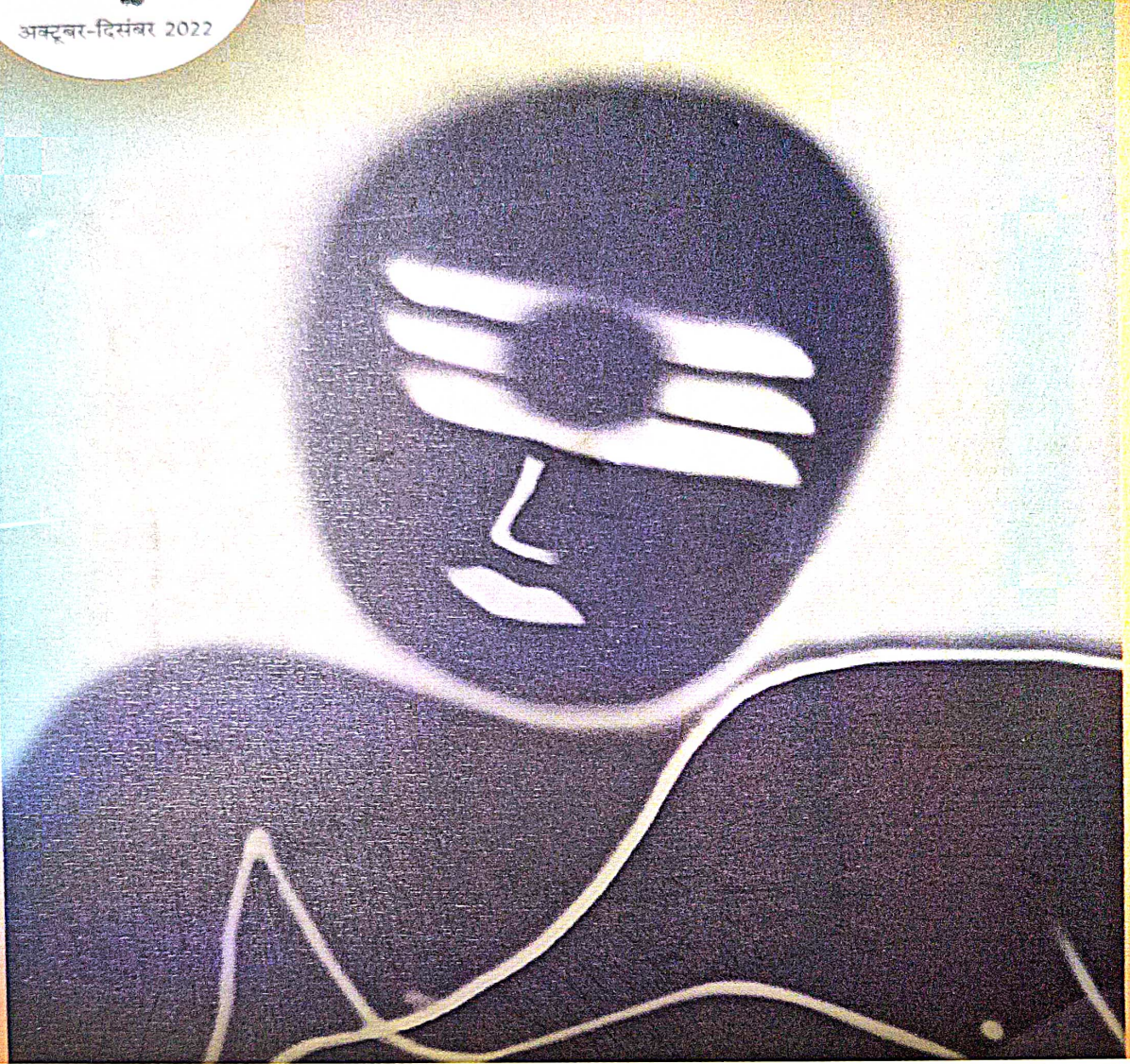




# आलोचना

त्रैमासिक



अनंतमूर्ति का संस्कार : सनातन की दुविधा / विनोद तिवारी  
खदीजा मस्तूर का आँगन : विभाजन-साहित्य का प्रतिपक्ष... / अदिति भारद्वाज  
उसका विश्वास था कि बाघ एक जादू है / राही डूमरचीर



# दिल और देश का भूगोल योगेंद्र आहूजा की कहानी 'मनाना'

रश्मि रावत

“कहानी का अभीष्ट यह रेखांकित करना है कि व्यक्ति का 'निजी' और 'सामाजिक' एक दूसरे से अलग, असंबद्ध, जुदा नहीं होता। वे एक दूसरे में शामिल होते हैं और एक के विकृत होने पर दूसरे का क्षतिग्रस्त होना लाजिम है। एक ऐसी समाज-व्यवस्था में जो हजार तरह की बेइसाफियों पर टिकी हो, व्यक्तियों का निजी जीवन अटूट या निर्बाध नहीं रह सकता। उसका भी क्षत-विक्षत होना अपरिहार्य है।”

महत्त्वपूर्ण आलोचक तथा दिल्ली विश्वविद्यालय के कॉलेज ऑफ़ आर्ट्स एंड कॉमर्स में असिस्टेंट प्रोफ़ेसर। हाशिये की आवाजें तथा स्त्री लेखन का समकाल किरावे प्रकाशित।

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हिंदी कहानी के इतिहास में जिसे हम 'नई कहानी' के नाम से जानते हैं, उसके नयापन सिर्फ़ शिल्प, भाव-भूमि, संरचना या संवेदना तक सीमित नहीं था। यह एक नई पाठ-पढ़ने के अलावा कुछ नए संघर्ष भी साथ लाई थी और उसने आलोचना को भी नर्भकृत होने, नई विश्लेषण-पद्धति, अर्थ-संघान या आकलन के नए औजार ईजाद करने के लिए बाध्य किया था। यह कहना गलत न होगा कि उस दौर की कहानियों पर नाम्बर सिंह की आलोचना पुस्तक कहानी : नई कहानी अपने आप में 'नई आलोचना' भी है। यह शायद पहली बार हुआ था कि कहानी के संदर्भ में प्रयोग, बिंब, प्रतीक, संकेतिकता, अर्थों की बहुस्तरीयता आदि की चर्चा की जाने लगी थी—अक्सर स्वयं कहानीकारों के ही द्वारा। कहानीकार सिर्फ़ कहानी लिखने से ही संतुष्ट नहीं थे, वे उसके परिभाषाकार और व्याख्याकार भी थे और कहानियों के कथ्य या अंतःप्रेरणा को, अपनी रचनात्मकता के सार को आलेखों या वक्तव्यों के जरिये अपने और पाठकों के लिए स्पष्ट करना जरूरी समझते थे। कहानी पहली बार जैसे 'आत्म-सजग' हुई थी। पिछली शताब्दी के अंतिम दशक में, ठीक-ठीक कहें तो 'नव-उदारवाद' और वैश्वीकरण के आगाज के बाद कहानी की दुनिया में 'लंबी कहानी' ने एक केंद्रीयता या कम से कम प्रमुखता हासिल की। इसी समय से बेइसाफ़ियों, हिंसा और उत्पीड़न के नए, अप्रत्यक्ष, अपरिभाषित प्रारूपों का प्रकट होना शुरू हुआ जो धीरे-धीरे हमारे दैनिक जीवन का हिस्सा हो गए। यह इन्हीं परिवर्तनों का नतीजा है कि इस समय की कहानी 'नई कहानी' या 'साठोत्तरी कहानी' से शिल्प, विन्यास, कहन, विषयवस्तु, भाषिक व्यवहार और यथार्थ के अवबोध-आकलन, सभी स्तरों पर बहुत अलग है—लेकिन आज कहानीकार, अपवादों को छोड़कर, उसके तत्वों या प्रवृत्तियों या लक्षणों को पृथक रूप से रेखांकित या व्याख्यायित करते नहीं दिखते। सहज जिज्ञासा होती है कि क्या यह कहानी की दुनिया में आत्म-सजगता के क्षरण का संकेतक है या 'अति-आत्मविश्वास' का?

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# अपने आप से दोस्ती

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## सृजन-परिक्रमा

हंस के अगस्त 2021 अंक में छपी मधु कांकरिया की कहानी 'उलझन' और नवंबर 2021 में छपी निधि अग्रवाल की 'पांचवें पुरुष की तलाश में' को साथ-साथ पढ़कर हम अलग-अलग कालखंड की दो स्त्रियों के प्रेम के प्रति नजरिए को समझ सकते हैं। एक में व्यावहारिकता के तकाजों से संचालित होती नियमबद्ध, नीरस मगर वास्तविक जिंदगी है और दूसरी ओर यथार्थ से दूर किसी दूसरे देशकाल में कल्पना के कोमल रेशे। एक ओर सातवें दशक की संस्कारग्रस्त, दुविधा से घिरी स्त्री है तो दूसरी ओर इक्कीसवीं सदी की आत्मचेता आधुनिक स्त्री। 'पांचवें पुरुष की तलाश में' की केंद्रीय पात्र ताप्ती को गढ़ने के क्रम में कहानीकार ने न केवल कैनवास से असली जीवन की धूप-छांव और धूल-गर्द को पोंछ डाला है, उसे गढ़ा भी है चीनी वाटरकलर चित्रों जैसे नाजुक ब्रश-स्ट्रोक्स से। जो घटनाएं जीवन में एक दीर्घकाल में घटती हैं, उनकी अवधि को सिकोड़ और समेटकर इस पेंटिंग सरीखी कहानी में जड़ दिया गया है। यहां एक निर्द्वंद्व, अकुंठ स्त्री है जिसकी खूबसूरती में बिंधा साहिल एक फूल प्रदर्शनी में हुई

पहली ही मुलाकात में पूछ सकता है 'मे आई किस यू?' और मौन स्वीकृति पा सकता है। पहले संवाद में एक-दूसरे का नाम पूछने की जगह प्रेमी द्वारा उच्चरित शब्द है 'बियेट्रिस, दांते की आत्मा का प्रवेश द्वार'. चाहनाओं और देह की मद्धिम आंच में सिकते-सुलगते पल वे इस सहजता के साथ जीते हैं कि ताप्ती को भ्रम होता है कि वे सचमुच घटित हुए हैं या स्वप्न में। एक ताजी हवा के झोंके-सा जीवन में आया साहिल हाथ में छल्ला लिए पूछता है 'विल यू बी माइन?' और वे दोनों घर बसा लेते हैं। घर का आर्थिक आधार ताप्ती की कमाई है जबकि साहिल अपनी कला और कल्पनाओं के आकाश में उड़ानें भरता है। ताप्ती एक चित्रकार के मन से अनजान नहीं, और उसे विकसित होने का पूरा स्पेस देना चाहती है। साहिल की कला-प्रेरणा और मॉडल बनना भी उसे खुशी देता है। लेकिन कभी-कभी उसका मन भी निर्बाध उड़ने की मोहलत चाहता। धीरे-धीरे घटनाएं उसे एहसास कराती हैं कि साहिल को सिर्फ अपनी कला से प्रेम है और ताप्ती के साथ उसका रिश्ता सिर्फ अधिकार-सुख भोगने का है। आगे के घटनाक्रम में कलाकारों के एक गांव बसाने की साहिल की महत्वाकांक्षी योजना के सिलसिले में उसका कलाकार दोस्त इब्राहिम

उनके साथ रहने लगता है। उसके द्वारा बनाई ताप्ती की पेंटिंग्स के कारण साहिल को शुबहा होता है कि वे दोनों एक-दूसरे के इश्क में हैं। उसकी अप्रत्याशित प्रतिक्रिया से आहत-विस्मित ताप्ती उन झकझोर देने वाले पलों में साहिल से अपने रिश्ते पर पुनर्विचार के लिए बाध्य होती है और उसी पल उनकी जिंदगियां जुदा हो जाती हैं। अपने आकर्षण से बिंधे इब्राहिम को भी वह सिर्फ दोस्त मानती है, जिससे मन बांटा जा सकता है, जिस्म नहीं।

जीवन के दूसरे पड़ाव में वह भावोद्रेकों की जगह यथार्थ में जीने वाले समृद्ध विक्टर का सतत प्रेम निवेदन स्वीकार कर उससे विवाह कर लेती है। इस दूसरे जीवन में उसे एक आत्ममुग्ध कलाकार की अराजकता और गैर-जिम्मेदारी से निजात मिलती है और साथ ही एक सुरक्षित भविष्य। फिर भी यह आरामदेह मगर तयशुदा, मशीन सरीखा जीवन उसे जल्दी ही उबाने लगता है। आर्थिक सुरक्षा, भविष्य की बेफिक्री और विक्टर की नपी-तुली बातें, सब कुछ उसे निरर्थक लगने लगते हैं। जीवन में रोमांस, रोमांच, कुछ जोखिम और अनिश्चितता न हो तो जीना सिर्फ आदतों का एक उबाऊ और बेमतलब दोहराव रह जाता है। उसे अपनी छोटी-सी नौकरी याद आती है जो तमाम

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## छोटे पैरों की लंबी दास्तान

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### सृजन-परिक्रमा

‘परिवार’, जो समाज की बुनियादी इकाई है, पर अरस्तू के समय से आज तक कितने ही विचारक अलग-अलग दृष्टियों से विचार करते रहे हैं। फिर भी अभी तक उस पर पुनर्विचार की आवश्यकता निःशेष नहीं हुई। उससे जुड़े अनेक सवाल हैं जिनके अंतिम उत्तरों तक पहुंचना अभी बाकी है। क्या परिवार संस्था मनुष्य के मानस के, उसकी स्वाभाविक एषणाओं के अनुरूप है अथवा विरुद्ध? वह उसके भीतर की संभावनाओं के विकास में सहायक होता है या अवरोधक? परिवार में मनुष्य की नैतिकता का क्षरण होता है या वह एक अधिक नैतिक, संवेदनशील मनुष्य और सजग नागरिक बन पाता है?

हस्त, अप्रैल 2022 अंक में प्रकाशित फरजाना महदी की कहानी ‘बानो’ परिवार-संस्था की वर्तमान हालत को एक पति-पत्नी के संग-साथ के चंद घंटों की अवधि में दिखाते हुए हमें अनायास इन प्रश्नों के रू-ब-रू ले आती है। कहानी इतनी ही है कि एक पारंपरिक मुस्लिम

परिवार की बानो को कुछ देर के लिए बुर्का पहनने से मुक्ति मिली है। इस अस्थायी मुक्ति का क्या मूल्य है? लेकिन कहानी में चंद पलों की यह मुक्ति ही सरफराज और बानो के रिश्ते को, साथ ही उन दोनों के व्यक्तित्व को एक नई रंगत देने लगती है। वे अपने भीतर एक नई स्त्री, नए पुरुष का आविष्कार करते हैं और परस्परता को एक नई लय में ढालने की प्रक्रिया में अपने रिश्ते को नवीकृत करते हैं। वे दोनों पति-पत्नी के रूप में सात साल बिता चुके हैं, लेकिन अभी तक एक-दूसरे से अजनबी हैं। अभी तक वे परिवार और समाज द्वारा पूर्व प्रदत्त पटकथा पर अभिनय करते हुए सिर्फ अपनी भूमिकाएं निभा रहे थे। पति की वही भूमिका थी जो पारंपरिक परिवारों में मर्दों की होती है। पत्नी की भूमिका थी ससुराल में सबकी पसंद-नापसंद का ध्यान रखते और उनकी जरूरतें पूरी करते हुए अपने भीतर खाली, शुष्क, निस्सार महसूस करते रहना। मायके में भी वह बचपन से इसी भूमिका के लिए ढाली गई है। फिर भी जीवन की उमंग और ललक से वह पूरी तरह खाली नहीं। बुर्का पहनने से पहले वह जिस पुलक से खुद को

निहारती-संवारती, अपने रूप पर खुद ही मुग्ध होती है, उसकी अपनी आंखों से देखी गई खूबसूरती के मोहक वर्णन के बाद उस दिलकश सौंदर्य का स्याह रंग के बुर्के में कैद होना पाठकों को एक आघात देता है। बाइक पर दौड़ती हवा के साथ उसके भीतर यह मासूम चाहत उमड़ने लगती है कि काश हवा का झोंका उसका नकाब उड़ा ले जाए। आजाद इच्छाओं के ऐसे पल वह अब तक अपने भीतर, सिर्फ खुद के ही संग जीती आई है, लेकिन आज उसका पति उसके साथ कुछ उन्मुक्त पल जीने की ख्वाहिश से उसे पार्क में लेकर आया है। इतना भर बदलाव एक गतिहीन जीवन में कितने रंघ खोल सकता है, कैसी तरंगें पैदा कर सकता है, कहानी में इसके जीवंत विवरण हैं। बिना किसी टिप्पणी के सिर्फ सजीव विवरणों के जरिए कहानी रेखांकित करती है कि संकुचित करने वाली इन परिपाटियों से स्त्री का ‘स्वत्व’ और आत्म-सम्मान किस तरह कुचले जाते हैं। उसका सहज विकास रुक जाता है और स्त्री-पुरुष की जीवन-स्थितियों की विषमता उनके व्यक्तित्व और उपलब्धियों में भी एक बड़ी खाई पैदा कर देती है।

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रश्मि रावत

## सृजन-परिक्रमा

‘हंस’ के मार्च 2023 अंक में प्रकाशित फ़रीद ख़ां की कहानी ‘आदर्श नगर, अंधेरी (वेस्ट)’ मुंबई के एक खास इलाके की कुछ विशिष्ट जीवन-स्थितियों की कहानी है और उसका कालखंड भी सीमित है. फिर भी यह बिना किसी पारिभाषिक या निर्णयपरक शब्दावली का सहारा लिए हमारे समकाल में मानवीय संबंधों का सच जिस तरह उघाड़ती है, वह इसे एक उल्लेखनीय कहानी बनाता है. हम कलाओं से मानवीय सत्व को बचाए रखने की उम्मीद करते हैं, लेकिन अनियंत्रित और बेलगाम ‘वृद्ध-पूँजीवाद’ के सर्वव्यापीकरण और पतन के वर्तमान दौर में क्या कला की दुनिया अप्रभावित, अप्रतिहत रह सकती है? प्रथम पुरुष (फ़र्स्ट पर्सन) में लिखी गई इस रोचक कहानी में एक वास्तविक जगह के नाम को शीर्षक बनाकर रेखांकित किया गया है कि कहानी का यथार्थ ठोस है, पात्र इसी देश-काल के हैं और उसमें कल्पना की उड़ान नहीं, आंखों-देखा जीवन है. आदर्श-नगर मुंबई की फिल्मी दुनिया में जगह बनाने के,

रजतपट पर चमकने का सपना लिए गांव-देहात, कस्बों और उपनगरों से आने वाले बेशुमार लोगों की संघर्ष-स्थली है. उसी के अनुरूप वहां के निवासियों की अपनी जीवन-लय और मिजाज है.

कहानी की शुरुआत में वाचक शिवा आईने में देखते हुए खुद से पूछ रहा है कि क्या कमी है इस आदमी में? कमी इतनी ही है कि उसकी शकल कुछ ऐसी है कि लड़कियां उसे देखते ही ‘भैया’ का नाता जोड़ लेती हैं. नायक के लिए यह जैसे उसके अस्तित्व से जुड़ा एक केंद्रीय सवाल हो. वह बिहार से आया है और उसकी गढ़न उत्तर-भारत के पारंपरिक मूल्यों में हुई है. महानगर की द्रुतगति उसकी जीवनचर्या में जरूर शामिल हुई है लेकिन फिलवक्त उसके मूल्यबोध में नहीं. फिर भी ‘भैया’ जैसा चेहरा-मोहरा होने का अफसोस वह जिस प्रकार करता है, वह पाठक को पूर्वाभास करा देता है कि महानगर के तूफान में उसकी पारंपरिक नैतिकता और मूल्यबोध के चीथड़े उड़ने ही वाले हैं.

पिछले कुछ बरसों में आई तमाम फिल्मों जैसे ‘रंगीला’ की मिली, ‘फैशन’ की मेघना और ‘मैं माधुरी दीक्षित बनना

चाहती हूं’ की छुटकी जैसी कितनी ही लड़कियां सपने संजोए छोटे शहरों से फिल्मनगरी का रुख करती हैं. इस कहानी में पिंकी पप्पू के साथ अभिनेत्री बनने की महत्वाकांक्षा से उस इलाके में रहने आई है. कहानी एक माहिर कलम से, लेकिन इसी दायरे के सीमित अनुभवों से बुनी गई है. उसके परे की जीवन-स्थितियां कहानी का हिस्सा नहीं हैं. कहानीकार वाचक की ही निगाहों से पिंकी और उसके परिवेश को दिखाता-बताता है. उसकी नजरों या जजमेंट्स के परे पिंकी जो है या हो सकती है, उस बाबत राय बनाने के लिए पाठक स्वतंत्र हैं.

पहली ही मुलाकात में पिंकी को स्क्रिप्ट राइटर शिवा में अपना भाई नजर आता है. कस्बाई संस्कारों के चलते शिवा इस रिश्ते को कुछ दूर तक निभाता भी है. एक सामंती परिवेश में जिस तरह बहन के संरक्षण और सुरक्षा की जिम्मेदारी ली जाती है और उससे घरेलू कामों की सेवाएं अकुंठ भाव से स्वीकार कर ली जाती हैं, ठीक वैसा ही कहानी में है. वह उसे ऑडिशन के लिए केवल परिचितों और उनमें भी अच्छे चरित्र के लोगों के पास भेजता है ताकि हर ‘चश्मे-बद’ उससे



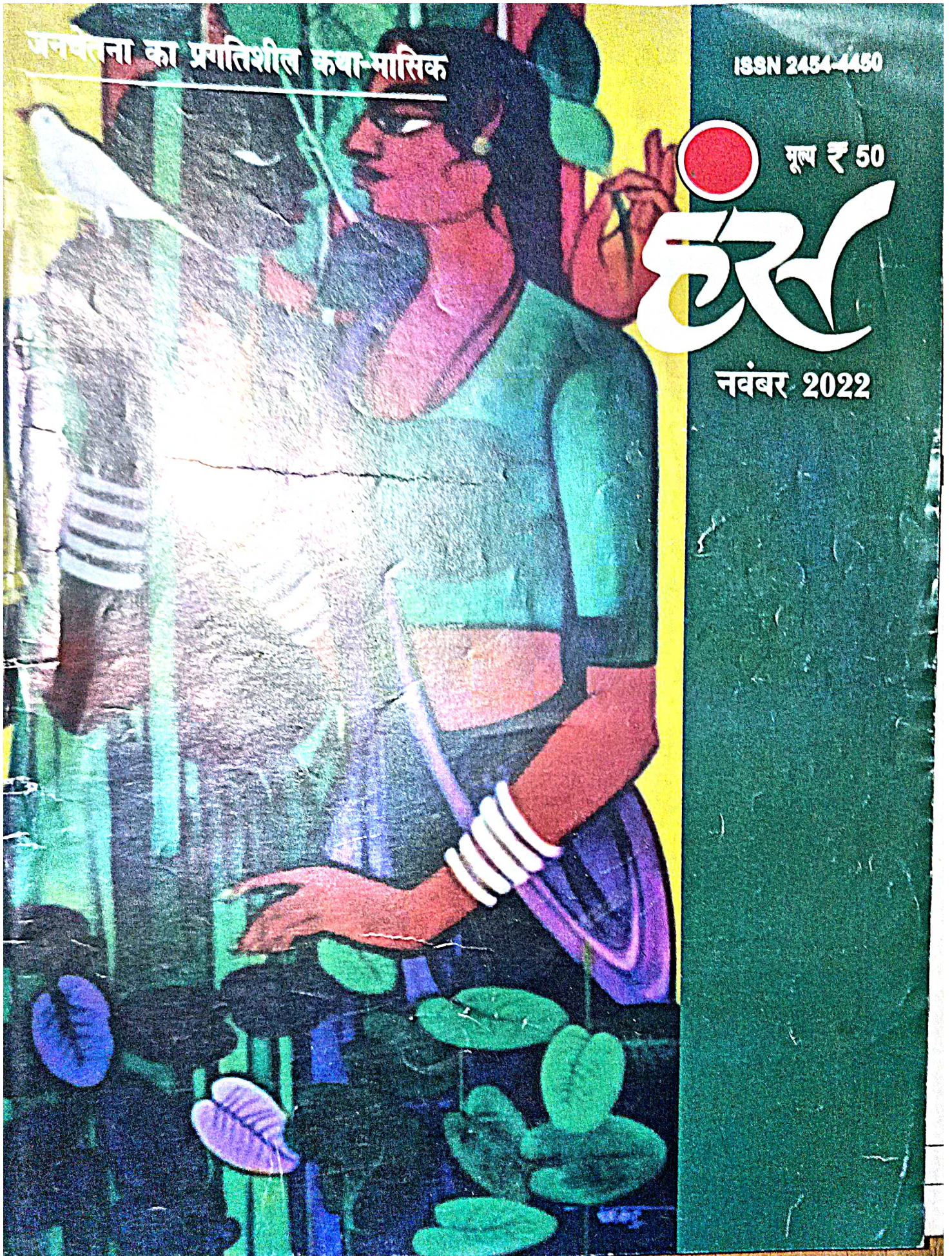
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## विमर्श और यथार्थ का सहजीवन

रश्मि रावत

### सृजन-परिक्रमा

हमारे समाज में 'विवाह' के पारम्परिक, सांस्थानिक, धर्म-सम्मत दायरे के बाहर स्त्री-पुरुष सह-जीवन ('लिव-इन') अब नया परिदृश्य नहीं है. भले ही खुले तौर पर सह-जीवन जीते युगल संख्या में कम हों, इसके प्रति स्वीकार्यता तेजी से बढ़ी है. साहित्य और संस्कृति में स्त्रियों की सक्रियता बढ़ने से परिवारों और विवाह में व्याप्त विषमता का उद्घाटन व्यापक तौर पर हुआ है. युवा पीढ़ी किसी एक रिश्ते में अपनी भावनाओं का आजीवन निवेश करने से कतराती है, सशक्त रहती है. 'लिव-इन' में रह रहे जोड़ों में आपसी संशय, भय, असुरक्षा जैसे भाव, उनके प्रति परिवार और समाज के रुख, 'सपोर्ट-सिस्टम' के अभाव और ऐसी ही अन्य जटिलताओं को विषय बनाती अनेक रचनाएं इस बीच लिखी गई हैं. इस आलेख में 'सह-जीवन' के इर्द-गिर्द बुनी दो कहानियों का विश्लेषण किया गया है.

हंस के जुलाई 2022 अंक में छपी संजय सिंह की कहानी 'लेफ्ट कॉर्नर' में

एक कॉलेज के परिसर में मिले फ्लैट में टीचर सुचित्रा के अपने प्रेमी के साथ 'लिव-इन' में रहने पर व्यवस्थापकों के एतराज से उठी हलचलें हैं. पिछले दो दशकों में 'स्त्री-विमर्श' ने समाज में स्त्री की आजादी, गरिमा और स्व-चेतना जैसे मूल्यों के लिए थोड़ी जगह तो बनाई है, यद्यपि यह अभी शुरुआत ही है. सुचित्रा और उसके प्रेम के पक्ष में अनेक स्त्रियां लामबंद हैं. फिर भी कहानी के अंत में उसे पराजय ही मिलती है. 'स्त्री की आजादी' अभी भी मध्यवर्ग का सामान्य जीवन-मूल्य नहीं है. समाज का चलन और बौद्धिक, अकादमिक दायरे के विमर्श जैसे दो अलग, असंबद्ध, दूरस्थ दुनियाएं हैं. व्यक्ति की आजादी, 'आत्म-बोध' और 'स्व-चेतना' जैसे आधुनिक मूल्य और उनके तर्क-वितर्क अकादमिक ट्रैप में फंसे रहते हैं और इसके परे जीवन परंपरा और परिपाटी की लीक पर पूर्ववत् चलता रहता है. कभी-कभी इससे बिल्कुल अलग परिदृश्य उन उपेक्षित तबकों में दिखता है, जहां अभी तक आधुनिक शिक्षा की पहुंच नहीं हो सकी है. वहां जीवन किन्हीं विमर्शों या विचार-सरणियों के परे अपनी

नैसर्गिक शक्ति से, अंतःप्रेरणा से ही नए रास्ते खोज लेता है. अनेक स्थानीय, सामुदायिक लोकाचारों में हम ऐसे स्वस्थ जीवनबोध की झलकियां पाते हैं, जो उनके गहन और व्यापक अध्ययन की जरूरत महसूस कराती हैं. अगर ऐसा हो तो उससे हमारे समाज का सामूहिक विवेक, और आगे चलकर नागरिक संहिता भी व्यापकतर, समावेशी हो सकेंगे.

हंस के अक्टूबर 2021 अंक में प्रकाशित, रत्नकुमार सांभरिया की कहानी 'वर' में घुमंतू जनजाति की रोशनी अपने देवर के साथ अपने घर में पूरी ठसक से रहती है. बेवफा और स्वार्थी पति के हक जताने पर पंचायत ('बसती') बैठती है. एक सादे लेकिन कसे हुए शिल्प और प्रामाणिक बोली-बानी में रची गई इस कहानी में स्थानिकता का भूगोल बेहद सजीव और स्वतःस्फूर्त है. भाषा परिवेश गढ़ने में इस कदर सक्षम है कि घटनाक्रम तमाम सूक्ष्म ब्यौरों के साथ आंखों के आगे दृश्यमान हो जाता है. शिक्षा और आधुनिक शब्द-संपदा से वंचित समुदाय के जनजीवन को जीवंत ढंग से साकार करने में ऐसी ही भाषा कारगर हो सकती

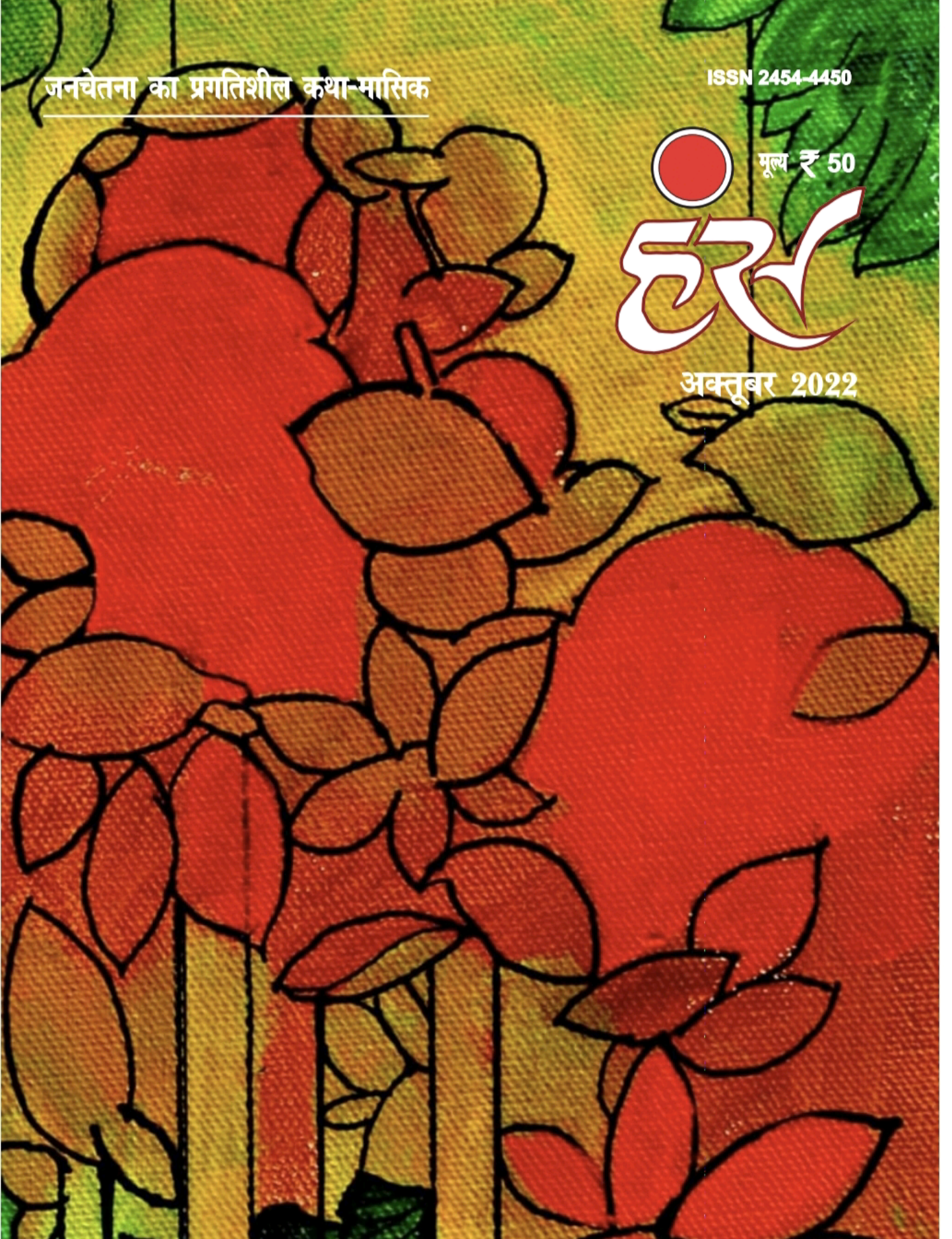
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# ‘विषम’ लैंगिक दुनिया में एकाकी

रश्मि रावत

## सृजन-परिक्रमा

पिछली सदी के ऑस्ट्रियाई लेखक स्टीफन स्वाइग का नाम हिंदी में अंजाना नहीं, फिर भी उनकी अनेक रचनाओं से पाठकों का परिचय होना अभी शेष है. उनका 1927 में प्रकाशित लघु-उपन्यास ‘कंप्यूजन’ (‘उलझन’) एक ऐसी ही रचना है, इब्सन, काफ़्का और दोस्तोयेव्स्की जैसे लेखकों की रचनाओं के साथ, उनकी ही कड़ी में, ‘मानवात्मा’ के अध्ययन के लिए अपरिहार्य. कथानायक रोलैंड, जो अंग्रेजी के सम्मानित प्रोफेसर हैं, जीवन के उत्तरार्ध में उन्हें समर्पित एक अभिनंदन ग्रंथ को पलटते हुए अपना अतीत याद करते हैं—युवावस्था में जब वे छात्र थे, उस समय एक प्रोफेसर के साथ उनके रिश्ते और दोस्ती की कहानी. वे याद करते हैं कि विद्यार्थी जीवन की शुरुआत में उनकी रुचि सिर्फ नए-नए नशों, लड़कियों और बेमकसद आवागामी में थी और ज्ञान और बौद्धिकता से उन्हें घोर अरुचि थी. अनंतर वे एक दूर-दराज के विश्वविद्यालय में अंग्रेजी के एक प्रोफेसर के संपर्क में आते हैं. उनकी पहली ही क्लास में, पहला ही व्याख्यान सुनने के अनुभव

को वे इन शब्दों में याद करते हैं:

“असंख्य क्षणों में कोई एक क्षण ही होता है, जो हमारे अंतःलोक को ‘चरम’ प्रदान करता है. एक ऐसा क्षण, जैसा कि स्टेंडल ने कहा है, जिसमें रक्त का चरम ठोस आकार ग्रहण करता है. प्रसव का-सा जादुई क्षण और उसी तरह अपने शरीर के तपते अंतर में छिपा अदृश्य, अस्युश्य, अग्राह्य एक अद्भुत अनुभव.”

उन्हें पुनर्जीवन देने वाले उस शख्स का जीवन जैसे-जैसे उसके सामने खुलता है, एक चरम रूप से अतृप्त, उद्विग्न, एकाकी, कुछ रहस्यमय व्यक्तित्व उद्घाटित होता है. किसी मर्मांतक लेकिन अनकही वेदना से प्रोफेसर का पारिवारिक-सामाजिक जीवन क्षत-विक्षत है. उनकी सुंदर, जीवंत पत्नी के साथ उनका रिश्ता बेजान, दिखावटी है और रोलैंड के प्रति उनका रुख भी अपने-पराए, ऊपर-नीचे के झूले में हिचकोले खाता रहता है. प्रोफेसर के जीवन का एक सिरा प्रकाशित है लेकिन दूसरा कहीं प्रगाढ़ अंधेरे में छिपा है. वह अपने विद्यार्थियों की श्रद्धा का पात्र है, शेक्सपियर के साहित्य का एक मौलिक व्याख्याकार—किंतु उसका एक छिपा हुआ दूसरा जीवन भी है जो दूर-दराज के शहरों, सस्ते होटलों, बस्तियों

में बीतता है और जिस पर खतरे मंडराते हैं. उसकी यौनवृत्तियां समाज-अनुमोदित नहीं हैं और वह उन्हें किसी जुर्म या पाप की तरह गुह्य रूप से ही जी सकता है.

उपन्यास जिस यथार्थ को उद्घाटित करता है, वह एक शताब्दी पूर्व यूरोप में भी समाज की एक बड़ी आबादी का सच था. विषम-लैंगिकता से इतर यौनवृत्तियां सदियों से मौजूद रही हैं और उनके प्रति भेदभाव की हिंसा का सिलसिला भी हमेशा जारी रहा है. ऐसे व्यक्तियों की प्रतिभा और मेधा उन सवालियों के जंगल में घिरकर रह जाती है, जिनके जवाब लिखने की लिपि अभी तक ईजाद नहीं हुई. वे जैसे समाज में होते हुए भी नहीं होते. वे रोज आत्मिक खुदकुशी करते हैं और एक अटल, दुर्निवार चुप्पी में गुम हो जाते हैं. इसीलिए रोलैंड प्रोफेसर के घर के सदस्य की तरह रहते हुए लंबे समय तक गोपन को भेदने की तीव्र इच्छा और कोशिश के बावजूद अपने जीवन के उस सर्वाधिक प्रिय व्यक्ति के जीवन-रहस्य की एक सलवट तक नहीं पा पाता. कहानी के एक निर्णायक और नाटकीय क्षण में प्रोफेसर की पत्नी और प्रोफेसर दोनों ही उनके प्रति प्रबल आकर्षण में बंधे हैं. अंततः वे रोलैंड के सामने अपना हृदय

## Coalition Politics in India : The Post Emergency Janata Experiment

Srikant Pandey, Assoc. Professor

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### Abstract

The socio-economic turmoil of the 1970s was converted into a political opportunity by the leaders of the opposition parties irrespective of ideological differences. Such an attempt galvanized the mutually opponent political parties into a single political identity called Janata Party which successfully replaced the dominant Indian National Congress from the centre of power at the Raisina Hills of New Delhi. Though it could not survive for its full term but it was able to send a message that the one party dominance may be successfully challenged. The present paper intends to explore the reasons of coming together of political power on the one hand and the crumbling down of the first coalitional government at the national level.

### Key Words

Emergency , MISA, Election, Predominance, Fractured Mandate, Ideology, Common Minimum Programme.

The systemic turmoil witnessed within the sub-systems of party system in the 1967 gradually kept on maturing and mutating which ultimately emerged at the national level in 1977. Replicating almost the same political process of coming together of political parties as was seen at the state level in 1967, this first experiment of coalition ( technically it was merger of political parties into one identity , called Janata Party) politics at the larger political screen of the national political arena virtually signaled an alarm bell for the deepening crisis in the Congress system .However, the political vacuum created by low pressure political cyclone of pre-emergency pan India people's agitations in general and student's mobilization in particular created a conducive political temperature against the predominant party system which suffered a major blow in the post-emergency election. In fact, the electoral upsurge of 1967 not only brought about qualitative change in the party system at the state level but also reflected a growing concern of regional political elites to emulate this model of consociational coalition at the Union level as well. The growing strength of the opposition parties in general and regional parties in particular got a perfect political environment in 1977 which led to conversion of socio-economic dissent of the Demos into second electoral upsurge whereby predominance was replaced by pre/post election realignment of political parties that ensured establishment of first coalition government at the centre. Any contextual analysis of the factors responsible for this far reaching change in the Indian party system would distinctly display that no doubt the opposition united to ride the post emergency tidal wave of anti incumbency mood of the disenchanted people but the fact remains that such a volcanic political situation was an outcome of growing mass unrest due to worsening political economy of the country which led to large scale industrial unrest, railway strike, student's

# फरिंदे

साहित्य, संस्कृति एवं विचार का द्वैमासिक



## इक्कीसवीं सदी: स्त्री-कथा अंक

- साक्षात्कार : उषा प्रियंवदा, पंकज बिष्ट, रोहिणी अश्रवाल
- आलेख : रश्मि रावत, नीरज खरे, राकेश बिहारी, शुभा श्रीवास्तव
- साथ में 23 स्त्री-कथाकारों की कहानियाँ

# सबलगा

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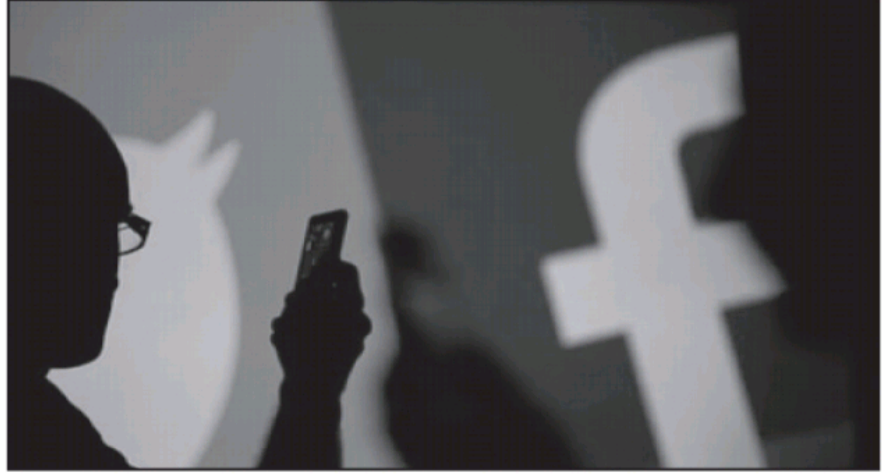
- एक सच्चे अयोध्यावासी थे शीतला सिंह
- आदिवासी राजनीति का उभरता चेहरा
- मिग 21 का वायु सेना से बिदा होना



# शब्दों की मुँदी आँखें

रश्मि रावत

हाँ और ना के बीच



दशकों तक इस धीमे-धीमे कल्ल करने वाले समाज की बीमारी नहीं पहचान सकी। पहचाना तो एसर्ट नहीं कर सकी। एसर्ट किया तो मेरे पास वह जुबान नहीं थी जिसमें अपनी बात कह सकूँ। अब किसी तरह अपने एकान्त में कुछ लिख लेती हूँ। अपने लोगों को बोला तो वे समझ नहीं सके। मेरी ऊर्जा उन्हें कन्विस करने के लिए दुनिया भर के समाजों और साहित्य से प्रमाण खोजने में जाया होने लगी। धीरे-धीरे सबने मुझसे नजरें फेर लीं।



लेखिका दिल्ली विश्वविद्यालय के एक कॉलेज में अध्यापन और प्रतिष्ठित पत्रिकाओं में नियमित लेखन करती हैं।

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सोशल मीडिया पर और सामाजिक-सांस्कृतिक सरोकारों से जुड़ी गतिविधियों में उनसे जब-तब संवाद होता रहता था। उनकी भाषा में सच्चाई की कौन्ध दिखती थी। बेमानी शब्दों की अतिशयता के इस दौर में आभासी या असली दुनिया में कहीं कोई सच्ची, प्रामाणिक अभिव्यक्ति दिखे, तो स्वाभाविक रूप से वह इंसान दिल के करीब हो जाता है। मेरा शर्मिला से यही रिश्ता है। उनसे कभी रू-ब-रू मिलना नहीं हुआ था। कुछ दिन पहले किसी काम के सिलसिले में उनके घर पहली बार जाना हुआ। फोन पर पहले से तय करके नहीं, यह एक अनायास हुई मुलाकात थी।

दरवाजा खुलते ही हम एक दूसरे के सामने थे, चेहरों पर अलग-अलग भावों के साथ। उन्हें सही सलामत देखना मुझे राहत दे रहा था। उनके चेहरे पर हैरानी और खुशी थी और असमंजस का भाव भी जो किसी के बिना सूचना के, अकस्मात् आने से उपजता है। उन्होंने कुर्सी पर फैले कागजों को मेज पर रख दिया जो पहले ही किताबों और डायरियों से भरी थी। मुझे बैठने का संकेत कर वे पानी लेने गयीं। मैंने देखा कि एक पूरी दीवार में एक अलमारी और लोहे का एक बड़ा रैक और लकड़ी के चन्द और रैक थे, सब के सब किताबों, कापियों और कागजों से ठसाठस। जाहिर था कि वे किसी काम में गहरे डूबी थीं। डूबने से पेशतर वे उन पन्नों में उलझी रही होंगी और उनसे कल्पनाओं और ख्यालों की खुराक

लेकर भीतर उतरी ही होंगी कि कॉल-बेल बज उठी होगी। उनके सृजन के उन मूल्यवान एकान्त पलों में अनचाहे सेन्ध लगाने के कारण तरह-तरह के ख्याल मुझे घेर रहे थे। अपने होने को अनहुआ करना मेरे वश में न था। भले ही मैं नामालूम सी उपस्थिति की तरह वहाँ निर्भर बैठने के लिए या तत्काल अनुपस्थित होने के लिए सहर्ष तैयार होऊँ, उनकी चेतना के जल में तो कंकड़ पड़ ही चुका था।

सोचती रही कि कम से कम समय और स्पेस लेते हुए अपनी मंशा किस प्रकार जाहिर करूँ कि किसी बहस या अनावश्यक वार्तालाप के बिना खुद को वहाँ से वापस ले आ सकूँ। इस बीच वे ट्रे में दो गिलास नींबू पानी ले आयीं। अब चेहरे में स्वागत भाव था और आवाज में अपनापन—“ये वाला नमकीन है और ये मीठा। मुझे दोनों बराबर अच्छे लगते हैं। आप अपने वाला स्वाद छँटें।” एकबारगी लगा इसी वाक्य का सिरा पकड़ कर अपनी इच्छा को अंजाम दूँ “मेरा वाला स्वाद है फिलहाल आपको आपकी ही संगत में छोड़कर जाने का। न जाने कितने महीनों-हफ्तों-दिनों के बाद ये लम्हे नसीब हुए होंगे। लेकिन उनके आत्मीय बर्ताव के असर में मुझसे सिर्फ इतना ही हुआ कि गिलास गट-गट पी गयी और कहा—“आप फोन नहीं उठा रही थीं और कार्यशाला के सम्बन्ध में कुछ पूछना था तो इस तरह आना पड़ा। अभी चलती हूँ। आप काम से फारिग



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## **Theories of Party System: Contribution of Sartori**

**Srikant Pandey, Assoc. Professor  
Delhi College of Arts and Commerce  
University of Delhi**

### **Abstract**

Part system has emerged as a critical component of political science in general and comparative politics in particular. In fact, beginning of representative democracy led to crystallisation of diverse interests which led to competition for political power which in the long run gave way to political parties. The nature and character of electoral competition leads to some pattern which is being analysed and some universal laws are framed which is referred as theories of party system. Many political scientists in general and Duverger in particular have provided theories of party system. Sartori has tried to give an objective theory of party system. Unlike Duverger Sartori has included ideology as a critical component of determining the basic ingredients of developing theories of party system. I have tried to analyse the contribution of his theory in comparative politics.

### **Key Words**

Party System, Numerical, deology, Competitive, Non-competitive, Duverer,

### **Sartori's Classification**

Unlike Maurice Duverger, Sartori does not provide a simple classification of party systems based primarily on their numerical character. The reason being, as he claims himself, he has tried to avoid purely numerical variable by adding other variables, like ideology, in order to be as scientific/objective as possible.( Giovanni Sartori,Parties and Party Systems: A Framework For Analysis, Cambridge University Press, 1976, pp120-121) He made his critique of Duverger's law clear when he said, " Number of parties approach leads towards frustration. Because, we are incapable of deciding whether one is one, or two is two. Moreover, no accounting system can work, without counting the rule".(ibid ,pp 119-120) In order to be more precise and clear, he has classified party systems under two broad categories, i.e., competitive systems and non competitive systems which are elaborated below.

Competitive Systems:

#### **Multipartism**

In this category Sartori, first of all, discusses the phenomena of polarized pluralism. Such a system is characterized by the presence of a relevant anti-system opposition - especially of the communist or of the Fascist variety, but also of other varieties. Accordingly, a party can be defined as being anti-system whenever it undermines the legitimacy of the regimes it opposes. Its opposition is based not on issues, rather on principles. As they believe in changing the system rather than the government they represent an extraneous ideology. These parties may operate from within no less than from without, by smooth infiltration no less by conspicuous obstruction. Secondly, polarized pluralism must have bilateral oppositions that are naturally exclusive and

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Part system has emerged as a critical component of political science in general and comparative politics in particular. In fact, beginning of representative democracy led to crystallisation of diverse interests which led to competition for political power which in the long run gave way to political parties. The nature and character of electoral competition leads to some pattern which is being analysed and some universal laws are framed which is referred as theories of party system. Many political scientists in general and Duverger in particular have provided theories of party system. Sartori has tried to give an objective theory of party system. Unlike Duverger Sartori has included ideology as a critical component of determining the basic ingredients of developing theories of party system. I have tried to analyse the contribution of his theory in comparative politics.

### **Key Words**

Party System, Numerical, deology, Competitive, Non-competitive, Duverer,

### **Sartori's Classification**

Unlike Maurice Duverger, Sartori does not provide a simple classification of party systems based primarily on their numerical character. The reason being, as he claims himself, he has tried to avoid purely numerical variable by adding other variables, like ideology, in order to be as scientific/objective as possible. (Giovani Sartori, Parties and Party Systems: A Framework For Analysis, Cambridge University Press, 1976, pp120-121) He made his critique of Duverger's law clear when he said, "Number of parties approach leads towards frustration. Because, we are incapable of deciding whether one is one, or two is two. Moreover, no accounting system can work, without counting the rule". (ibid ,pp 119-120) In order to be more precise and clear, he has classified party systems under two broad categories, i.e., competitive systems and non competitive systems which are elaborated below.

Competitive Systems:

#### **Multipartism**

In this category Sartori, first of all, discusses the phenomena of polarized pluralism. Such a system is characterized by the presence of a relevant anti-system opposition - especially of the communist or of the Fascist variety, but also of other varieties. Accordingly, a party can be defined as being anti-system whenever it undermines the legitimacy of the regimes it opposes. Its opposition is based not on issues, rather on principles. As they believe in changing the system rather than the government they represent an extraneous ideology. These parties may operate from within no less than from without, by smooth infiltration no less by conspicuous obstruction. Secondly, polarized pluralism must have bilateral oppositions that are naturally exclusive and



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# Medium is the Sensation:

## OTT Platforms on the Smartphone Screen

*Aakriti Kohli*

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### Abstract

*This article probes the production of the screen sensorium and media and cultural significance of the concept of play in media studies. The article specifically examines the smartphone screen by exploring the transformation of screen cultures and spectatorship and the changing viewing practices with the coming of OTT, to understand the affordances and limitations initiated by these new modalities of screen consumption. This aspect of play, and the conditions of mediation and its impact on everyday intimate and social life of the audience has been significant. This paper argues that the smartphone screen offers the pleasures of play operating within the regime of sensing and generates new modalities of watching films and television content for audiences.*

**Keywords:** *Screen, Youth, Play, Sensing, OTT, Sensorium*

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### Introduction

The increasing popularity of the smartphone screen as a ubiquitous device points towards how it is at once an idea, media and technology, and our engagement with it in everyday experience has made it one of the dominant screens of our lives. The contemporary smartphone screen, in opposition to cinema, television, mobile phone, computer and laptop, signals towards new frameworks which determine the relationships between

technologies, culture and individuals, and requires us to address the materiality and reality of these technologies and technocultures produced due to the transition into an individualized screen experience. The smartphone screen, unlike that of television and cinema is also more “playful” and intimate in creating a personal visual and tactile sensory experience for the audience-user, thereby transforming the senses. Subsequently this study brings the questions of screen cultures and screen sensorium produced, and the forms of engagement specifically with respect to the smartphone screen in contemporary times.

In an article published in *The Quartz* titled, “Indians love watching videos on their phones – as long as it is for free”, an image of two men sharing a smartphone screen lying down on their beds, and another man lying down on a platform next to them using his smartphone as well, is deeply evocative (Bhattacharya 2018). The article also cites a report published by the Boston Consulting Group in the year 2018, that one of the primary reasons for growth of OTT (Over-the-top) video platforms in India is the adoption of smartphones, followed by cheap mobile data and broadband.<sup>1</sup> The central premise of the article was that Indians are gravitating towards using smartphones, primarily for watching videos, as long as they don’t have to pay for them.

In a study conducted by a big data and AI based mobile advertising company on consumer preferences between OTT and DTH (Direct-to-home) platforms in August 2019, 55% of the respondents said they now preferred to watch and consume video content on OTT, whereas 41% of the respondents continued to prefer watching content on DTH (Brand Equity 2019). In another study published in 2019 by KPMG about 87% of the respondents consumed online content on their smartphones (KPMG 2019). The study also mentioned that the age groups of 15-24 and 25-36 spends the most time per week at 9.2 hours and 8.3 hours respectively, though followed closely by the age groups of 37-50

and 50+ as well. Proliferation of smartphones, affordable and cheap mobile data have made it the preferred and the dominant medium for consuming online video content, followed by Smart TVs (5%), tablets (1%), laptops (4%), personal computers (2%), and others. It has also been reported that OTT platforms in India added about 3-4 million new users in the period between March 2020 and April 2020, owing to the national lockdown imposed due to the Covid-19 pandemic (Tandon, Jha and Tewari 2020). These statistics point to an emerging screen spectatorship culture, with online video, film and television content converging on the smartphone screen.

The smartphone screen media has also generated new modalities of watching films and television content for audiences. OTT consumption on the smartphone screen displaces television viewing or watching films as a “family activity” in urban India thereby reconfiguring social formations (Mankekar 1999). The inclusion of new content lexicon such as streaming and playing are reconfiguring the access and engagement with media texts on screen. With access to this content mediated via the smartphone screen, across multiple platforms, there are newer ways of imagining the audiences as well. They no longer watch or tune-in, but stream content on devices, activating various modes of play. They are more diverse in the content they consume but at the same time converge on a few handful platforms available via screen media.

While the structural dynamics of OTT platforms, in terms of the content they produce and licence, their marketing, distribution and publicity strategies, are influenced by their prospective audiences that are increasingly spending a significant part of their time online, it is also guided by the architecture of the smartphone screen, its interface, its functionality, its uses, its possibilities and limitations and its software. All of these aspects of OTT streaming platforms are crucial to understand how the screen sensorium gets generated, activated and circulated in OTT spectatorship in and



through the smartphone screen as modes of play. In that sense if certain media experiences cannot be neatly categorised as consumption or use, then “play” becomes a productive term to think through consumption of media texts on the smartphone screen. Play can then be used creatively to look at it as a mode of media consumption and as a cultural practice, specifically where there is *consumption* of new media forms not exclusively for instrumental *use* of digital technologies, which might be still considered ambiguous owing to their fleeting nature.

The contemporary smartphone screen, in opposition to the mobile phone, computer and laptop produces interaction via the senses - of touch, of vision, of space, and of hearing, enabling and making possible our experience of the screen itself. Sensing is the ability to perceive, and technologies increasingly help in configuring and enabling this perception, thereby ordering sensory experiences. Humans have historically amplified and extended their senses by using instruments and artefacts such as telescopes, microscopes, microphones etc. among other devices (Connor 2005). In fact, it is not limited to these devices becoming routes for us to merely sense the world, but they produce newer sensations and sensing capabilities themselves. He further suggests that the camera for instance knows how to “see” on its own, and the microphone knows when it “hears” a sound, acting and sensing independent of the subject. These technologies also adapt and become intelligent over time, adapting to changing environments. The ability to sense then gets repositioned by technology. The smartphone screen is a popular and widespread technology of sensation which directs us towards new sites and practices of sensation. While a lot of what the smartphone screen does is invisible and virtual, it simulates and stimulates our senses in how we navigate our everyday worlds. We now see (digital maps), hear (audio from it and in it) and touch our phones. Our sensory taxonomies have been rearranged, in many ways augmenting the sense of sight, touch and sound, and extending it via light, location, and mobility. Technologies play a significant

role in the formation of sense. The touchscreen of the smartphone screens set it apart from other mediums such as that of the television or cinema. This tactile nature enables a kind of travelling through windows where you have to touch in order to see. The screen is held and cradled in the hand itself which is how the kinetic and haptic converge. This is the temporal collapsing of making and viewing images or “haptic experience of productivity” (Verhoeff 2012: 84). Using the smartphone screen is at once a physical and performative activity. Unlike the viewing practices like that of television or cinema, it is not just consuming images, but of image-making constantly, it is production and reception at the same time. It also requires massive amount of coordination – between fingers, eye and hearing, screen and image, and space and time. Sensory experiences show that the image on the screen can be expanded with fingers, pinched to a smaller size, disappear with a flick and appear again with a combination of finger gestures. What are then the social and cultural processes that activate the physical responses of our senses in the mediation with the screen? The smartphone screen sensuously evokes activities of everyday life and hence calls for a study of the deep significance of sensation. Human interaction with smartphone devices via sensors for both incoming and outgoing information produces sensory experiences apart from the traditional five senses and there is invocation of other sensory experiences as well. The interaction between humans and smartphones is significant, because it’s not just the stimulation of human senses but also the presence of mobile sensors themselves which together converge to produce specific OTT viewing experiences for instance. How does the smartphone screen impact the sensorium by extending human senses? In subsequent sections I will elaborate on sensing processes and “playful” OTT experiences.

## **Sensuous Scholarship and Sensorial Relationships**

The social and cultural significance of the senses mediated via screen technologies reveals how sensuousness and embodiment get activated. There has been emerging sensuous scholarship, specifically with respect to understanding media texts. Howes (2003) views Sensory Studies to be based on a cultural approach to the study of the senses and a sensory approach to the study of culture. The usefulness of this approach is that it recognizes the various subjective meanings attached to the senses. The study of auditory, haptic, kinesthetic and visual senses is crucial in my understanding of the screen mediated experiences. Howes and Classen (2014) in their introduction to *Ways of Sensing* emphasise on “intersensoriality” or moving away from the traditional categorization of senses as independent to further the argument on the interplay between them. Marks (2002), in her work on multisensory media, has advanced an approach of understanding art for instance, via multiple sensory approaches. She expands on engaging with art through haptic perception and including kinesthetic and proprioceptive functions. She argues that artists for instance seek to interpellate the many senses of viewers by creating a multisensory experience which goes beyond the narrow confines of audio-visual aspects of a work of art. The field of contemporary sensory studies has examined a range of issues, for instance Sheller (2004) has studied how the marketing of automobile technologies involves the stimulation of very specific senses, Parisi (2008) has looked at the re-framing of the touch of sense in the context of video games, and Bull (2000) has examined the use of portable music-playing devices in urban public spaces and how it transforms the users’ sonic experience of the city providing them with a private soundscape. Drysdale and Wong (2019) also provide a useful framework for conducting sensory ethnography by suggesting the development of a “sensory sensibility” by making use of the role of senses in conducting research, being attentive to the senses and alert to the embodiment

and expression of the same. Further they suggest being aware of the sensory capacities being utilised in everyday life and activities as a disposition during all levels of the research process, in order to study and understand the complexities and the emplacement of sensory experiences and expression.

Vannini et al (2012) in their work on sensuality in sociology speak of how media and consumer culture rely on stimulating the senses and cater to the need for sensual pleasures through consumption of objects and services. Some of these pleasures are evoked via the powerful seduction of images, the commercialization of aromas and perfumes, the elevation of culinary tastes, and facilitated through modern technology - the commodification of touch and even satisfying our acoustic senses. Our everyday activities are getting amplified by appealing to our senses by the somatic work performed by media and consumer culture, screen media and technologies. Vannini et al make a compelling argument when they call for a “more-than-human approach to sensory studies” (2012, 168) in order to adapt to the changing nature of the sensorium because neither technology nor biology solely determine our sensations and sensory experiences. They further elaborate on the approach that I have also followed, that there is in fact an assemblage of octants (users, technologies, corporations, relations, developments, software, devices) that transform our sensorium and sensory experiences. They go on to argue that sensing the world or carrying out somatic work requires us to incorporate this dynamism of various factors in order to fully understand what makes our senses as well as the ways in which we come to sense the world. In that sense, the screen creates a particular kind of sensorium for the audience-user and hence if we “experience the world, others, and the self through our senses” (Gabriele 2008: 240) then in the context of my study, the screen media and technologies further stimulate our sensory orientations in qualitatively different ways.

Classen (2012) in an introduction on the interpellation of our senses has discussed how the department store discovered and introduced sensory marketing by allowing customers to feel, touch and see products before buying them, as opposed to the practice of verbally asking for products to be retrieved by the salesperson in the store, for thereby engaging their senses fully. The experience of navigating OTT is much like the experience of visiting a departmental store then. There is stimulation of visual and tactile sensations. An audience-user is invited to, much like in a store, to see, touch, open and experience audio-visual content with a flick of their finger. OTT on the smartphone screen, in comparison to cable television and cinema, offers the audience-user the sensory experience of visually engaging with content, of touching different library offerings by opening them, scrolling through them, and feeling this immersive experience sensually.

## **Mapping the OTT Phenomenon**

In an editorial statement published in *Bioscope* for screen studies in South Asia, Vasudevan et al (2010) spoke of the need to address the definition and ambition of the field to incorporate the various media and cultural forms that have now emerged. He points out that South Asian media studies have largely meant film studies - and later television studies to an extent - given the widespread influence of cinema. He goes on to add that the screen needs to be located in researching about people and their practices, technologies and the techniques which inform the viewing experience. For him the sensory and affective experience of the screen encompasses the songs, radio stations, television channels, records, cassettes, CDs, DVDs, books, magazines, and internet cultures which expand our understanding of how screen experiences are constituted. He signposts Internet cultures, but does not take it further to provide for the convergence of screens, enabled by the Internet. In his renewing of the frame of screen studies, the screen continues to be a reference point as he gestures

towards newer screen mediations while raising some questions about the fields of mobile telephony, screen-based installations, urban planning and architecture, and implores us to see newer ways of engaging with this “dispersed mediascape” (Vasudevan et al 2010, 8).

The popularity and dominance of YouTube for consuming online video content in India was challenged in 2015, when India’s first subscription video-on-demand streaming service, Hot star (owned by the Star Corporation) was launched, coinciding with the Cricket World Cup and the Indian Premier League. Thereon the website became the go-to platform for sports streaming in the country, and later incorporated general entertainment programmes such as syndicated Indian and global television shows and films. A leading American OTT platform, Netflix entered the Indian market in January 2016, with their plans starting at \$6.70 per month.<sup>3</sup> Its launch was closely followed by Amazon Prime, which entered the Indian market late in 2016, offering much lower subscription rates (\$6.70 for a year), along with its free delivery service, bundling these two together for its customers. The next few years saw a consolidation of audiences on these three platforms, with the initial hiccups of slow data speeds and video buffering eventually being overcome to pose a credible challenge to programmatic television, on-demand services, and also hitting the DVD market for films and television.

Soon established networks and channels in India, such as Sony Liv and Zee also entered the fray, offering streaming of their television shows and other content on their OTT platforms via apps and websites. In addition to this they also onboarded popular international syndicated shows as well as films to their digital library. Eros Now, an Indian media company involved in the distribution of VHS and exhibition of films originally, also offered its video-on-demand platform, initially offering music videos and its own films, and later adding content such as short films, web-series and other curated content, in addition to its

original productions as well. Some of the other notable players include Voot and MX Player.

In a move which signals the retention of control and concentration of ownership by big media companies, Star Corporation's 21<sup>st</sup> Century Fox was bought by The Walt Disney Company in 2019, and subsequently, Hot star was rebranded as Disney+ Hot star. Since the majority of smartphone users in India use the Android operating system, owned by Google, the whole screen ecosystem is deeply connected to the company's operations as well. It is for this reason that all these formidable corporations are together referred to as FAANG (Facebook, Apple, Amazon, Netflix and Google).<sup>4</sup>

There is considerable scholarship that has emerged with respect to streaming of content online, emergence of transnational television and transformations in cinema production and distribution practices. The consolidation and concentration by traditional big media corporations has also spurred fears of media imperialism, a frame that has been used by Fitzgerald (2019) for instance to study the globalised development of OTT video services as a new international communication order. This has also been explored by Cunningham and Craig (2020) in discussing media globalisation and emerging patterns of distribution and consumption, making key distinctions between social media entertainment (SME) and professionally generated content (PGC) such as those by streaming platforms. Mikos (2020) has also mapped the emergence and form of the transnational television audience with the coming of global distribution platforms such as Netflix and Amazon. Netflix has also been at the centre of a sustained examination from various perspectives, including but not limited to, its business model and conception of spectators (Zundel 2014), its long-form programming and production practices (Jenner 2018) and unpacking of its recommendation algorithm (Frey 2021).

Among the many factors influencing the growth of online video consumption in India, is that India has the second highest per capita consumption of online video in the world. Mobile data rates are relatively cheaper in comparison to other countries, with prices starting from Rs \$0.24/GB in 2019.<sup>5</sup> Classifying India as a mobile-first country, Amazon Prime launched its mobile-only video plan in India in January 2021.<sup>6</sup> This has been in collaboration with Airtel, a leading telecom network provider in India. This subscription will work only on a smartphone, offering SD (Standard Definition) streaming quality content making use of mobile data. Disney+ Hot star has also recently collaborated with Airtel to offer mobile-only free subscriptions to its subscribers for one year. Vodafone Idea, another telecom network operator, has also tied up with leading OTT platforms offering reduced subscription rates.

Some of the leading players in the OTT space include big tech giants such as Amazon, Apple, Reliance Jio, and traditional broadcast networks such as Sony, Zee, Walt Disney, among others. In many ways now, the consolidation in the OTT industry seems to mirror the concentration of ownership in cable television in India. In September 2021 Amazon Prime brought 8 OTT apps as part under its service offering, becoming India's first OTT aggregator platform.<sup>7</sup> Additionally there has been a merger between Zee and Sony, leading to a combining of their OTT offerings on one single platform.<sup>8</sup> It has also been argued that the illusion of choice of having multiple platforms and the apparent "decentralisation" due to displacement of programmatic television masks the increasing centralisation in proliferation of digital platforms and technologies. Zuboff (2019) has argued similarly that big technology companies, in collision with the state, have now enabled an era of information civilization, where our ways of seeing, knowing and being are governed by technology and data, a true hallmark of "surveillance capitalism". In India for instance, the period between 2016 and 2017 saw Reliance Jio shaking the mobile data space by introducing their 4G services free of cost,



thereby cornering the market and on-boarding a huge section of the Indian population as mobile-data users.<sup>9</sup> Due to the lack of a robust telecommunication policy pertaining to mobile data tariffs by TRAI (Telecom Regulatory Authority of India), Reliance Jio was able to initiate such a predatory practice, making other network providers succumb to the pressure of slashing rates for mobile data, just to remain relevant.

## **Screen Audience-users and Playful Consumption**

My interviews were held with young men and women between the ages of 18 and 30, residing in Delhi. I conducted in-depth unstructured interviews with respondents that were recruited from known networks between March 2020 and May 2021 (Table 1). The interviews were largely semi-structured, informed by the following themes to address and speak to different theoretical and practical aspects of playful OTT screen experience enabling sensing: their viewing context and practices, bodily sensations and feelings emerging out of using the app, the change in how they use technology, functional experiences of using OTT, changes in lifestyle, social relationships and communication on social media, among others.

In present times, the technological, social and cultural contexts in which contemporary audiences exist have changed significantly. Emerging technological developments, proliferation of newer distribution platforms, the changing viewing contexts, and new screen laws are transforming the spectator. The smartphone screen audience-user is significantly different from the legacy film and television audience. I use the term audience-user here, for even though spectator studies evolved to include an active audience perspective, freeing the audiences from being bound by the text, by seeing them as active producers of meaning, however the traditional medium context of film and television screens still limits the possibilities of being an audience-user. Some have also called the new audience, a prosumer, collapsing

the differences between consumers and producers (Bruns 2008). The smartphone screen on the other hand is dependent on user's inputs and navigation of the screen, it produces a more active viewing context, also allowing viewers to create their own content, memes, social media posts, and images in relation to the content they consume. The audience now, as smartphone screen users, are offered numerous participatory opportunities. This conflation, and hence the challenge of locating and understanding online audiences and users, is perhaps why the Indian government struggled with formulating a policy for OTT platforms in India, with rules being notified as recently as 2021, and compliance of those rules still ambiguous and incomplete. Regulations and policy in India and elsewhere for OTT were limited to rules for information technology platforms specifically, but by and large limited regulation of content which has led large technology giants to consolidate their presence and gain monopolistic control.

Another emerging question is that how do we categorise media experiences that do not neatly fit within the definitions of media consumption and use? Specifically, new media devices and texts, which offer interactive pleasures and possibilities that can be thought of as play? In signalling a "playful turn", Raessens (2014) has argued that play has not received a sustained examination within the field of media studies, apart from work on video games (which has been recent), to use it as a frame of analysis for other media forms and texts. The concept of gamification is also useful here in exploring the playful nature of media experience. Gamification refers to game-like structures, rules and practices being deployed in non-game contexts to fuel user engagement and interest. Gamification is not entirely new but the contexts in which it is being adapted and adopted are certainly novel. The smartphone screen offers numerous possibilities for playful activities and communication. The concept of play is not only a characteristic of leisure, but can also be invoked in other contexts, such as that of consuming content interactively, and in this case, OTT applications.

The smartphone screen lends itself very well to playful activity, because apart from being a communication device, it is also a playable device, one which we toy with when we are bored, for leisure and pleasure. The screen itself and the apps within it offer unprecedented ways to pleasure ourselves. The concept of play on the smartphone screen with respect to media technologies, platforms and texts has the potential to complicate and even confuse the established silos in media and cultural studies, including but not limited to production/consumption, real/virtual, structure/agency, meaningful/banal, representation/simulation, to name a few.

Play-like gamification is very evident in sports content streaming, for instance there are emerging opportunities for engagement and monetization, with personalised sporting statistics, options for fantasy play, betting tips and odds, quizzes and interactive games to keep audience-users hooked to the platform. During the IPL in 2020, Disney+ Hotstar introduced its “Watch’N Play” feature, calling it an “immersive experience” by allowing audience-users to upload their selfie videos, duets, and the opportunity to discuss the match in real time by commenting in the interactive section.

Game mechanics are also employed in the genre of fictional content. ZEE5 launched its ZEE5 Super Family (ZSF) gaming experience for their Hindi-language content in February 2020. As part of their playful offering, audience-users are allowed to watch advertisements and earn points in return. The cumulated points then can be redeemed later at the platform for buying subscription packs. Further audience-users can choose their favourite characters across the shows, and predict and place bets on how the character’s arc will progress. Successful predictions stand the chance to win rewards such as cars, smartphones, gift vouchers and ZEE5 subscription. All this feed into the assumption that audience-users will connect with their innate or acquired competitive nature and spend more time on the app. Additionally,

this platform introduced PLAY5, a feature by which brands can engage with audience-users via hyper-personalised advertisements in an interactive format. In their words, it is, “an extension of the show property.”<sup>10</sup>

Netflix also introduced “Netflix Party” in 2020, which provided for a co-viewing feature in the app. Audience-users can share the link of what they are watching with their friends and others. The link continues to stream in real-time and hence whenever an audience-user opens the link, everyone will be watching the same content on their screens. Users can also pause, rewind and play at the same time. This is very similar to and reminiscent of multiplayer video games which are played by two or more players simultaneously across different screens.

In order to keep up with emerging trends of short-format videos and drive more traffic on their apps, platforms such as Eros Now introduced a short-form video content offering called “Quickies”. ZEE5 similarly leveraged the banning of TikTok, and introduced HiPi, a platform for audience users to upload their own short videos. MX Player, another OTT platform, introduced actual games in their app to encourage users to play them and earn MX Coins. These coins can then be used to unlock premium content on the platform or even use them as discounts or coupons for shopping on e-commerce platforms such as Paytm, Myntra and OYO.<sup>11</sup>

The increasing use of hyper-personalization, gamification and interactivity produces a playful streaming experience for audience-users. Hence the smartphone screen is essentially a playable device that offers opportunities to play with content on the screen via OTT apps. In the next section I will argue that this play universe on the screen operates within the regime of sensing which structures and mediates screen experience for the audience-users.

## Screen Sensorium and the Audience-user

The smartphone screen, unlike that of television and cinema is also more intimate in creating a personal visual and tactile sensory experience for the audience-user, thereby transforming the senses. Undoubtedly, the experience of going to the theatre is also a somatic one, with dim lighting in the beginning and complete darkness once the film starts, the temperature-controlled environment, plush seats and an overall cosy environment. For some respondents however, the chatter of fellow audience members, the crunching of the popcorn, among other things, either adds or subtracts from their experience. In similar ways, the watching of traditional television experience gets interrupted by advertisements, the movement of other people in the house, and sometimes even interruption by power outages or signal loss. The smartphone screen on the other hand offers a private soundscape, which eliminates distractions and ambient noise. The smartphone screen then has reconfigured the sensorium with the use of technologies to condition our bodily habits of media consumption.

*I mean we can use Bluetooth speakers with our television also, but when I use earphones with my smartphone screen, the audio feels more powerful, and the image even closer to me because it's in my hands, it creates a more personal and intimate watching experience. Sound effects feel more immediate and live with the earphones. Like I am less distracted because nothing else is there in my line of vision you know. (No. 14)*

For my respondents, the smartphone screen is the default screen of their life, reading Twitter feeds and comments, reading blogs and even books on their phone, and the size of the screen does not take away but in fact redefines the idea of immersive play experience for them, making the screen more intimate, the content more private and personal, to the point that a private activity such as television and cinema watching can now be done

in a public place. Subsequently, since most smartphone screens now come with AMOLED displays (Active Matrix Organic Light Emitting Diodes), High Definition and even 4K resolution, and superior overall picture quality, that visual and aural intensity does not diminish for them.

The domestic context of viewing television and the theatre context of watching cinema earlier produced an associative sense of location. However, with the mobility of the smartphone screen and uninterrupted mobile data, new sites of sensation get produced with consumption of content on the screen in other public and private viewing contexts. Watching content in public spaces leads to an interplay of different senses such as while commuting, waiting at the bus stop, in the class, in the mall as well as in private modes of consumption such as watching it in bed, under the covers, on the terrace, in the bathroom, etc. developing new kinds of perception and associations with media content. The emerging screen culture produces new sensitivities and new spaces of sensation thereby leading to the formation of new senses of association, proximity and immediacy.

*I don't know how this started, but I have gotten into this habit of watching a show or a clip while in the bathroom. Either I start a new episode, or continue from where I left, but I cannot do my business without watching something on my phone. (No. 18)*

The sensing of the smartphone device also conditions the mediation of the audience-user's experience with the screen. For instance, the proximity sensor in smartphones, which is on top of the device, turns off the display when we are talking on the phone, when the phone comes near the user's ear, and turns on when it moves away. Further, inactivity on the screen leads to time-out of the display similarly. Some respondents spoke of how they would sleep while watching something on their phones, only to wake up and find that the screen has gone to sleep.

Additionally, the light sensor in smartphones adjusts the brightness of the screen by measuring the brightness on the user's face, thereby calibrating the most optimum light sensitivity for the audience-user. The gesture sensors in the smartphones similarly transform media consumption on the screen. For instance, drawing a V sign to switch on the flashlight, or a circle to unlock the phone's camera, or drawing lines to play or pause music playback. Some smartphones also offer another gesture control whereby users can answer their phone calls by bringing the phone close to the ear. The Samsung Galaxy S5 phone has another feature called "eye tracking", where the camera registers the user's eye movements, and will pause a video automatically if the user looks away from the phone.<sup>19</sup> Similarly in 2018 Apple introduced eye tracking and gaze control as part of its Attention Aware and Detection features in its iPhones, automatically dimming the screen brightness when the user looks away from the screen.

*When I watch something on my phone it is a very personal intimate experience and I have the power to choose what I want to watch, when I want to pause and when I want to stop. On television it feels very impersonal. Going to the theatre hall also feels like a community-experience, and with Covid who knows when and if we will ever go back. When I go on any app I can browse, read, choose, watch, stop and start again. I control it with my fingers or even just with my eye by not looking at the screen anymore. (No. 1)*

The flip-side to this is also the visual fatigue of the OTT library display, with some respondents speaking of the visual stimuli which can overload their senses with the problem of plenty, thereby producing sensory saturation. What Lipovestsky (2011) calls "hyperconsumption" in the era of hypermodernity is the constant stream and play of new media and cultural commodities and services that enable constant consumption.

*Honestly sometimes my eyes start hurting, and it hurts to keep scrolling. Sometimes you just cannot choose what to watch, nothing seems exciting enough. Then I just get tired, either I keep the phone down or go on YouTube or maybe Instagram. But I do feel lost when deciding what to watch, because there is so much, and everything looks interesting, but not interesting enough to watch at that moment, so I just keep adding them to the watchlist. (No. 6)*

Most OTT apps make a concerted effort to offer a unique user design interface, to help them differentiate themselves from others in how they interpellate the senses of the audience-user.

*If I have to be honest, I prefer the Netflix design. I mean the interface makes it easy for me to navigate, it comes naturally. When I watch on my phone, I tilt the screen horizontally for better display, and I feel that Netflix is easier to exit or go back in comparison to Amazon Prime. I have to constantly keep touching the screen for the controls to come, so that I can return to the main menu, it is kind of annoying. (No. 9)*

Technologies not only amplify and extend human sensing capabilities, but also produce new sensations and sensing capabilities of their own. The smartphone screen has produced significantly different textures of media experience and consumption. Consuming televisual and cinematic content on the smartphone screen demonstrates how it is no more a social experience, but an individualised, contingent and variable form of play. The smartphone screen has enabled our perception in an acutely different way, by ordering and configuring our sensory experiences. We have in many ways learnt the skill of how to sense with the smartphone screen. The smartphone screen and OTT have been produced and adapted to the changing viewing practices. We have come to learn to sense via technologies,



rearranging our sensory taxonomies. A respondent for instance shares how their sense of time or *chronoception* when it comes to watching content on their smartphone has changed. Due to the lack of any scheduling of content as with television time and cinema time, their time spent on their smartphone and OTT applications consuming content has become unhindered, interrupted only by calls or messages, or in some cases, heating up of the phone, and cramping of their hand and fingers.

*You know there is this new term called 'text claw', where your fingers clamp up and ache due to constant use of the phone. Like I feel my thumb sometimes starts hurting due to the constant scrolling. I mostly keep my phone cradled in my hand, and after some time you can feel the warmth of the phone due to the heat produced, and I immediately realise that I've been on the screen far too long (laughs). (No. 4)*

Increasingly there is a deeper relationship between our bodies and the external environment mediated by information communication technologies. Our bodies communicate data about itself to technologies, which make sense of this data and relay it back to us. The screen invites the user to have an interactive and immersive experience, offering possibilities of engagement far exceeding those of traditional television and cinema. In many cases respondents shared the ability to do much more with the screen such as using touch to pause, take screenshots of certain scenes and uploading them on their social media accounts or sending to their friends, annotating it with their comments.

*I always associated watching a film in the theatre with family or friends. Now I feel that sense of association does not exist, like I have new activities I do, like I take a screenshot and write something funny and post it online and send it to my friends. (No. 17)*

Previously in the absence of the newly announced Digital Media Ethics code, most content on OTT platforms was streamed without censorship or certification, making use of the loopholes in the Cable Television Regulation Act and the Cinematograph Act. A proliferation of content with violence, drug use, profanity, sexual content was available for streaming without any restrictions. Indian television and programming rules for instance also adhered to time schedules for adult content. OTT then provides new kinds of viewing pleasures and sensations which were earlier restricted or not available to audiences (such as transnational content).

*We had become used to the fact that there will be no swearing on Indian television or even mention of sex for that matter. Even English films in the theatre would be censored. And imagine now you can watch anything at any time, without it being censored. You feel more connected to what you're watching when the characters are freely abusing in a situation where everyone in real life actually does! And showing sex is not taboo anymore, it has really become normalized now because how can you censor the Internet (No. 10)*

*I really like the fact that there is no censorship when it comes to violence and action now. As a genre it is so exciting. They don't treat us like kids who cannot watch blood, guns and death. It assumes that its audience is mature enough to sense what they are watching is fiction but at the same time be able to enjoy it also without random cuts. (No. 16)*

*Sexual content has become an integral part of OTT content, I mean it's so common no one is bothered even. I remember when Game of Thrones would air on Star World they would heavily censor it, cutting all sex scenes and beeping abuses, and the same episode on*

*Hotstar would be free of censorship, obviously everyone ditched TV and watched Hotstar. It's thrilling to be able to watch such content without it being edited. And now there is hardly any show online without a sexual reference. Sometimes if I have to watch something very adult in nature, I prefer to do it on my phone because I don't want others at home to see what I am watching, I mean my parents are cool but it can be embarrassing. I can safely read and watch what I want in the privacy of my phone screen. (No. 9)*

The domestic experience of watching television and the sociality of cinema has given way to individuated consumption on personal screens. Content is on-demand and instant, with new films being released online, and all episodes and seasons of television series being available to audience-users. Many users shared that they feel relaxed as there is no urgency to watch something at a specific time, they know they can always go back to it. The sense of television and cinematic impermanence has been obliterated. A respondent shared that much like playing a game, with all the seasons and episodes available to watch at one go, it leads them to binge-watch more than a few episodes together, thereby producing a sense of living in the show's metaverse for some time.

*It happens that if I get hooked onto a show then I will watch many episodes together. I have noticed that because I spend 3-4 hours in a day on a show, I kind of start living in that world, in my head I sense I am still inside the show, constantly thinking about it. Obviously, that feeling doesn't stay for long, but it is there. And I remember talking about this with a few friends also who felt something similar. (No. 18)*

There is however, some level of technical frustration as well. Some respondents shared how buffering of content either due to

their own slow internet connections or server issues with OTT platforms, is frustrating, making them think about how television never buffered. The smartphone screen and fast internet speeds have further made stronger the sense of immediacy and instantaneous nature of our interaction with technologies. When the screen hangs and becomes unresponsive, and the Internet disconnects, it immediately produces a sense of unease and frustration.

*Sony Liv is the worst app in the world, actually even ZEE5, it just hangs randomly, keeps buffering, if you try to zip ahead, it starts from the beginning, without explanation. And I get so frustrated sometimes I just want to throw my phone, because the phone just hangs you know, it's useless. I have to restart it and pray that Sony Liv is now in a good mood and behaves itself. (No. 6)*

In many ways then the screen exists and produces a multimedia sensorium, where the technology senses the user and in turn the user senses it through the screen. A very intuitive, real-time relationship between the screen and fingers and the palm develops, with streams of data flowing both ways.

## **In lieu of a Conclusion: Streaming and Playing the Screen**

With access to films and televisual content on the smartphone screen, modes of viewing have transformed, as have viewing practices, both temporally and spatially, a journey travelling from *tuning in* to *playing* content. A shift in perceptions of visuality has ensured that the exhibition context does not inflect the textuality of the content, and is not considered subordinate to it. Subsequently, the aesthetic and cultural assumptions of the intrinsic qualities of what television and cinema are, and are supposed to be, seem limiting, and even arrogant now,

considering such ontological arguments do not seem tenable and viable any more, in terms of playing of content on the smartphone screen.

While consumption of OTT on the smartphone screen has not completely displaced television and the theatre, however the confluence of all video content on the smartphone screen has reconfigured screen cultures, constructing new viewing habits and shifting medium-specific preferences for audience-users. The push to hyperconsumption also drives them to pause content and search for commodities on e-commerce apps, inspired by what they are watching, thereby changing the modalities of media viewing and spurring spontaneous consumption. About 90% of my respondents shared that they solely use their smartphone screen for all their online shopping.

The concurrency of the smartphone screen's ubiquity in human life at every time of the day and an intimate connection between users and their screens makes it a unique object of study. The screen in Marshall McLuhan's sense is literally an extension of humans, in a way in which our central nervous system is technologically extended by the screen – when users engage with the screen via multiple senses of touch, hearing and sight. Even our sense of space is affected by the screen, in our movement and positioning of our bodies, tilting of our heads, tracking out hands. The smartphone screen is a sensuous form of capital, technology and media.

## **Notes**

1. OTT stands for Over-the-top, and refers to any streaming service which delivers its content over the internet. The service then is delivered over the top of another platform such as cable, broadcast and satellite. OTT is also similar to video-on-demand or SVoD as it is subscription based, but does not

require downloading unlike other video-on-demand services, as the content streams over the Internet.

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**Table 1: Respondent Details**

Respondent #	OTT Duration on Smartphone Screen (per day)	Gender	Age	Screens (in order of OTT use)	OTT Platforms consumed
1	2-3 hours	Female	25	Smartphone, Laptop, TV	YouTube, Amazon Prime, Disney+ Hotstar, Sony Liv
2	4 hours	Male	19	Smartphone, Tablet, TV	YouTube, Netflix, Amazon Prime, Zee5, Sony Liv, Voot
3	1 hour	Female	18	Tablet, Smartphone	Amazon Prime, Sony Liv, Zee5, Disney+ Hotstar, JioTV
4	2-3 hours	Female	18	Smartphone, Tablet, TV	YouTube, Amazon Prime, MX Player, Eros Now, Voot
5	4 hours	Female	19	Smartphone, Laptop	Netflix, Sony Liv, Zee5, Disney+ Hotstar, Voot, Alt Balaji
6	2-3 hours	Male	23	Smartphone, Tablet, Laptop, TV	YouTube, Amazon Prime, Disney+ Hotstar, Eros Now, Voot
7	3-4 hours	Female	18	Smartphone, Laptop	Netflix, Sony Liv, Disney+ Hotstar, Alt Balaji

8	2-3 hours	Male	20	Smartphone	YouTube, JioTV
9	2 hours	Female	26	Tablet, Smartphone, TV	YouTube, Netflix, Sony Liv, Zee5, Disney+ Hotstar, Voot
10	1 hours	Female	28	Smartphone, Laptop, TV	YouTube, Amazon Prime, Sony Liv, Zee5, Disney+ Hotstar, Eros Now, Alt Balaji
11	1-2 hours	Male	22	Smartphone, Tablet, Laptop	Netflix, JioTV, Sony Liv, Disney+ Hotstar
12	1-2 hours	Female	24	Smartphone, TV	Amazon Prime, Disney+ Hotstar, Zee5, Eros Now
13	2 hours	Male	18	Smartphone, TV	Netflix, Voot, Zee5, Sony Liv
14	2-3 hours	Male	19	Smartphone, Tablet, Laptop	YouTube, Amazon Prime, Sony Liv, Zee5, Disney+ Hotstar
15	2 hours	Female	22	Laptop, Smartphone	Amazon Prime, Zee5, JioTV, Voot, Alt Balaji
16	1 hour	Male	29	Smartphone, TV	YouTube, Amazon Prime, Sony Liv, Zee5, Disney+ Hotstar
17	3 to 4 hours	Female	21	Tablet, Smartphone	Netflix, Disney+ Hotstar, Eros Now, Sony Liv, Voot, Alt Balaji
18	2 hours	Male	27	Smartphone, Laptop, TV	YouTube, Amazon Prime, Zee5, Sony Liv, Voot

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# Bounded and Compact Hankel Operators on the Fock-Sobolev Spaces

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**Abstract.** This paper focuses on the operator-theoretic properties (boundedness and compactness) of Hankel operators on the Fock-Sobolev spaces  $\mathcal{F}^{p,m}$  in terms of symbols in  $\mathcal{BM}\mathcal{O}_r^p$  and  $\mathcal{VM}\mathcal{O}_r^p$  spaces, respectively, for a non-negative integers  $m$ ,  $1 \leq p < \infty$  and  $r > 0$ . Along the way, we also study Berezin transform of Hankel operators on  $\mathcal{F}^{p,m}$ .

## 1. Introduction

The investigation of Hankel operators on several spaces like Hardy spaces, Bergman spaces, Bergman spaces on a certain domains, Fock spaces, Fock-type spaces etc., has a long history in mathematics. We refer to [2, 6, 7, 9–11] for the detailed study of Hankel operators on these spaces. Zhu [9] obtained a characterization of bounded and compact Hankel operators on the Bergman space by defining the spaces of bounded mean oscillation and vanishing mean oscillation with respect to the Bergman metric and analogous results were obtained by Perälä, Schuster and Virtanen [5] on the weighted Fock spaces. Motivated by these developments, the properties of Hankel operators on the Fock-Sobolev spaces are discussed in this paper. In particular, we examine the boundedness and compactness of these operators in terms of  $\mathcal{BM}\mathcal{O}_r^p$  and  $\mathcal{VM}\mathcal{O}_r^p$  spaces for the generating symbols.

Let  $dA$  be the Lebesgue area measure on  $\mathbb{C}$ . For  $1 \leq p \leq \infty$ , let  $\mathcal{F}^p$  be the space of all entire functions  $g$  on the complex plane  $\mathbb{C}$  such that  $g(v)e^{-\frac{1}{2}|v|^2} \in L^p(\mathbb{C}, dA(v))$  with norm

$$\|g\|_p = \left\{ \frac{p}{2\pi} \int_{\mathbb{C}} |g(v)|^p e^{-\frac{p}{2}|v|^2} dA(v) \right\}^{\frac{1}{p}},$$

for  $1 \leq p < \infty$  and

$$\|g\|_{\infty} = \operatorname{ess\,sup}_{v \in \mathbb{C}} \{|g(v)|e^{-\frac{1}{2}|v|^2}\},$$

for  $p = \infty$ .

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Throughout the paper,  $m$  is a fixed non-negative integer. The Fock-Sobolev space  $\mathcal{F}^{p,m}$  is the space of all entire functions  $g$  on  $\mathbb{C}$  such that

$$\|g\|_{p,m} = \sum_{0 \leq k \leq m} \|g^{(k)}\|_p < \infty,$$

where  $g^{(k)}$  denotes the  $k^{\text{th}}$  derivative of  $g$ . Cho and Zhu [3, 4] gave a very useful Fourier characterization of Fock-Sobolev spaces on  $\mathbb{C}^n$  ( $n \geq 1$ ). They proved that  $g \in \mathcal{F}^{p,m}$  if and only if  $z^m g \in \mathcal{F}^p$  and  $\|g\|_{p,m}$  can be taken as

$$\|g\|_{p,m} = \left\{ \omega_{p,m} \int_{\mathbb{C}} |g(v)|^p |v|^{mp} e^{-\frac{p}{2}|v|^2} dA(v) \right\}^{\frac{1}{p}}; 1 \leq p < \infty$$

and

$$\|g\|_{\infty} = \sup_{v \in \mathbb{C}} |g(v)v^m e^{-\frac{1}{2}|v|^2}|; p = \infty,$$

where  $\omega_{p,m} = \left(\frac{p}{2}\right)^{\frac{mp}{2}+1} \frac{1}{\pi \Gamma(\frac{mp}{2}+1)}$ .

Let  $L^{p,m}$  be the space of all Lebesgue measurable functions  $g$  such that  $g(v)|v|^m e^{-\frac{1}{2}|v|^2} \in L^p(\mathbb{C}, dA(v))$  and  $\mathcal{F}^{p,m}$  is a closed subspace of  $L^{p,m}$ .

The space  $\mathcal{F}^{2,m}$  is a closed subspace of the Hilbert space  $L^{2,m}$  with inner product

$$\langle f, g \rangle_{p,m} = \frac{1}{\pi} \int_{\mathbb{C}} f(v) \overline{g(v)} |v|^{2m} e^{-|v|^2} dA(v) \text{ for all } f, g \in \mathcal{F}^{2,m},$$

and having reproducing kernel

$$K^m(v, z) = K_z^m(v) = \sum_{k=0}^{\infty} \frac{m!}{(k+m)!} (\bar{z}v)^k = m! \frac{(e^{\bar{z}v} - Q_m(\bar{z}v))}{(\bar{z}v)^m},$$

where  $Q_m(w)$  is the Taylor polynomial of  $e^w$  of order  $(m-1)$  that is,  $Q_m(w) = \sum_{k=0}^{m-1} \frac{w^k}{k!}$ . Let

$$k_z^m(v) = \frac{K_z^m(v)}{\sqrt{K_z^m(z)}} = \frac{(e^{\bar{z}v} - Q_m(\bar{z}v))}{(\bar{z}v)^m} \left\{ \frac{m!|z|^{2m}}{(e^{|z|^2} - Q_m(|z|^2))} \right\}^{\frac{1}{2}}$$

denote the normalized reproducing kernel of  $\mathcal{F}^{2,m}$ . Also, the sequence  $b_k(v)_{k=0}^{\infty}$  forms an orthonormal basis of  $\mathcal{F}^{2,m}$ , where

$$b_k(v) = \sqrt{\frac{m!}{(k+m)!}} v^k.$$

Cho and Zhu [4] showed that the orthogonal projection  $P^m : L^{2,m} \rightarrow \mathcal{F}^{2,m}$  given by

$$P^m g(z) = \langle g, K_z^m \rangle_{2,m} = \frac{1}{\pi} \int_{\mathbb{C}} g(v) \overline{K_z^m(v)} |v|^{2m} e^{-|v|^2} dA(v)$$

is a bounded projection from  $L^{p,m}$  onto  $\mathcal{F}^{p,m}$  for  $1 \leq p \leq \infty$ .

**2.  $\mathcal{BMO}_r^p$  spaces and boundedness of Hankel operators on  $\mathcal{F}^{p,m}$**

For  $1 \leq p \leq \infty$ , let  $\Omega_m^p$  denote the space of all Lebesgue measurable functions  $g$  on  $\mathbb{C}$  such that  $gk_v^m \in L^{p,m}$  for each  $v \in \mathbb{C}$ . Let  $I$  denotes the identity operator on  $L^{p,m}$ .

The following result can be found in [3], from which it is clear that for each  $v \in \mathbb{C}$ , the reproducing kernel  $\|K_v^m\|_{p',m}$  is finite for all possible  $p' \geq 1$ .

**Lemma 2.1.** *Suppose  $m$  is a fixed non-negative integers and  $Q_m(z)$  is the Taylor polynomial of  $e^z$  of order  $m - 1$  (with the convention that  $Q_0 = 0$ ). For any parameter  $p' > 0$ ,  $\sigma > 0$ ,  $c > 0$  and  $d > -mp' - 2$ , we can find a positive constant  $C_0$  such that*

$$\int_{\mathbb{C}} |e^{\bar{z}w} - Q_m(\bar{z}w)|^{p'} e^{-c|w|^2} |w|^d dA(w) \leq C_0 |z|^d e^{\frac{p'}{4c}|z|^2},$$

for all  $|z| \geq \sigma$ . Furthermore, this holds for all  $z$  if  $d \leq p'm$  as well.

Therefore, it follows that if  $g \in \Omega_m^p$ , then the Hankel operator  $H_g^p : \mathcal{F}^{p,m} \rightarrow L^{p,m}$  with symbol  $g$ , defined by  $H_g^p f = (I - P^m)gf$  for all  $f \in \mathcal{F}^{p,m}$ , is densely defined on  $\mathcal{F}^{p,m}$ , since the set of linear span of all kernel functions  $\{k_v^m : v \in \mathbb{C}\}$  is dense in the space  $\mathcal{F}^{p,m}$ . By using the definition of  $P^m$ , we write

$$H_g^p f(z) = \frac{1}{\pi} \int_{\mathbb{C}} (g(z) - g(v)) f(v) \overline{K_z^m(v)} |v|^{2m} e^{-|v|^2} dA(v). \tag{1}$$

Henceforth, for the convergence of integral in (1), we will assume that the symbol  $g$  is in  $\Omega_m^p$ .

For some  $z \in \mathbb{C}$ ,  $1 \leq p < \infty$  and  $0 < r < \infty$ , let  $\mathcal{B}(z;r) = \{v \in \mathbb{C} : |v - z| \leq r\}$  be the Euclidean disk centred at  $z$  and of radius  $r$ . Let  $L_{Loc}^p$  denote the space of all Lebesgue measurable functions  $g$  on  $\mathbb{C}$  such that  $g(v) \in L^p(K, dA(v))$  for each compact subset  $K$  of  $\mathbb{C}$ . Let  $\mathcal{BA}_r$  be the set of all  $L_{Loc}^1$  integrable functions  $g$  on  $\mathbb{C}$  such that  $\tilde{g}_r$  defined by

$$\tilde{g}_r(z) = \frac{1}{\pi r^2} \int_{\mathcal{B}(z;r)} g(v) dA(v)$$

is bounded on  $\mathbb{C}$ . For finite  $p \geq 1$  and  $g \in L_{Loc}^p$ , denote

$$\tilde{g}_r^p(z) = \frac{1}{\pi r^2} \int_{\mathcal{B}(z;r)} |g(v)|^p dA(v).$$

Let  $\mathcal{BA}_r^p$  be the set of all  $L_{Loc}^p$  integrable functions  $g$  on  $\mathbb{C}$  such that  $\tilde{g}_r^p$  is bounded on  $\mathbb{C}$ . Let  $\mathcal{BMO}_r^p$  denote the set of all  $L_{Loc}^p$  integrable functions  $g$  such that

$$\|g\|_{\mathcal{BMO}_r^p} = \text{Sup}_{z \in \mathbb{C}} \left\{ \frac{1}{\pi r^2} \int_{\mathcal{B}(z;r)} |g(v) - \tilde{g}_r(z)|^p dA(v) \right\}^{\frac{1}{p}}$$

is finite. Let  $\mathcal{BO}_r$  be the set of all continuous functions  $g$  on  $\mathbb{C}$  such that

$$\|g\|_{\mathcal{BO}_r} = \text{Sup}_{z \in \mathbb{C}} \left\{ \text{Sup}_{v \in \mathcal{B}(z;r)} |g(v) - g(z)| \right\} < \infty.$$

The following results will be instrumental in the study of Hankel operators on  $\mathcal{F}^{p,m}$ .

**Lemma 2.2.** [5] *Let  $p \geq 1$ . Then the following conditions hold:*

1. Let  $g \in L^p_{\text{Loc}}$  then  $g \in \mathcal{BM}\mathcal{O}_r^p$  if and only if there is a constant  $C > 0$  such that for every  $z \in \mathbb{C}$  there exists a constant  $\mu_z$  such that

$$\int_{\mathcal{B}(z;r)} |g(v) - \mu_z|^p dA(v) \leq C.$$

2. For  $0 < r < R$ ,  $\mathcal{BM}\mathcal{O}_R^p \subset \mathcal{BM}\mathcal{O}_r^p$ .
3.  $\mathcal{B}\mathcal{O}_r$  is independent of  $r$ . Moreover, for any continuous function  $g$  on  $\mathbb{C}$ ,  $g \in \mathcal{B}\mathcal{O}$  if and only if there exists a constant  $C_0 > 0$  such that

$$|g(z) - g(v)| \leq C_0(|z - v| + 1)$$

for all  $z, v \in \mathbb{C}$ .

4. If  $g \in \mathcal{BM}\mathcal{O}_{2r}^p$ , then  $\tilde{g}_r \in \mathcal{B}\mathcal{O}_r$ .
5. If  $g \in \mathcal{BM}\mathcal{O}_{2r}^p$ , then  $g - \tilde{g}_r \in \mathcal{B}A_r^p$ .
6.  $\mathcal{BM}\mathcal{O}_r^p \subset \mathcal{B}\mathcal{O}_r + \mathcal{B}A_r^p$  for  $0 < r < \infty$ .

**Lemma 2.3.** [3] Suppose  $t \in \mathbb{R}$  and  $M > 0$  be a fixed real number.

1. Then there exists a constant  $C_0 > 0$  such that

$$\sum_{k=0}^{\infty} \left(\frac{y}{k+1}\right)^t \frac{y^k}{k!} \leq C_0 e^y$$

for all real  $y \geq M$ . Furthermore, this holds for all  $y \geq 0$  if  $t \geq 0$ .

2. Then there exists a constant  $C_0 > 0$  such that

$$\sum_{k=0}^{\infty} \left(\frac{y}{k+1}\right)^t \frac{y^k}{k!} \geq C_0 e^y$$

for all real  $y \geq M$ . Furthermore, this holds for all  $y \geq 0$  if  $t \leq 0$ .

For any two points  $u$  and  $v$  such that  $u$  and  $v$  do not lie on the same ray emanating from the origin, the lattice generated by  $u$  and  $v$  is the set  $\{au + bv | a, b \in \mathbb{Z}\}$ .

**Lemma 2.4.** [8] Suppose  $\lambda$  is a locally integrable positive measure,  $p > 0$ ,  $r > 0$ ,  $m$  is a non-negative integer and  $\{b_n\}$  is the lattice in  $\mathbb{C}$  generated by  $r$  and  $ri$ . Then the following conditions are equivalent.

1. There exists a constant  $C_0$  such that

$$\int_{\mathbb{C}} |g(v)v^m e^{-\frac{|v|^2}{2}}|^p d\lambda \leq C_0 \|g\|_{p,m}^p$$

for all entire functions  $g$ .

2. There exists a constant  $C_0 > 0$  such that  $\lambda(\mathcal{B}(z;r)) < C_0$  for all  $z \in \mathbb{C}$ .
3. There exists a constant  $C_0 > 0$  such that  $\lambda(\mathcal{B}(b_n;r)) < C_0$  for all positive integers  $n$ .

The Berezin transform of a function  $g$  is given by

$$\begin{aligned} \mathfrak{B}_m(g)(z) &= \langle gk_z^m, k_z^m \rangle_{2,m} = \frac{1}{\pi m!} \int_{\mathbb{C}} g(v) |k_z^m(v)|^2 |v|^{2m} e^{-|v|^2} dA(v) \\ &= \frac{1}{\pi(e^{|z|^2} - Q_m(|z|^2))} \int_{\mathbb{C}} g(v) |e^{\bar{z}v} - Q_m(\bar{z}v)|^2 e^{-|v|^2} dA(v), \end{aligned}$$

where  $k_z^m$  denotes the normalized reproducing kernel of  $\mathcal{F}^{2,m}$ .

**Proposition 2.5.** *Let  $g \in \Omega_m^p$ . For  $1 \leq p \leq \infty$ , the following conditions are equivalent:*

1.  $g \in \mathcal{BA}_r^p$ ;
2. There exists a positive constant  $C$  such that

$$\frac{1}{\pi(e^{|z|^2} - Q_m(|z|^2))} \int_{\mathbb{C}} |g(v)|^p |e^{\bar{z}v} - Q_m(\bar{z}v)|^2 e^{-|v|^2} dA(v) \leq C$$

for all  $z \in \mathbb{C}$ ;

3. The multiplication operator  $L_g^p : \mathcal{F}^{p,m} \rightarrow L^{p,m}$  is bounded.

*Proof.* (1)  $\Leftrightarrow$  (2) Let  $g \in \mathcal{BA}_r^p$  then  $\int_{\mathcal{B}(z,r)} |g(v)|^p dA(v)$  is bounded on  $\mathbb{C}$ . Then Lemma 2.4 gives

$$\int_{\mathbb{C}} |h(v)v^m e^{-\frac{|v|^2}{2}}|^p d\lambda \leq C_0 \|h\|_{p,m}^p$$

for all entire functions  $h$  where  $d\lambda(v) = |g(v)|^p dA(v)$  if and only if  $g \in \mathcal{BA}_r^p$  and hence, it follows that  $g \in \mathcal{BA}_r^p$  if and only if  $\mathfrak{B}_m|g|^p$  is bounded on  $\mathbb{C}$  where

$$\mathfrak{B}_m|g(z)|^p = \frac{1}{\pi(e^{|z|^2} - Q_m(|z|^2))} \int_{\mathbb{C}} |g(v)|^p |e^{\bar{z}v} - Q_m(\bar{z}v)|^2 e^{-|v|^2} dA(v).$$

(1)  $\Leftrightarrow$  (3) Let  $g \in \mathcal{BA}_r^p$  then by definition  $\mathcal{J}_r^p$  is bounded. Define a non-negative measure  $d\lambda(z) = |g(z)|^p dA(z)$  on  $\mathbb{C}$  then  $\lambda(\mathcal{B}(z,r)) = \int_{\mathcal{B}(z,r)} d\lambda(v) = \int_{\mathcal{B}(z,r)} |g(v)|^p dA(v)$ . Therefore, from Lemma 2.4, it follows that

$$\int_{\mathbb{C}} |h(v)v^m e^{-\frac{|v|^2}{2}}|^p d\lambda \leq C_0 \|h\|_{p,m}^p$$

for all entire functions  $h$  if and only if  $g \in \mathcal{BA}_r^p$ . Thus, for all  $h \in \mathcal{F}^{p,m}$ , we have

$$\begin{aligned} \|L_g^p(h)\|_{p,m}^p &= \|hg\|_{p,m}^p = \omega_{p,m} \int_{\mathbb{C}} |h(v)|^p |g(v)|^p |v|^{mp} e^{-\frac{p}{2}|v|^2} dA(v) \\ &= \omega_{p,m} \int_{\mathbb{C}} |h(v)v^m e^{-\frac{1}{2}|v|^2}|^p d\lambda(v) \leq C \|h\|_{p,m}^p \end{aligned}$$

for some constant  $C > 0$ .  $\square$

Thus, from Lemma 2.2 and Proposition 2.5, it is obtained that  $\mathcal{BO}_r$  and  $\mathcal{BA}_r^p$  are independent of  $r$  and hence, we will denote them by  $\mathcal{BO}$  and  $\mathcal{BA}^p$ , respectively.

**Lemma 2.6.** *Let  $g \in \mathcal{BMO}_r^p$ . Then*

$$\frac{1}{\pi(e^{|z|^2} - Q_m(|z|^2))} \int_{\mathbb{C}} |g(v) - \mathfrak{B}_m g(z)|^p |e^{\bar{z}v} - Q_m(\bar{z}v)|^2 e^{-|v|^2} dA(v)$$

is bounded for  $|z| > M$ , for some positive constant  $M$ .



*Proof.* Let  $g \in \mathcal{BMO}_r^p \subset \mathcal{BO} + \mathcal{BA}_r^p$ , therefore, there exist two functions  $g_+, g_-$  on  $\mathbb{C}$  such that  $g_+ \in \mathcal{BO}_r$  and  $g_- \in \mathcal{BA}_r^p$ . Since  $g_+ \in \mathcal{BO}_r$ , therefore, by using Lemma 2.2 and Lemma 2.3 and the fact that  $\mathcal{BO}_r$  is independent of  $r$  and

$$\lim_{\substack{v \in \mathcal{B}(z;r) \\ |z| \rightarrow \infty}} (1 - e^{-\bar{z}v} Q_m(\bar{z}v)) = 1,$$

it follows that

$$\begin{aligned} & \left\{ \frac{1}{\pi(e^{|z|^2} - Q_m(|z|^2))} \int_{\mathcal{B}(z;r)} |g_+(v) - \mathfrak{B}_m g_+(z)|^p |e^{\bar{z}v} - Q_m(\bar{z}v)|^2 e^{-|v|^2} dA(v) \right\} \\ &= \left\{ \frac{1}{\pi(e^{|z|^2} - Q_m(|z|^2))} \int_{\mathcal{B}(z;r)} |g_+(v) - \mathfrak{B}_m g_+(z)|^p |e^{\bar{z}v}|^2 |1 - e^{-\bar{z}v} Q_m(\bar{z}v)|^2 \right. \\ & \quad \left. e^{-|v|^2} dA(v) \right\} \\ &\leq C \left\{ \int_{\mathcal{B}(z;r)} |g_+(v) - \mathfrak{B}_m g_+(z)|^p e^{-|z-v|^2} dA(v) \right\} \\ &\leq C \left\{ \int_{\mathbb{C}} |g_+(v) - \mathfrak{B}_m g_+(z)|^p e^{-|z-v|^2} dA(v) \right\} \\ &= C \left\{ \int_{\mathbb{C}} |g_+(z-v) - \mathfrak{B}_m g_+(z)|^p e^{-|v|^2} dA(v) \right\}, \end{aligned}$$

for all  $|z| > M$  for some positive constants  $C$  and  $M$ , where

$$\begin{aligned} & |g_+(z-v) - \mathfrak{B}_m g_+(z)| \\ &= |g_+(z-v) - \frac{1}{\pi(e^{|z|^2} - Q_m(|z|^2))} \int_{\mathbb{C}} g_+(u) |e^{\bar{z}u} - Q_m(\bar{z}u)|^2 e^{-|u|^2} dA(u)| \\ &= | \frac{1}{\pi(e^{|z|^2} - Q_m(|z|^2))} \int_{\mathbb{C}} (g_+(z-v) - g_+(u)) |e^{\bar{z}u} - Q_m(\bar{z}u)|^2 e^{-|u|^2} dA(u) | \\ &= | \lim_{r \rightarrow \infty} \frac{1}{\pi(e^{|z|^2} - Q_m(|z|^2))} \int_{\mathcal{B}(z;r)} (g_+(z-v) - g_+(u)) |e^{\bar{z}u} - Q_m(\bar{z}u)|^2 \\ & \quad e^{-|u|^2} dA(u) | \\ &\leq \lim_{r \rightarrow \infty} | \frac{1}{\pi(e^{|z|^2} - Q_m(|z|^2))} \int_{\mathcal{B}(z;r)} (g_+(z-v) - g_+(u)) |e^{\bar{z}u}|^2 |1 - e^{-\bar{z}u} Q_m(\bar{z}u)|^2 \\ & \quad e^{-|u|^2} dA(u) | \\ &\leq C \lim_{r \rightarrow \infty} | \int_{\mathcal{B}(z;r)} (g_+(z-v) - g_+(u)) e^{-|z-u|^2} dA(u) | \\ &\leq C | \int_{\mathbb{C}} (g_+(z-v) - g_+(u)) e^{-|z-u|^2} dA(u) | \\ &= C \int_{\mathbb{C}} |g_+(z-v) - g_+(z-u)| e^{-|u|^2} dA(u) \end{aligned}$$

for all  $|z| > M$ . Therefore,

$$\begin{aligned} & \left\{ \frac{1}{\pi(e^{|z|^2} - Q_m(|z|^2))} \int_{\mathcal{B}(z;r)} |g_+(v) - \mathfrak{B}_m g_+(z)|^p |e^{\bar{z}v} - Q_m(\bar{z}v)|^2 e^{-|v|^2} dA(v) \right\} \\ &\leq C^2 \iint_{\mathbb{C}} |g_+(z-v) - g_+(z-u)|^p e^{-|u|^2} dA(u) e^{-|v|^2} dA(v) \end{aligned}$$

$$\leq \iint_{\mathbb{C}} (|u - v| + 1)^p e^{-|u|^2} dA(u) e^{-|v|^2} dA(v)$$

for all  $|z| > M$  which is a constant term. Now, since  $g_- \in \mathcal{BA}_r^p$ , therefore, by Proposition 2.5, there exists a positive constant  $C$  such that

$$\frac{1}{\pi(e^{|z|^2} - Q_m(|z|^2))} \int_{\mathbb{C}} |g_-(v)|^p |e^{\bar{z}v} - Q_m(\bar{z}v)|^2 e^{-|v|^2} dA(v) \leq C$$

for all  $z \in \mathbb{C}$ . Consider

$$\begin{aligned} & \left\{ \frac{1}{\pi(e^{|z|^2} - Q_m(|z|^2))} \int_{\mathbb{C}} |g_-(v) - \mathfrak{B}_m g_-(z)|^p |e^{\bar{z}v} - Q_m(\bar{z}v)|^2 e^{-|v|^2} dA(v) \right\}^{\frac{1}{p}} \\ & \leq \left\{ \frac{1}{\pi(e^{|z|^2} - Q_m(|z|^2))} \int_{\mathbb{C}} |g_-(v)|^p |e^{\bar{z}v} - Q_m(\bar{z}v)|^2 e^{-|v|^2} dA(v) \right\}^{\frac{1}{p}} + |\mathfrak{B}_m g_-(z)| \\ & \quad \|k_z\|_{2,m}^{\frac{2}{p}} \\ & \leq \left\{ \frac{1}{\pi(e^{|z|^2} - Q_m(|z|^2))} \int_{\mathbb{C}} |g_-(v)|^p |e^{\bar{z}v} - Q_m(\bar{z}v)|^2 e^{-|v|^2} dA(v) \right\}^{\frac{1}{p}} + |\mathfrak{B}_m g_-(z)| \\ & \leq C + |\mathfrak{B}_m g_-(z)|, \end{aligned}$$

where

$$\begin{aligned} |\mathfrak{B}_m g_-(z)| & \leq \frac{1}{\pi(e^{|z|^2} - Q_m(|z|^2))} \int_{\mathbb{C}} |g_-(v)| |e^{\bar{z}v} - Q_m(\bar{z}v)|^2 e^{-|v|^2} dA(v) \\ & \leq \left\{ \frac{1}{\pi(e^{|z|^2} - Q_m(|z|^2))} \int_{\mathbb{C}} |g_-(v)|^p |e^{\bar{z}v} - Q_m(\bar{z}v)|^2 e^{-|v|^2} dA(v) \right\}^{\frac{1}{p}} \\ & \quad \|k_z\|_{2,m}^{\frac{2}{p}} \\ & = \left\{ \frac{1}{\pi(e^{|z|^2} - Q_m(|z|^2))} \int_{\mathbb{C}} |g_-(v)|^p |e^{\bar{z}v} - Q_m(\bar{z}v)|^2 e^{-|v|^2} dA(v) \right\}^{\frac{1}{p}} \\ & \leq C. \end{aligned}$$

Therefore,

$$\left\{ \frac{1}{\pi(e^{|z|^2} - Q_m(|z|^2))} \int_{\mathbb{C}} |g_-(v) - \mathfrak{B}_m g_-(z)|^p |e^{\bar{z}v} - Q_m(\bar{z}v)|^2 e^{-|v|^2} dA(v) \right\}^{\frac{1}{p}} \leq 2C$$

and hence, we get the result.  $\square$

**Lemma 2.7.** Suppose there exists a positive constant  $M$  such that

$$\text{Sup}_{|z|>M} \left\{ \frac{1}{\pi(e^{|z|^2} - Q_m(|z|^2))} \int_{\mathbb{C}} |g(v) - \mathfrak{B}_m g(z)|^p |e^{\bar{z}v} - Q_m(\bar{z}v)|^2 e^{-|v|^2} dA(v) \right\},$$

is bounded. Then, there exists a constant  $M' > 0$  such that for each  $z \in \mathbb{C}$ , there exists a constant  $\mu_z$  such that

$$\text{Sup}_{|z|>M'} \left\{ \frac{1}{\pi r^2} \int_{\mathcal{B}(z;r)} |g(v) - \mu_z|^p dA(v) \right\}$$

is bounded.

*Proof.* By using the fact that  $e^{-|z-v|^2} \geq a$  for  $v \in \mathcal{B}(z; r)$  and for some constant  $a > 0$ , it follows that

$$\begin{aligned}
 & aC \left\{ \frac{1}{\pi r^2} \int_{\mathcal{B}(z;r)} |g(v) - \mathfrak{B}_m g(z)|^p dA(v) \right\} \\
 & \leq C \left\{ \frac{1}{\pi r^2} \int_{\mathcal{B}(z;r)} |g(v) - \mathfrak{B}_m g(z)|^p e^{-|z-v|^2} dA(v) \right\} \\
 & = C \left\{ \frac{1}{\pi r^2} \int_{\mathcal{B}(z;r)} |g(v) - \mathfrak{B}_m g(z)|^p e^{-|z|^2} |e^{\bar{z}v}|^2 e^{-|v|^2} dA(v) \right\} \\
 & \leq \left\{ \frac{1}{\pi^2 r^2 ((e^{|z|^2} - Q_m(|z|^2))} \int_{\mathcal{B}(z;r)} |g(v) - \mathfrak{B}_m g(z)|^p |e^{\bar{z}v} - Q_m(\bar{z}v)|^2 e^{-|v|^2} dA(v) \right\} \tag{2} \\
 & \leq \left\{ \frac{1}{\pi^2 r^2 ((e^{|z|^2} - Q_m(|z|^2))} \int_{\mathbb{C}} |g(v) - \mathfrak{B}_m g(z)|^p |e^{\bar{z}v} - Q_m(\bar{z}v)|^2 e^{-|v|^2} dA(v) \right\}
 \end{aligned}$$

for all  $|z| > M'$ , where the Eq. (2) follows from Lemma 2.3 and

$$\lim_{\substack{v \in \mathcal{B}(z;r) \\ |z| \rightarrow \infty}} (1 - e^{-\bar{z}v} Q_m(\bar{z}v)) = 1.$$

□

Lemma 2.6 and Lemma 2.7 jointly give the following result:

**Theorem 2.8.** *Let  $g \in \mathcal{BMO}_r^p$ . Then the following conditions are equivalent:*

1. *There exists a constant  $M > 0$  such that*

$$\text{Sup}_{|z|>M} \left\{ \frac{1}{\pi(e^{|z|^2} - Q_m(|z|^2))} \int_{\mathbb{C}} |g(v) - \mathfrak{B}_m g(z)|^p |e^{\bar{z}v} - Q_m(\bar{z}v)|^2 e^{-|v|^2} dA(v) \right\} < \infty;$$

2. *There exists a constant  $M > 0$  such that for each  $z \in \mathbb{C}$ , there exists a constant  $\mu_z$  such that*

$$\text{Sup}_{|z|>M} \left\{ \frac{1}{\pi r^2} \int_{\mathcal{B}(z;r)} |g(v) - \mu_z|^p dA(v) \right\} < \infty;$$

3. *There exists a constant  $M > 0$  such that for each  $z \in \mathbb{C}$ , there exists a constant  $\mu_z$  such that*

$$\text{Sup}_{|z|>M} \left\{ \frac{1}{\pi(e^{|z|^2} - Q_m(|z|^2))} \int_{\mathbb{C}} |g(v) - \mu_z|^p |e^{\bar{z}v} - Q_m(\bar{z}v)|^2 e^{-|v|^2} dA(v) \right\} < \infty.$$

*Proof.* (1) implies (2) follows from Lemma 2.7 and (1) implies (3) follows from Lemma 3.1 [5]. □

**Proposition 2.9.** *Let  $g \in \mathcal{BMO}_{2r}^p$ . Then there exists a positive constant  $M$  such that the following hold:*

- (1)  $\text{Sup}_{|z|>M+r} \left\{ \text{Sup}_{v \in \mathcal{B}(z;r)} |\mathfrak{B}_m g(v) - \mathfrak{B}_m g(z)| \right\} < \infty$
- (2)  $\text{Sup}_{|z|>M+r} \left\{ \frac{1}{\pi r^2} \int_{\mathcal{B}(z;r)} |(g - \mathfrak{B}_m g)(v)|^p dA(v) \right\} < \infty.$

*Proof.* Let  $g \in \mathcal{BMO}_{2r}^p \subset \mathcal{BMO}_r^p$ . Consider

$$|\mathfrak{B}_m g(z) - \tilde{g}_r(z)|$$

$$\begin{aligned}
 &= \left| \frac{1}{\pi r^2} \int_{\mathcal{B}(z,r)} \mathfrak{B}_m g(z) dA(v) - \frac{1}{\pi r^2} \int_{\mathcal{B}(z,r)} g(v) dA(v) \right| \\
 &\leq \frac{1}{\pi r^2} \int_{\mathcal{B}(z,r)} |g(v) - \mathfrak{B}_m g(z)| dA(v) \\
 &\leq \left\{ \frac{1}{\pi r^2} \int_{\mathcal{B}(z,r)} |g(v) - \mathfrak{B}_m g(z)|^p dA(v) \right\}^{\frac{1}{p}} \\
 &\leq C \left\{ \frac{1}{\pi(e^{|z|^2} - Q_m(|z|^2))} \int_{\mathbb{C}} |g(v) - \mathfrak{B}_m g(z)|^p |e^{\bar{z}v} - Q_m(\bar{z}v)|^2 e^{-|v|^2} dA(v) \right\}^{\frac{1}{p}} \\
 &\leq C_0,
 \end{aligned}$$

for all  $|z| > M > 0$  and for some constant  $C_0 > 0$ . Thus,

$$\text{Sup}_{|z| > M+r} \left\{ \text{Sup}_{v \in \mathcal{B}(z,r)} |(\mathfrak{B}_m g - \tilde{g}_r)(v) - (\mathfrak{B}_m g - \tilde{g}_r)(z)| \right\} < \infty$$

and

$$\text{Sup}_{|z| > M+r} \left\{ \frac{1}{\pi r^2} \int_{\mathcal{B}(z,r)} |(\mathfrak{B}_m g - \tilde{g}_r)(v)|^p dA(v) \right\} < \infty.$$

Since  $g \in \mathcal{BMO}_{2r}^p \subset \mathcal{BMO}_r^p$ , therefore by Lemma 2.2, it follows that  $\tilde{g}_r \in \mathcal{BO}$  and  $g - \tilde{g}_r \in \mathcal{BA}^p$ , so  $\mathfrak{B}_m g = \mathfrak{B}_m g - \tilde{g}_r + \tilde{g}_r$ ,  $g - \mathfrak{B}_m g = g - \tilde{g}_r + \tilde{g}_r - \mathfrak{B}_m g$ , we get the desired result.  $\square$

**Lemma 2.10.** *If  $g \in \mathcal{BA}^p$ , then  $H_g^p$  is bounded on  $\mathcal{F}^{p,m}$  for finite  $p \geq 1$ .*

*Proof.* By Proposition 2.5,  $g \in \mathcal{BA}^p$  if and only if  $L_g^p$  is bounded on  $\mathcal{F}^{p,m}$  and hence if  $g \in \mathcal{BA}^p$  then  $H_g^p$  is bounded on  $\mathcal{F}^{p,m}$ , since  $P^m$  is bounded.  $\square$

For two quantities  $X$  and  $Y$ , the equation  $X \lesssim Y$  represents there exists a constant  $C > 0$  such that  $X \leq CY$  ( $C$  is independent of  $X$  and  $Y$ ).

**Lemma 2.11.** *If  $g \in \mathcal{BO}$ , then  $H_g^p$  is bounded on  $\mathcal{F}^{p,m}$  for all  $1 \leq p \leq \infty$ .*

*Proof.* Let  $h \in \mathcal{F}^{p,m}$  and  $1 < p < \infty$ . Since  $g \in \mathcal{BO}$ , therefore, by Lemma 2.2, we obtain that

$$\begin{aligned}
 |H_g^p(h)(z)|^p &\leq \left\{ \omega_{p,m} \int_{\mathbb{C}} |g(z) - g(v)| |h(v)| \frac{|e^{z\bar{v}} - Q_m(z\bar{v})|}{|z\bar{v}|^m} |e^{-|v|^2}|v|^{2m} dA(v) \right\}^p \\
 &\leq C \left\{ \omega_{p,m} \int_{\mathbb{C}} (|z - v| + 1) |h(v)| \frac{|e^{z\bar{v}} - Q_m(z\bar{v})|}{|z\bar{v}|^m} |e^{-|v|^2}|v|^{2m} dA(v) \right\}^p.
 \end{aligned}$$

Further from [4], we have

$$\left| \frac{e^{z\bar{v}} - Q_m(z\bar{v})}{(z\bar{v})^m} \right| \lesssim \frac{e^{\frac{1}{2}|z|^2 + \frac{1}{2}|v|^2 - \frac{1}{8}|z-v|^2}}{(1 + |z||v|)^m} \leq \frac{e^{\frac{1}{2}|z|^2 + \frac{1}{2}|v|^2 - \frac{1}{8}|z-v|^2}}{(|z||v|)^m}.$$

Therefore,

$$\begin{aligned}
 &|H_g^p(h)(z)|^p e^{-\frac{p}{2}|z|^2} |z|^{pm} \\
 &\leq C e^{-\frac{p}{2}|z|^2} |z|^{pm} \left\{ \omega_{p,m} \int_{\mathbb{C}} (|z - v| + 1) |h(v)| \frac{|e^{z\bar{v}} - Q_m(z\bar{v})|}{|z\bar{v}|^m} |e^{-|v|^2}|v|^{2m} dA(v) \right\}^p \\
 &\leq C \left\{ \omega_{p,m} \int_{\mathbb{C}} (|z - v| + 1) |h(v)| e^{-\frac{1}{2}|v|^2} e^{-\frac{1}{8}|z-v|^2} |v|^m dA(v) \right\}^p
 \end{aligned}$$

$$\begin{aligned} &\leq C \left\{ \omega_{p,m} \int_{\mathbb{C}} |h(v)|^p e^{-\frac{p}{2}|v|^2} |v|^{pm} dA(v) \right\} \left\{ \omega_{p,m} \int_{\mathbb{C}} (|z-v|+1)^q e^{-\frac{q}{8}|z-v|^2} dA(v) \right\}^{\frac{p}{q}} \\ &= C \|h\|_{p,m}^p \left\{ \omega_{p,m} \int_{\mathbb{C}} (|z-v|+1)^q e^{-\frac{q}{8}|z-v|^2} dA(v) \right\}^{\frac{p}{q}}, \end{aligned}$$

for some constant  $C > 0$ . Therefore,  $\|H_g^p(h)\|_{p,m}^p \leq C_0 \|h\|_{p,m}^p$  and hence,  $H_g^p$  is bounded on  $\mathcal{F}^{p,m}$  for  $1 < p < \infty$ . For  $p = 1$ , we can conclude by using Fubini's theorem that

$$\begin{aligned} \|H_g^p(h)\|_{1,m} &= \omega_{1,m} \int_{\mathbb{C}} |H_g^p(h)(z)| e^{-\frac{1}{2}|z|^2} |z|^m dA(z) \\ &\leq C_0 \left\{ \int_{\mathbb{C}} |h(v)| e^{-\frac{1}{2}|v|^2} |v|^m dA(v) \right\} \left\{ \int_{\mathbb{C}} (|z-v|+1) e^{-\frac{1}{8}|z-v|^2} dA(z) \right\} \\ &\leq C_0 \|h\|_{1,m}, \end{aligned}$$

where  $C_0$  is a constant. For  $p = \infty$ ,

$$\begin{aligned} \|H_g^p(h)\|_{\infty,m} &= |H_g^p(h)(z)| e^{-\frac{1}{2}|z|^2} |z|^m \\ &\leq \|h\|_{\infty,m} \left\{ \int_{\mathbb{C}} (|z-v|+1) e^{-\frac{1}{8}|z-v|^2} dA(z) \right\} \leq C_1, \end{aligned}$$

where  $C_1 > 0$  is a constant and hence, the result follows for all  $1 \leq p \leq \infty$ .  $\square$

**Theorem 2.12.** Let  $g \in \mathcal{BMO}_r^p$ . Then the operators  $H_g^p$  and  $H_{\tilde{g}}^p$  are bounded for all  $1 \leq p < \infty$ .

*Proof.* The proof of the theorem follows from Lemma 2.2, Lemma 2.10 and Lemma 2.11 and the fact that if  $g \in \mathcal{BMO}_r^p$  then so  $\tilde{g}$ .  $\square$

### 3. $\mathcal{VMO}_r^p$ spaces and Compactness of Hankel operators on $\mathcal{F}^{p,m}$

Define  $\mathcal{VA}_r$  be the set of all  $L_{Loc}^1$  integrable functions  $g$  on  $\mathbb{C}$  such that  $\lim_{|z| \rightarrow \infty} \tilde{g}_r = 0$ . For finite  $p \geq 1$ , let  $\mathcal{VMO}_r^p$  denote the set of all  $L_{Loc}^p$  integrable functions  $g$  such that

$$\lim_{|z| \rightarrow \infty} \left\{ \frac{1}{\pi r^2} \int_{\mathcal{B}(z;r)} |g(v) - \tilde{g}_r(z)|^p dA(v) \right\}^{\frac{1}{p}} = 0.$$

Let  $\mathcal{VO}_r \subset \mathcal{BO}_r$  be the set of all continuous functions  $g$  on  $\mathbb{C}$  such that

$$\lim_{|z| \rightarrow \infty} \sup_{v \in \mathcal{B}(z;r)} |g(v) - g(z)| = 0.$$

Let  $\mathcal{VA}_r^p$  be the set of all  $L_{Loc}^p$  integrable functions  $g$  on  $\mathbb{C}$  such that

$$\lim_{|z| \rightarrow \infty} \tilde{g}_r^p = 0.$$

The following Lemma will be useful in the study of compact Hankel operators on  $\mathcal{F}^{p,m}$  and the related results.

**Lemma 3.1.** [8] Let  $\lambda$  is a positive Borel measure,  $0 < p < \infty$ ,  $r > 0$ ,  $m$  is a non- negative integer and  $\{b_n\}$  is the lattice in  $\mathbb{C}$  generated by  $r$  and  $ri$ . Then the following conditions are equivalent:

1.  $\lim_{n \rightarrow \infty} \int_{\mathbb{C}} |g_n(v)v^m e^{-\frac{|v|^2}{2}}|^p d\lambda = 0$  for all bounded sequence  $\{g_n\}$  in  $\mathcal{F}^{p,m}$  that converges to 0 uniformly on compact sets;
2.  $\lim_{|z| \rightarrow \infty} \lambda(\mathcal{B}(z; r)) = 0$ ;
3.  $\lim_{n \rightarrow \infty} \lambda(\mathcal{B}(b_n; r)) = 0$ .

Similar to  $\mathcal{B}\mathcal{O}_r$  and  $\mathcal{B}\mathcal{A}_r^p$ , it is easy to observe that  $\mathcal{V}\mathcal{O}_r$  and  $\mathcal{V}\mathcal{A}_r^p$  are independent of  $r$ , so we will denote them by  $\mathcal{V}\mathcal{O}$  and  $\mathcal{V}\mathcal{A}^p$ , respectively.

The following results are analogues to Lemma 2.2 and Theorem 2.8.

**Theorem 3.2.** *Let  $p$  is any natural number. Then the following conditions are equivalent:*

1.  $g \in \mathcal{VM}\mathcal{O}^p$ ;
2.  $g \in \mathcal{V}\mathcal{O} + \mathcal{V}\mathcal{A}^p$ ;
3.  $\lim_{|z| \rightarrow \infty} \left\{ \frac{1}{\pi(e^{|z|^2} - Q_m(|z|^2))} \int_{\mathbb{C}} |g(v) - \mathfrak{B}_m g(z)|^p |e^{\bar{z}v} - Q_m(\bar{z}v)|^2 e^{-|v|^2} dA(v) \right\} = 0$ ;
4. *There exists a constant  $M > 0$  such that for each  $z \in \mathbb{C}$ , there exists a constant  $\mu_z$  such that*

$$\lim_{|z| \rightarrow \infty} \left\{ \frac{1}{\pi r^2} \int_{\mathcal{B}(z;r)} |g(v) - \mu_z|^p dA(v) \right\} = 0;$$

5. *There exists a constant  $M > 0$  such that for each  $z \in \mathbb{C}$ , there exists a constant  $\mu_z$  such that*

$$\lim_{|z| \rightarrow \infty} \left\{ \frac{1}{\pi(e^{|z|^2} - Q_m(|z|^2))} \int_{\mathbb{C}} |g(v) - \mu_z|^p |e^{\bar{z}v} - Q_m(\bar{z}v)|^2 e^{-|v|^2} dA(v) \right\} = 0.$$

From Theorem 3.2, it follows that  $\mathcal{VM}\mathcal{O}_r^p$  is independent of  $r$ , so we will write  $\mathcal{VM}\mathcal{O}^p$ .

**Lemma 3.3.** 1. *If  $g \in \mathcal{VM}\mathcal{O}^p$ , then  $\tilde{g}_r \in \mathcal{V}\mathcal{O}$ .*

2. *If  $g \in \mathcal{VM}\mathcal{O}^p$ , then  $g - \tilde{g}_r \in \mathcal{V}\mathcal{A}^p$  for every  $r > 0$ .*
3. *If  $g \in \mathcal{VM}\mathcal{O}^p$ , then  $\mathfrak{B}_m(g) \in \mathcal{V}\mathcal{O}$ .*
4. *If  $g \in \mathcal{VM}\mathcal{O}^p$ , then  $g - \mathfrak{B}_m(g) \in \mathcal{V}\mathcal{A}^p$ .*
5. *The function  $g \in \mathcal{V}\mathcal{O}$  if and only if for each constant  $C > 0$ , there exists  $r > 0$  such that  $|g(z) - g(v)| \leq C(1 + |z - v|)$  for all  $z, v \in \mathbb{C} \setminus \mathcal{B}(0; r)$  (see [1]).*

**Lemma 3.4.** [1] *For  $r > 0$ , consider a function  $g : \mathbb{C} \setminus \mathcal{B}(0; r) \rightarrow \mathbb{C}$  with*

$$|g(z) - g(v)| \leq C(1 + |z - v|) \text{ for all } z, v \in \mathbb{C} \setminus \mathcal{B}(0; r),$$

where  $C > 0$  is independent of  $g$ . Then, there exists a function  $G$  on  $\mathbb{C}$  such that  $g = G$  on  $\mathbb{C} \setminus \mathcal{B}(0; r)$  and  $|G(z) - G(v)| \leq 2C(1 + |z - v|)$  for all  $z, v \in \mathbb{C}$ .

**Theorem 3.5.** *Let  $g \in \mathcal{VM}\mathcal{O}^p$  where  $1 \leq p < \infty$ . Then the Hankel operators  $H_g^p$  and  $H_{\tilde{g}}^p$  are both compact.*

*Proof.* Let  $g \in \mathcal{V}A^p$ . This gives the positive measure  $d\lambda = |g|^p dA$  satisfying  $\lim_{|z| \rightarrow \infty} \lambda(\mathcal{B}(z; r)) = 0$ . So, by Lemma 3.1, the multiplication operator  $L_g^p : \mathcal{F}^{p,m} \rightarrow L^{p,m}$  is compact and so is  $H_g^p$ .

Let  $g \in \mathcal{V}\mathcal{O}$ . Let  $\epsilon > 0$  be arbitrary. Using Lemma 3.3 and Lemma 3.4, it follows that there exists a function  $G$  on  $\mathbb{C}$  such that  $g = G$  on  $\mathbb{C} \setminus \mathcal{B}(0; r)$  and  $|G(z) - G(v)| \leq 2\epsilon(1 + |z - v|)$  for all  $z, v \in \mathbb{C}$ . Then Lemma 2.2 and Lemma 2.11 give  $H_G^p$  is bounded with  $\|H_G^p\| \leq 2\epsilon C_0$  for some constant  $C_0 > 0$ . Also,  $H_{g-G}^p$  is compact, since  $g - G$  has compact support, and  $\|H_G^p - H_{g-G}^p\| = \|H_g^p\| \leq 2\epsilon C_0$ . Since  $\epsilon > 0$  is arbitrary, therefore, the Hankel operators  $H_g^p$  is compact. Similarly, it can be proved that the Hankel operators  $H_{\bar{g}}^p$  is compact. Hence, by using Theorem 3.2, the result follows.  $\square$

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# Complex Symmetry and Normality of Toeplitz Composition Operators on the Hardy Space

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**Abstract.** In this paper, we investigate the conditions under which the Toeplitz composition operator on the Hardy space  $\mathcal{H}^2$  becomes complex symmetric with respect to a certain conjugation. We also study various normality conditions for the Toeplitz composition operator on  $\mathcal{H}^2$ .

## 1. Introduction and Preliminaries

Let  $\mathbb{D}$  denote the open unit disc and  $\mathbb{T} = \{e^{i\theta} : \theta \in [0, 2\pi)\}$  denote the unit circle in the complex plane  $\mathbb{C}$ . Recall that the *Hardy space*  $\mathcal{H}^2$  is a Hilbert space which consists of all those analytic functions  $f$  on  $\mathbb{D}$  having power series representation with square summable complex coefficients. That is,

$$\mathcal{H}^2 = \{f : \mathbb{D} \rightarrow \mathbb{C} \mid f(z) = \sum_{n=0}^{\infty} \hat{f}(n)z^n \text{ and } \|f\|_{\mathcal{H}^2}^2 := \sum_{n=0}^{\infty} |\hat{f}(n)|^2 < \infty\}$$

or equivalently,

$$\mathcal{H}^2 = \{f : \mathbb{D} \rightarrow \mathbb{C} \text{ analytic} \mid \sup_{0 < r < 1} \frac{1}{2\pi} \int_0^{2\pi} |f(re^{i\theta})|^2 d\theta < \infty\}.$$

The evaluation of functions in  $\mathcal{H}^2$  at each  $w \in \mathbb{D}$  is a bounded linear functional and for all  $f \in \mathcal{H}^2$ ,  $f(w) = \langle f, K_w \rangle$  where  $K_w(z) = 1/(1 - \bar{w}z)$ . The function  $K_w(z)$  is called the *reproducing kernel* for the Hardy space  $\mathcal{H}^2$ . Consider the Hilbert space

$$\widetilde{\mathcal{H}^2} = \{f^* : \mathbb{T} \rightarrow \mathbb{C} \mid f^*(z) = \sum_{n=0}^{\infty} \hat{f}(n)e^{in\theta} \text{ and } \|f^*\|_{\widetilde{\mathcal{H}^2}}^2 := \sum_{n=0}^{\infty} |\hat{f}(n)|^2 < \infty\}.$$

Let  $L^2$  denote the Lebesgue (Hilbert) space on the unit circle  $\mathbb{T}$ . It is well known that every function  $f \in \mathcal{H}^2$  satisfies the radial limit  $f^*(e^{i\theta}) = \lim_{r \rightarrow 1^-} f(re^{i\theta})$  for almost every  $\theta \in [0, 2\pi)$  and it is obvious that the

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correspondence where  $f(z) = \sum_{n=0}^{\infty} \hat{f}(n)z^n$  is mapped to  $f^*(e^{i\theta}) = \sum_{n=0}^{\infty} \hat{f}(n)e^{in\theta}$  is an isometric isomorphism from  $\mathcal{H}^2$  onto the closed subspace  $\widehat{\mathcal{H}^2}$  of  $L^2$ . Since  $\{e_n(z) = z^n : n \in \mathbb{Z}\}$  forms an orthonormal basis for  $L^2$ , every function  $f \in L^2$  can be expressed as  $f(z) = \sum_{n=-\infty}^{\infty} \hat{f}(n)z^n$  where  $\hat{f}(n)$  denotes the  $n$ th Fourier coefficient of  $f$ . Let  $L^\infty$  be the Banach space of all essentially bounded functions on the unit circle  $\mathbb{T}$ . For any  $\phi \in L^\infty$ , the Toeplitz operator  $T_\phi : \mathcal{H}^2 \rightarrow \mathcal{H}^2$  is defined by  $T_\phi f = P(\phi \cdot f)$  for  $f \in \mathcal{H}^2$  where  $P : L^2 \rightarrow \mathcal{H}^2$  is the orthogonal projection. It can be easily verified that for  $m, n \in \mathbb{Z}$ ,

$$P(z^m \bar{z}^n) = \begin{cases} z^{m-n} & \text{if } m \geq n, \\ 0 & \text{otherwise.} \end{cases}$$

For a non-zero bounded analytic function  $u$  on  $\mathbb{D}$  and a self-analytic map  $\phi$  on  $\mathbb{D}$ , the *weighted composition operator*  $W_{u,\phi}$  is defined by  $W_{u,\phi} f = u \cdot f \circ \phi$  for every  $f \in \mathcal{H}^2$ . Over the past several decades, there has been tremendous development in the study of composition operators and weighted composition operators over the Hardy space  $\mathcal{H}^2$  and various other spaces of analytic functions. Readers may refer [1, 10] for general study and background of the composition operators on the Hardy space  $\mathcal{H}^2$ . In this paper, we introduce the notion of the Toeplitz composition operator on the Hardy space  $\mathcal{H}^2$  where the symbol  $u$  in  $W_{u,\phi}$  need not necessarily be analytic. For a function  $\psi \in L^\infty$  and a self-analytic map  $\phi$  on  $\mathbb{D}$ , the *Toeplitz composition operator*  $T_\psi C_\phi : \mathcal{H}^2 \rightarrow \mathcal{H}^2$  is defined by  $T_\psi C_\phi f = P(\psi \cdot f \circ \phi)$  for every  $f \in \mathcal{H}^2$  where  $C_\phi f := f \circ \phi$  is the composition operator on  $\mathcal{H}^2$ . The authors in [5] introduced the concept of the Toeplitz composition operators on the Fock space and also studied its various properties.

Let  $\mathcal{H}$  be a separable Hilbert space. Then a mapping  $S$  on  $\mathcal{H}$  is said to be *anti-linear (also conjugate-linear)* if  $S(\alpha x_1 + \beta x_2) = \bar{\alpha}S(x_1) + \bar{\beta}S(x_2)$  for all scalars  $\alpha, \beta \in \mathbb{C}$  and for all  $x_1, x_2 \in \mathcal{H}$ .

An anti-linear mapping  $C : \mathcal{H} \rightarrow \mathcal{H}$  is said to be a *conjugation* if it is involutive (i.e.  $C^2 = I$ ) and isometric (i.e.  $\|Cx\| = \|x\|$  for every  $x \in \mathcal{H}$ ). A *complex symmetric operator*  $S$  on  $\mathcal{H}$  is a bounded linear operator such that  $S = CS^*C$  for some conjugation  $C$  on  $\mathcal{H}$ . We call such an operator  $S$  to be a *C-symmetric operator*.

Garcia and Putinar [3, 4] began the general study of complex symmetric operators on Hilbert spaces which are the natural generalizations of complex symmetric matrices. There exist a wide variety of complex symmetric operators which include normal operators, compressed Toeplitz operators, Volterra integration operators etc. Jung et al. [7] studied the complex symmetry of the weighted composition operators on the Hardy space in the unit disc  $\mathbb{D}$ . Garcia and Hammond [2] undertook the study of complex symmetry of weighted composition operators on the weighted Hardy spaces. Ko and Lee [8] gave a characterization of the complex symmetric Toeplitz operators on the Hardy space  $\mathcal{H}^2$  of the unit disc  $\mathbb{D}$ . Motivated by this, we study the complex symmetry of the Toeplitz composition operators on the Hardy space  $\mathcal{H}^2$ . In this paper we give a characterization of such types of operators. We also investigate certain conditions under which a complex symmetric operator turns out to be a normal operator. In the concluding section of this article, we discuss the normality of the Toeplitz composition operators on  $\mathcal{H}^2$ .

## 2. Complex Symmetric Toeplitz Composition Operators

In this section we aim to find the conditions under which a Toeplitz composition operator becomes complex symmetric with respect to a certain fixed conjugation. In order to determine these conditions, we need an explicit formula for the adjoint  $C_\phi^*$  of a composition operator  $C_\phi$  where  $\phi$  is a self-analytic map on the unit disc  $\mathbb{D}$ . But there exists no general formula and there are only a few special cases where it is possible to find a formula for  $C_\phi^*$  explicitly. C. Cowen was the first to find the representation for the adjoint of a composition operator  $C_\phi$  on  $\mathcal{H}^2$ , famously known as the Cowen's Adjoint Formula, where the symbol  $\phi$  is a linear fractional self-map of the unit disc  $\mathbb{D}$ . The Cowen's Adjoint Formula was extended to the Bergman space  $\mathcal{A}^2$  by P. Hurst [6] and it is stated as follows:

**Theorem 2.1 ([1]).** (Cowen's Adjoint Formula) Let  $\phi(z) = \frac{az+b}{cz+d}$  be a linear fractional self-map of the unit disc where  $ad - bc \neq 0$ . Then  $\sigma(z) = \frac{\bar{a}z - \bar{c}}{-\bar{b}z + \bar{d}}$  maps disc into itself,  $g(z) = (-\bar{b}z + \bar{d})^{-p}$  and  $h(z) = (cz + d)^p$  are bounded analytic

functions on the disc and on  $\mathcal{H}^2$  or  $\mathcal{A}^2$ ,  $C_\phi^* = M_g C_\sigma M_h^*$  where  $p = 1$  on  $\mathcal{H}^2$  and  $p = 2$  on  $\mathcal{A}^2$ . (Note that the operator  $M_g$  is the multiplication operator defined by  $M_g f = g \cdot f$ .)

Next we have the following lemmas which would be instrumental in proving certain results throughout this article :

**Lemma 2.2 ([9]).** A linear fractional map  $\phi$ , written in the form  $\phi(z) = \frac{az+b}{cz+d}$ ;  $ad - bc \neq 0$ , maps  $\mathbb{D}$  into itself if and only if:

$$|b\bar{d} - a\bar{c}| + |ad - bc| \leq |d|^2 - |c|^2. \tag{1}$$

**Lemma 2.3 ([1]).** Let  $\phi(z) = \frac{az+b}{cz+d}$  be a linear fractional map and define the associated linear fractional transformation  $\phi^*$  by

$$\phi^*(z) = \frac{1}{\phi^{-1}(\frac{1}{2})} = \frac{\bar{a}z - \bar{c}}{-\bar{b}z + \bar{d}}.$$

Then  $\phi$  is a self-map of the disc if and only if  $\phi^*$  is also a self-map of the disc.

**Lemma 2.4 ([1]).** If  $\phi(z) = \frac{az+b}{cz+d}$  is a linear fractional transformation mapping  $\mathbb{D}$  into itself where  $ad - bc = 1$ , then  $\sigma(z) = \frac{\bar{a}z - \bar{c}}{-\bar{b}z + \bar{d}}$  maps  $\mathbb{D}$  into itself.

In the following lemma, a conjugation on the Hardy space  $\mathcal{H}^2$  has been defined with respect to which we will find the complex symmetry of the operator  $T_\psi C_\phi$ .

**Lemma 2.5 ([8]).** For every  $\xi$  and  $\theta$ , let  $C_{\xi,\theta} : \mathcal{H}^2 \rightarrow \mathcal{H}^2$  be defined by

$$C_{\xi,\theta} f(z) = e^{i\xi} \overline{f(e^{i\theta} \bar{z})}.$$

Then  $C_{\xi,\theta}$  is a conjugation on  $\mathcal{H}^2$ . Moreover,  $C_{\xi,\theta}$  and  $C_{\tilde{\xi},\tilde{\theta}}$  are unitarily equivalent where  $(\tilde{\xi}, \tilde{\theta})$  satisfies the equation  $\tilde{\xi} - k\tilde{\theta} = -\xi + k\theta - 2n\pi$  for every  $k \in \mathbb{N}$  and  $n \in \mathbb{Z}$ .

In the next theorem, we determine the conditions under which the Toeplitz composition operator  $T_\psi C_\phi$  turns out to be complex symmetric with respect to the conjugation  $C_{\xi,\theta}$  on  $\mathcal{H}^2$ .

**Theorem 2.6.** For  $\psi(z) = \sum_{n=-\infty}^{\infty} \hat{\psi}(n)z^n \in L^\infty$  and for self-analytic linear transformation  $\phi(z) = az + b$  ( $a \neq 0$ ) mapping  $\mathbb{D}$  into itself, let  $T_\psi C_\phi$  be a Toeplitz composition operator on  $\mathcal{H}^2$ . Then  $T_\psi C_\phi$  is complex symmetric with the conjugation  $C_{\xi,\theta}$  if and only if for each  $k, p \in \mathbb{N} \cup \{0\}$  and for every  $n \in \mathbb{Z}$ , we have :

(i)  $\sum_{n=-k+p}^p \binom{k}{p-n} \overline{\hat{\psi}(n)} \bar{a}^{p-n} \bar{b}^{-n+k-p} \lambda^p = \sum_{n=-k}^{-k+p} \binom{p}{p-n-k} \overline{\hat{\psi}(-n)} \bar{a}^{n+k} \bar{b}^{-p-n-k} \lambda^k$  for  $b \neq 0$  and, (ii)  $\overline{\hat{\psi}(n)} \lambda^n = \overline{\hat{\psi}(-n)} \bar{a}^n$  for  $b = 0$ .

*Proof.* If  $T_\psi C_\phi$  is complex symmetric with respect to the conjugation  $C_{\xi,\theta}$ , then for all  $k \in \mathbb{N} \cup \{0\}$  we have

$$C_{\xi,\theta} T_\psi C_\phi z^k = (T_\psi C_\phi)^* C_{\xi,\theta} z^k. \tag{2}$$

We take  $\mu = e^{i\xi}$  and  $\lambda = e^{-i\theta}$  and consider the following two cases:

Case (i) : Let  $b \neq 0$ . Then

$$\begin{aligned}
 C_{\xi,\theta}T_{\psi}C_{\phi}z^k &= C_{\xi,\theta}T_{\psi}(\phi(z))^k \\
 &= C_{\xi,\theta}T_{\psi}(az + b)^k \\
 &= C_{\xi,\theta}P(\psi(z) \cdot \sum_{m=0}^k \binom{k}{m} a^m b^{k-m} z^m) \\
 &= C_{\xi,\theta}P(\sum_{m=0}^k (\sum_{n=-\infty}^{\infty} \binom{k}{m} \hat{\psi}(n) a^m b^{k-m} z^{m+n})) \\
 &= C_{\xi,\theta}(\sum_{m=0}^k P(\sum_{n=-\infty}^{\infty} \binom{k}{m} \hat{\psi}(n) a^m b^{k-m} z^{m+n})) \\
 &= C_{\xi,\theta}(\sum_{m=0}^k (\sum_{n=-m}^{\infty} \binom{k}{m} \hat{\psi}(n) a^m b^{k-m} z^{m+n})) \\
 &= \sum_{m=0}^k C_{\xi,\theta}(\sum_{n=-m}^{\infty} \binom{k}{m} \hat{\psi}(n) a^m b^{k-m} z^{m+n}) \\
 &= e^{i\xi} \sum_{m=0}^k (\sum_{n=-m}^{\infty} \binom{k}{m} \overline{\hat{\psi}(n)} \bar{a}^m \bar{b}^{-k-m} e^{-i(m+n)\theta} z^{m+n}) \\
 &= \mu \sum_{m=0}^k (\sum_{n=-m}^{\infty} \binom{k}{m} \overline{\hat{\psi}(n)} \bar{a}^m \bar{b}^{-k-m} \lambda^{m+n} z^{m+n})
 \end{aligned} \tag{3}$$

and

$$\begin{aligned}
 (T_{\psi}C_{\phi})^*C_{\xi,\theta}z^k &= C_{\phi}^*T_{\psi}^*C_{\xi,\theta}z^k \\
 &= C_{\phi}^*T_{\bar{\psi}}(e^{i\xi}e^{-ik\theta}z^k) \\
 &= C_{\phi}^*T_{\bar{\psi}}(\mu\lambda^kz^k) \\
 &= C_{\phi}^*P(\mu\lambda^k \sum_{n=-\infty}^{\infty} \overline{\hat{\psi}(n)} z^{k-n}) \\
 &= C_{\phi}^*P(\mu\lambda^k \sum_{n=-\infty}^{\infty} \overline{\hat{\psi}(-n)} z^{n+k}) \\
 &= \mu\lambda^k C_{\phi}^*(\sum_{n=-k}^{\infty} \overline{\hat{\psi}(-n)} z^{n+k}).
 \end{aligned} \tag{4}$$

On using Theorem 2.1 for  $a \neq 0$ ,  $c = 0$  and  $d = 1$ , we obtain that  $C_{\phi}^* = M_g C_{\sigma}$  where  $g(z) = (1 - \bar{b}z)^{-1}$  and  $\sigma(z) = \frac{\bar{a}z}{1-bz}$ . Since  $|a| + |b| \leq 1$  from Lemma 2.2, so  $|b| < 1$  and hence,  $\frac{1}{(1-\bar{b}z)^j} = \sum_{j=0}^{\infty} \binom{j+i-1}{j} (\bar{b}z)^j$  for  $z \in \mathbb{D}$ .

Therefore, from (4) we get that

$$\begin{aligned}
 (T_\psi C_\phi)^* C_{\xi, \theta} z^k &= \mu \lambda^k M_g C_\sigma \left( \sum_{n=-k}^{\infty} \overline{\hat{\psi}(-n)} z^{n+k} \right) \\
 &= \mu \lambda^k M_g \left( \sum_{n=-k}^{\infty} \overline{\hat{\psi}(-n)} \left( \frac{\bar{a}z}{1-\bar{b}z} \right)^{n+k} \right) \\
 &= \mu \lambda^k \left( \sum_{n=-k}^{\infty} \overline{\hat{\psi}(-n)} \bar{a}^{n+k} \left( \frac{1}{1-\bar{b}z} \right)^{n+k+1} z^{n+k} \right) \\
 &= \mu \sum_{j=0}^{\infty} \left( \sum_{n=-k}^{\infty} \binom{n+k+j}{j} \overline{\hat{\psi}(-n)} \bar{a}^{n+k} \bar{b}^j \lambda^k z^{n+k+j} \right). \tag{5}
 \end{aligned}$$

It follows from (2) that for each  $k \in \mathbb{N} \cup \{0\}$ , we have

$$\sum_{m=0}^k \left( \sum_{n=-m}^{\infty} \binom{k}{m} \overline{\hat{\psi}(n)} \bar{a}^m \bar{b}^{k-m} \lambda^{m+n} z^{m+n} \right) = \sum_{j=0}^{\infty} \left( \sum_{n=-k}^{\infty} \binom{n+k+j}{j} \overline{\hat{\psi}(-n)} \bar{a}^{n+k} \bar{b}^j \lambda^k z^{n+k+j} \right). \tag{6}$$

Thus, the coefficient of  $z^p$  where  $p \in \mathbb{N} \cup \{0\}$  must be equal on the both sides of (6). On comparing the coefficients of  $1, z, z^2, z^3$  and so on, on the both sides of (6), we observe that

$$\sum_{n=-k+p}^p \binom{k}{p-n} \overline{\hat{\psi}(n)} \bar{a}^{p-n} \bar{b}^{n+k-p} \lambda^p = \sum_{n=-k}^{-k+p} \binom{p}{p-n-k} \overline{\hat{\psi}(-n)} \bar{a}^{n+k} \bar{b}^{p-n-k} \lambda^k \tag{7}$$

for each  $k, p \in \mathbb{N} \cup \{0\}$ .

Conversely, let us suppose that (7) holds for each  $k, p \in \mathbb{N} \cup \{0\}$ . Then from (3) and (5), we have

$$\begin{aligned}
 (C_{\xi, \theta} T_\psi C_\phi - (T_\psi C_\phi)^* C_{\xi, \theta}) z^k &= \mu \left( \sum_{m=0}^k \left( \sum_{n=-m}^{\infty} \binom{k}{m} \overline{\hat{\psi}(n)} \bar{a}^m \bar{b}^{k-m} \lambda^{m+n} z^{m+n} \right) \right. \\
 &\quad \left. - \mu \left( \sum_{j=0}^{\infty} \left( \sum_{n=-k}^{\infty} \binom{n+k+j}{j} \overline{\hat{\psi}(-n)} \bar{a}^{n+k} \bar{b}^j \lambda^k z^{n+k+j} \right) \right) \right) \\
 &= 0.
 \end{aligned}$$

**Case (ii) :** If  $b = 0$ , then

$$\begin{aligned}
 C_{\xi, \theta} T_\psi C_\phi z^k &= C_{\xi, \theta} T_\psi (\phi(z))^k \\
 &= C_{\xi, \theta} T_\psi (az)^k \\
 &= C_{\xi, \theta} P \left( \sum_{n=-\infty}^{\infty} \hat{\psi}(n) a^k z^{n+k} \right) \\
 &= C_{\xi, \theta} \left( \sum_{n=-k}^{\infty} \hat{\psi}(n) a^k z^{n+k} \right) \\
 &= e^{i\xi} \sum_{n=-k}^{\infty} \overline{\hat{\psi}(n)} \bar{a}^k e^{-i(n+k)\theta} z^{n+k} \\
 &= \mu \sum_{n=-k}^{\infty} \overline{\hat{\psi}(n)} \bar{a}^k \lambda^{n+k} z^{n+k}. \tag{8}
 \end{aligned}$$

For  $a \neq 0, b = c = 0$  and  $d = 1$ , we get from Theorem 2.1 that  $g(z) = h(z) = 1$  and  $\sigma(z) = \bar{a}z$ . Thus,  $C_\phi^* = C_\sigma$ . We compute

$$\begin{aligned}
 (T_\psi C_\phi)^* C_{\varepsilon, \theta} z^k &= C_\phi^* T_\psi^* C_{\varepsilon, \theta} z^k \\
 &= C_\sigma T_\psi^*(\mu \lambda^k z^k) \\
 &= C_\sigma P(\mu \sum_{n=-\infty}^{\infty} \overline{\hat{\psi}(n)} \lambda^k z^{k-n}) \\
 &= C_\sigma P(\mu \sum_{n=-\infty}^{\infty} \overline{\hat{\psi}(-n)} \lambda^k z^{n+k}) \\
 &= \mu C_\sigma (\sum_{n=-k}^{\infty} \overline{\hat{\psi}(-n)} \lambda^k z^{n+k}) \\
 &= \mu \sum_{n=-k}^{\infty} \overline{\hat{\psi}(-n)} \lambda^k \bar{a}^{n+k} z^{n+k}.
 \end{aligned} \tag{9}$$

Since the equation (2) holds, on equating the expressions (8) and (9), we obtain that  $\overline{\hat{\psi}(n)} \lambda^n = \overline{\hat{\psi}(-n)} \bar{a}^n$  for every  $n \in \mathbb{Z}$ . Conversely, let us assume that  $\overline{\hat{\psi}(n)} \lambda^n = \overline{\hat{\psi}(-n)} \bar{a}^n$  for every  $n \in \mathbb{Z}$ . Then (8) and (9) implies that  $(C_{\varepsilon, \theta} T_\psi C_\phi - (T_\psi C_\phi)^* C_{\varepsilon, \theta}) z^k = 0$ . Thus,  $T_\psi C_\phi$  is complex symmetric with conjugation  $C_{\varepsilon, \theta}$ .  $\square$

**Example 2.7.** Let  $\psi(z) = z + \bar{z} \in L^\infty$ . Then,  $\hat{\psi}(n) = \hat{\psi}(-n)$  for all  $n \in \mathbb{Z}$ . Let  $\phi(z) = iz$ . Then  $\phi(z)$  is a self-analytic map on  $\mathbb{D}$ . Consider the conjugation  $C_{\varepsilon, \theta}$  where we choose  $\theta = \pi/2$ . Then  $\lambda = e^{-i\theta} = -i$ . On taking  $a = i, b = 0$  and  $\lambda = -i$  in Theorem 2.6, we get that  $\overline{\hat{\psi}(n)} \lambda^n = \overline{\hat{\psi}(-n)} \bar{a}^n$  for every  $n \in \mathbb{Z}$  and hence,  $C_{\varepsilon, \theta} T_\psi C_\phi = (T_\psi C_\phi)^* C_{\varepsilon, \theta}$ . Therefore, the operator  $T_\psi C_\phi$  is complex symmetric with respect to the conjugation  $C_{\varepsilon, \pi/2}$ .

In the light of the above example, an interesting observation has been made in the following Corollary:

**Corollary 2.8.** Let  $\psi(z) = \sum_{n=-\infty}^{\infty} \hat{\psi}(n) z^n \in L^\infty$  and  $\phi(z) = az$  be a self-analytic map on  $\mathbb{D}$  where  $a = e^{i\theta}$  for  $\theta \in \mathbb{R}$ . Then  $T_\psi C_\phi$  is complex symmetric with respect to the conjugation  $C_{\varepsilon, \theta}$  if and only if  $\hat{\psi}(n) = \hat{\psi}(-n)$  for all  $n \in \mathbb{Z}$ .

*Proof.* It follows from Theorem 2.6 that  $T_\psi C_\phi$  is complex symmetric with respect to the conjugation  $C_{\varepsilon, \theta}$  if and only if  $\overline{\hat{\psi}(n)} \lambda^n = \overline{\hat{\psi}(-n)} \bar{a}^n$  if and only if  $\hat{\psi}(n) = \hat{\psi}(-n)$  for all  $n \in \mathbb{Z}$  where  $a = e^{i\theta}$  and  $\lambda = e^{-i\theta}$ .  $\square$

An operator  $T : \mathcal{H} \rightarrow \mathcal{H}$  where  $\mathcal{H}$  denotes a Hilbert space is said to be *hyponormal* if  $T^*T \geq TT^*$  or equivalently,  $\|Tx\| \geq \|T^*x\|$  for every  $x \in \mathcal{H}$ . Our next goal is to find out the conditions under which a Toeplitz composition operator  $T_\psi C_\phi$  becomes a normal operator. The proof involves the technique followed in [Proposition 2.2, [2]].

**Theorem 2.9.** Let  $\psi \in L^\infty$  and let  $\phi$  be any self-analytic mapping from  $\mathbb{D}$  into itself. If the operator  $T_\psi C_\phi : \mathcal{H}^2 \rightarrow \mathcal{H}^2$  is hyponormal and complex symmetric with conjugation  $C_{\varepsilon, \theta}$ , then  $T_\psi C_\phi$  is a normal operator on  $\mathcal{H}^2$ .

*Proof.* Since  $T_\psi C_\phi$  is complex symmetric with respect to the conjugation  $C_{\varepsilon, \theta}$ , this gives that  $(T_\psi C_\phi)^* = C_{\varepsilon, \theta} T_\psi C_\phi C_{\varepsilon, \theta}$ . On using the isometry of  $C_{\varepsilon, \theta}$ , we obtain that

$$\|(T_\psi C_\phi)^* f\| = \|C_{\varepsilon, \theta} T_\psi C_\phi C_{\varepsilon, \theta} f\| = \|T_\psi C_\phi C_{\varepsilon, \theta} f\| \text{ for every } f \in \mathcal{H}^2.$$

By hypothesis,  $T_\psi C_\phi$  is a hyponormal operator on  $\mathcal{H}^2$  and thus,  $\|T_\psi C_\phi f\| \geq \|(T_\psi C_\phi)^* f\|$  for every  $f \in \mathcal{H}^2$ . Therefore,  $\|(T_\psi C_\phi)^* f\| = \|T_\psi C_\phi C_{\varepsilon, \theta} f\| \geq \|(T_\psi C_\phi)^* C_{\varepsilon, \theta} f\| = \|C_{\varepsilon, \theta} T_\psi C_\phi f\| = \|T_\psi C_\phi f\|$  for every  $f \in \mathcal{H}^2$ . Hence,  $\|(T_\psi C_\phi)^* f\| \geq \|T_\psi C_\phi f\|$  and this together with the hyponormality of  $T_\psi C_\phi$  implies that  $\|(T_\psi C_\phi)^* f\| = \|T_\psi C_\phi f\|$  for every  $f \in \mathcal{H}^2$  which proves that  $T_\psi C_\phi$  is a normal operator.  $\square$

In the following theorem, the conditions under which the Toeplitz composition operator  $T_\psi C_\phi$  commutes with the conjugation  $C_{\xi,\theta}$  has been investigated which further provides us with a criteria which together with the complex symmetry of  $T_\psi C_\phi$  makes the operator  $T_\psi C_\phi$  a normal operator.

**Theorem 2.10.** Let  $\psi(z) = \sum_{n=-\infty}^{\infty} \hat{\psi}(n)z^n \in L^\infty$  and  $\phi(z) = az + b$  ( $a \neq 0$ ) be a linear fractional transformation mapping  $\mathbb{D}$  into itself. Then the Toeplitz composition operator  $T_\psi C_\phi$  commutes with the conjugation  $C_{\xi,\theta}$  on  $\mathcal{H}^2$  if and only if for each  $m, k \in \mathbb{N} \cup \{0\}$  ( $0 \leq m \leq k$ ) and  $n \in \mathbb{Z}$ , we have:

- (i)  $\hat{\psi}(n)a^m b^{k-m} \lambda^k = \overline{\hat{\psi}(n)\bar{a}^m \bar{b}^{k-m}} \lambda^{m+n}$  if  $b \neq 0$  and,
- (ii)  $\hat{\psi}(n)a^k = \overline{\hat{\psi}(n)\bar{a}^k} \lambda^n$  if  $b = 0$ .

*Proof.* If the operator  $T_\psi C_\phi$  commutes with  $C_{\xi,\theta}$ , then for each  $k \in \mathbb{N} \cup \{0\}$ , we have  $T_\psi C_\phi C_{\xi,\theta} z^k = C_{\xi,\theta} T_\psi C_\phi z^k$ . We consider the following two cases:

**Case (i) :** Let us suppose that  $b \neq 0$ . Since for each  $k \in \mathbb{N} \cup \{0\}$ ,

$$\begin{aligned} T_\psi C_\phi C_{\xi,\theta} z^k &= T_\psi C_\phi (e^{i\xi} e^{-ik\theta} z^k) \\ &= P(\psi(z)) \cdot \mu \lambda^k (az + b)^k \\ &= \mu \lambda^k P\left(\sum_{m=0}^k \left(\sum_{n=-\infty}^{\infty} \binom{k}{m} \hat{\psi}(n) a^m b^{k-m} z^{m+n}\right)\right) \\ &= \mu \lambda^k \left(\sum_{m=0}^k P\left(\sum_{n=-\infty}^{\infty} \binom{k}{m} \hat{\psi}(n) a^m b^{k-m} z^{m+n}\right)\right) \\ &= \mu \lambda^k \sum_{m=0}^k \left(\sum_{n=-m}^{\infty} \binom{k}{m} \hat{\psi}(n) a^m b^{k-m} z^{m+n}\right) \end{aligned}$$

and

$$\begin{aligned} C_{\xi,\theta} T_\psi C_\phi z^k &= C_{\xi,\theta} T_\psi ((az + b)^k) \\ &= C_{\xi,\theta} P\left(\sum_{m=0}^k \left(\sum_{n=-\infty}^{\infty} \binom{k}{m} \hat{\psi}(n) a^m b^{k-m} z^{m+n}\right)\right) \\ &= C_{\xi,\theta} \left(\sum_{m=0}^k P\left(\sum_{n=-\infty}^{\infty} \binom{k}{m} \hat{\psi}(n) a^m b^{k-m} z^{m+n}\right)\right) \\ &= C_{\xi,\theta} \left(\sum_{m=0}^k \left(\sum_{n=-m}^{\infty} \binom{k}{m} \hat{\psi}(n) a^m b^{k-m} z^{m+n}\right)\right) \\ &= \mu \sum_{m=0}^k \left(\sum_{n=-m}^{\infty} \binom{k}{m} \overline{\hat{\psi}(n)\bar{a}^m \bar{b}^{k-m}} \lambda^{m+n} z^{m+n}\right); \end{aligned}$$

we obtain that  $\hat{\psi}(n)a^m b^{k-m} \lambda^k = \overline{\hat{\psi}(n)\bar{a}^m \bar{b}^{k-m}} \lambda^{m+n}$  for each  $n \in \mathbb{Z}$  and  $m \in \mathbb{N} \cup \{0\}$  ( $0 \leq m \leq k$ ).

Conversely, if for each  $n \in \mathbb{Z}$  and  $m, k \in \mathbb{N} \cup \{0\}$ , we have  $\hat{\psi}(n)a^m b^{k-m} \lambda^k = \overline{\hat{\psi}(n)\bar{a}^m \bar{b}^{k-m}} \lambda^{m+n}$ , then  $(T_\psi C_\phi C_{\xi,\theta} - C_{\xi,\theta} T_\psi C_\phi) z^k = 0$  which proves that  $T_\psi C_\phi$  commutes with  $C_{\xi,\theta}$ .

**Case (ii) :** Let  $b = 0$ . Then  $T_\psi C_\phi C_{\xi,\theta} z^k = C_{\xi,\theta} T_\psi C_\phi z^k$  if and only if  $P(\psi(z)) \cdot \mu \lambda^k (az)^k = C_{\xi,\theta} P(\psi(z)) \cdot (az)^k$  if and only if  $P(\sum_{n=-\infty}^{\infty} \hat{\psi}(n) \mu \lambda^k a^k z^{n+k}) = e^{i\xi} \sum_{n=-k}^{\infty} \overline{\hat{\psi}(n)\bar{a}^k} e^{-i(n+k)\theta} z^{n+k}$  if and only if  $\sum_{n=-k}^{\infty} \hat{\psi}(n) \lambda^k a^k z^{n+k} = \sum_{n=-k}^{\infty} \overline{\hat{\psi}(n)\bar{a}^k} \lambda^{n+k} z^{n+k}$  if and only if  $\hat{\psi}(n)a^k = \overline{\hat{\psi}(n)\bar{a}^k} \lambda^n$  for every  $n \in \mathbb{Z}$  and  $k \in \mathbb{N} \cup \{0\}$ .  $\square$

**Corollary 2.11.** Let  $\psi(z) = \sum_{n=-\infty}^{\infty} \hat{\psi}(n)z^n \in L^\infty$  and  $\phi(z) = az + b$  ( $a \neq 0$ ) be a linear fractional transformation mapping  $\mathbb{D}$  into itself. Then the Toeplitz composition operator  $T_\psi C_\phi$  commutes with the conjugation  $C_{0,0}$  on  $\mathcal{H}^2$  if and only if for each  $n \in \mathbb{Z}$  and  $m, k \in \mathbb{N} \cup \{0\}$  ( $0 \leq m \leq k$ ), we have:

- (i)  $\hat{\psi}(n)a^m b^{k-m} \in \mathbb{R}$  if  $b \neq 0$ , and
- (ii)  $\hat{\psi}(n)a^k \in \mathbb{R}$  if  $b = 0$ .

The following theorem is in general valid for any linear operator  $T$  on a Hilbert space  $\mathcal{H}$  which is complex symmetric with respect to any conjugation  $C$  defined on  $\mathcal{H}$  such that  $T$  commutes with  $C$ .

**Theorem 2.12.** *Let  $\psi \in L^\infty$  and let  $\phi$  be any self-analytic mapping from  $\mathbb{D}$  into itself. Suppose that  $T_\psi C_\phi$  is a complex symmetric operator with conjugation  $C_{\xi,\theta}$  on  $\mathcal{H}^2$  and further, suppose that  $T_\psi C_\phi$  commutes with  $C_{\xi,\theta}$ . Then  $T_\psi C_\phi$  is a normal operator on  $\mathcal{H}^2$ .*

*Proof.* By hypothesis,  $T_\psi C_\phi$  is a complex symmetric operator with conjugation  $C_{\xi,\theta}$  such that it commutes with  $C_{\xi,\theta}$  which implies that  $T_\psi C_\phi$  is a self-adjoint operator. That is,

$$(T_\psi C_\phi)^* = C_{\xi,\theta} T_\psi C_\phi C_{\xi,\theta} = C_{\xi,\theta} C_{\xi,\theta} T_\psi C_\phi = T_\psi C_\phi. \tag{10}$$

Hence,  $T_\psi C_\phi$  is a normal operator on  $\mathcal{H}^2$ .  $\square$

**Corollary 2.13.** *Let  $\psi(z) = \sum_{n=-\infty}^\infty \hat{\psi}(n)z^n \in L^\infty$  and  $\phi(z) = az + b$  ( $a \neq 0$ ) be a linear fractional transformation mapping  $\mathbb{D}$  into itself. Suppose that  $T_\psi C_\phi : \mathcal{H}^2 \rightarrow \mathcal{H}^2$  is a complex symmetric operator with conjugation  $C_{0,0}$  and  $\hat{\psi}(n)a^m b^{k-m} \in \mathbb{R}$  for each  $n \in \mathbb{Z}$  and  $m, k \in \mathbb{N} \cup \{0\}$  ( $0 \leq m \leq k$ ). Then  $T_\psi C_\phi$  is a normal operator on  $\mathcal{H}^2$ .*

*Proof.* From Corollary 2.11, we obtain that  $T_\psi C_\phi$  commutes with the conjugation  $C_{0,0}$  as  $\hat{\psi}(n)a^m b^{k-m} \in \mathbb{R}$  for each  $n \in \mathbb{Z}$  and  $m, k \in \mathbb{N} \cup \{0\}$  ( $0 \leq m \leq k$ ). Thus, we get that  $T_\psi C_\phi$  is a normal operator on  $\mathcal{H}^2$  by Theorem 2.12.  $\square$

### 3. Normality Of Toeplitz Composition Operators

In this section we discuss the normality of the Toeplitz composition operators on  $\mathcal{H}^2$ . We explore the conditions under which the operator  $T_\psi C_\phi$  becomes normal and further we discover the necessary and sufficient conditions for the operator  $T_\psi C_\phi$  to be Hermitian.

**Theorem 3.1.** *Let  $\psi(z) = \sum_{n=-\infty}^\infty \hat{\psi}(n)z^n \in L^\infty$  and  $\phi(z) = az + b$  ( $a \neq 0$ ) be a linear fractional transformation mapping  $\mathbb{D}$  into itself. Let the operator  $T_\psi C_\phi$  on  $\mathcal{H}^2$  be hyponormal. Then we have the following:*

- (i) If  $b \neq 0$ , then  $\sum_{n=0}^\infty \{|\hat{\psi}(n)|^2 - \sum_{m=0}^\infty \binom{m+n}{m} |\hat{\psi}(-n)| |a|^n |b|^m\} \geq 0$ .
- (ii) If  $b = 0$ , then  $\sum_{n=0}^\infty \{|\hat{\psi}(n)|^2 - |\hat{\psi}(-n)|^2 |a|^{2n}\} \geq 0$ .

*Proof.* By the hyponormality of  $T_\psi C_\phi$  on  $\mathcal{H}^2$ , we have  $\|T_\psi C_\phi f\|^2 \geq \|(T_\psi C_\phi)^* f\|^2$  for every  $f \in \mathcal{H}^2$ . In particular, on taking  $f \equiv 1$ , we obtain that

$$\|T_\psi C_\phi(1)\|^2 \geq \|(T_\psi C_\phi)^*(1)\|^2. \tag{11}$$

Then  $\|T_\psi C_\phi(1)\|^2 = \|P(\sum_{n=-\infty}^\infty \hat{\psi}(n)z^n)\|^2 = \|\sum_{n=0}^\infty \hat{\psi}(n)z^n\|^2 = \sum_{n=0}^\infty |\hat{\psi}(n)|^2$ . It can be noted that the function  $\psi(z)$  can be expressed as

$$\psi(z) = \psi_+(z) + \psi_0(z) + \overline{\psi_-(z)}$$

where  $\psi_+(z) = \sum_{n=1}^\infty \hat{\psi}(n)z^n$ ,  $\psi_-(z) = \sum_{n=1}^\infty \overline{\hat{\psi}(-n)z^n}$  and  $\psi_0(z) = \hat{\psi}(0)$ . It follows that  $P(\overline{\psi(z)}) = P(\overline{\psi_+(z)} + \overline{\psi_0(z)} + \psi_-(z)) = \sum_{n=0}^\infty \overline{\hat{\psi}(-n)z^n}$ .

Let us first assume that  $b \neq 0$ . Since  $C_\phi^* = M_g C_\sigma$  where  $g(z) = (1 - \bar{b}z)^{-1}$  and  $\sigma(z) = \frac{\bar{a}z}{1 - \bar{b}z}$ , it is obtained that

$$\begin{aligned} \|(T_\psi C_\phi)^*(1)\|^2 &= \|C_\phi^* T_{\bar{\psi}}(1)\|^2 = \|M_g C_\sigma P(\overline{\psi(z)})\|^2 \\ &= \|M_g C_\sigma (\sum_{n=0}^\infty \overline{\hat{\psi}(-n)z^n})\|^2 \\ &= \|\sum_{n=0}^\infty \hat{\psi}(-n) \frac{\bar{a}^n z^n}{(1 - \bar{b}z)^{n+1}}\|^2 \\ &= \|\sum_{n=0}^\infty (\sum_{m=0}^\infty \binom{m+n}{m} \overline{\hat{\psi}(-n)} \bar{a}^n \bar{b}^m z^{m+n})\|^2 \\ &= \sum_{n=0}^\infty (\sum_{m=0}^\infty \binom{m+n}{m} |\hat{\psi}(-n)| |a|^n |b|^m)^2. \end{aligned}$$

Hence, it follows from (11) that  $\sum_{n=0}^\infty \{|\hat{\psi}(n)|^2 - \sum_{m=0}^\infty \binom{m+n}{m} |\hat{\psi}(-n)| |a|^n |b|^m\} \geq 0$ .

If  $b = 0$ , then  $C_\phi^* = C_\sigma$  where  $\sigma(z) = \bar{a}z$ . This implies that  $\|(T_\psi C_\phi)^*(1)\|^2 = \|C_\sigma T_{\bar{\psi}}(1)\|^2 = \sum_{n=0}^\infty |\hat{\psi}(-n)|^2 |a|^{2n}$ . Thus, from (11), we get that  $\sum_{n=0}^\infty \{|\hat{\psi}(n)|^2 - |\hat{\psi}(-n)|^2 |a|^{2n}\} \geq 0$ .  $\square$

**Corollary 3.2.** Let  $\psi(z) = \sum_{n=-\infty}^\infty \hat{\psi}(n)z^n \in L^\infty$  and  $\phi(z) = az + b$  ( $a \neq 0$ ) be a linear fractional transformation mapping  $\mathbb{D}$  into itself. Let the operator  $T_\psi C_\phi$  on  $\mathcal{H}^2$  be normal. Then we have the following:

- (i) If  $b \neq 0$ , then  $\sum_{n=0}^\infty \{|\hat{\psi}(n)|^2 - \sum_{m=0}^\infty \binom{m+n}{m} |\hat{\psi}(-n)| |a|^n |b|^m\} = 0$ .
- (ii) If  $b = 0$ , then  $\sum_{n=0}^\infty \{|\hat{\psi}(n)|^2 - |\hat{\psi}(-n)|^2 |a|^{2n}\} = 0$ .

The condition obtained above in Corollary 3.2 is necessary but not sufficient which can be observed through the following example:

**Example 3.3.** Let  $\psi(z) = z + \bar{z}$  and  $\phi(z) = iz$ . Then, for  $a = i, b = 0, \hat{\psi}(-1) = \hat{\psi}(1) = 1$  and  $\hat{\psi}(-n) = \hat{\psi}(n) = 0$  where  $n \in \mathbb{Z} - \{0\}$ , the condition  $\sum_{n=0}^\infty \{|\hat{\psi}(n)|^2 - |\hat{\psi}(-n)|^2 |a|^{2n}\} = 0$  is satisfied. But the Toeplitz composition operator  $T_\psi C_\phi$  is not normal as  $(T_\psi C_\phi)(T_\psi C_\phi)^*(z) = z^3 + 2z$  whereas  $(T_\psi C_\phi)^*(T_\psi C_\phi)(z) = -z^3 + 2z$ .

Next we investigate the necessary and sufficient conditions under which the operator  $T_\psi C_\phi$  becomes Hermitian.

**Theorem 3.4.** Let  $\psi(z) = \sum_{n=-\infty}^\infty \hat{\psi}(n)z^n \in L^\infty$  and  $\phi(z) = az + b$  ( $a \neq 0$ ) be a linear fractional transformation mapping  $\mathbb{D}$  into itself. Then the Toeplitz composition operator  $T_\psi C_\phi$  on  $\mathcal{H}^2$  is Hermitian if and only if for each  $k, p \in \mathbb{N} \cup \{0\}$  and  $n \in \mathbb{Z}$ , we have :

- (i)  $\sum_{n=-k+p}^p \binom{k}{p-n} \hat{\psi}(n) a^{p-n} b^{n+k-p} = \sum_{n=-k}^{-k+p} \binom{p}{p-n-k} \overline{\hat{\psi}(-n)} \bar{a}^{n+k} \bar{b}^{p-n-k}$  when  $b \neq 0$
- and, (ii)  $a^k \hat{\psi}(n) = \bar{a}^{n+k} \overline{\hat{\psi}(-n)}$  when  $b = 0$ .

*Proof.* Let us suppose that the operator  $T_\psi C_\phi$  is Hermitian on  $\mathcal{H}^2$ . This implies that  $T_\psi C_\phi z^k = (T_\psi C_\phi)^* z^k$  for



every  $k \in \mathbb{N} \cup \{0\}$ . Let us suppose  $b \neq 0$ . Since

$$\begin{aligned} T_\psi C_\phi z^k &= T_\psi(\phi(z))^k \\ &= P(\psi(z)) \cdot \sum_{m=0}^k \binom{k}{m} a^m b^{k-m} z^m \\ &= P\left(\sum_{m=0}^k \left(\sum_{n=-\infty}^{\infty} \binom{k}{m} \hat{\psi}(n) a^m b^{k-m} z^{m+n}\right)\right) \\ &= \sum_{m=0}^k P\left(\sum_{n=-\infty}^{\infty} \binom{k}{m} \hat{\psi}(n) a^m b^{k-m} z^{m+n}\right) \\ &= \sum_{m=0}^k \left(\sum_{n=-m}^{\infty} \binom{k}{m} \hat{\psi}(n) a^m b^{k-m} z^{m+n}\right) \end{aligned}$$

and

$$\begin{aligned} (T_\psi C_\phi)^* z^k &= C_\phi^* T_{\bar{\psi}} z^k \\ &= C_\phi^* P\left(\sum_{n=-\infty}^{\infty} \overline{\hat{\psi}(-n)} z^{n+k}\right) \\ &= M_g C_\sigma \left(\sum_{n=-k}^{\infty} \overline{\hat{\psi}(-n)} z^{n+k}\right) \\ &= \sum_{n=-k}^{\infty} \overline{\hat{\psi}(-n)} \bar{a}^{n+k} \left(\frac{1}{1-\bar{b}z}\right)^{n+k+1} z^{n+k} \\ &= \sum_{j=0}^{\infty} \left(\sum_{n=-k}^{\infty} \binom{n+k+j}{j} \overline{\hat{\psi}(-n)} \bar{a}^{n+k} \bar{b}^j z^{n+k+j}\right) \end{aligned}$$

where  $g(z) = (1 - \bar{b}z)^{-1}$  and  $\sigma(z) = \frac{\bar{a}z}{1-\bar{b}z}$ ; it follows that the coefficient of  $z^p$  for  $p \in \mathbb{N} \cup \{0\}$  in the expressions for  $T_\psi C_\phi z^k$  and  $(T_\psi C_\phi)^* z^k$  are equal for each  $k \in \mathbb{N} \cup \{0\}$ . Therefore, on comparing the coefficients of  $1, z, z^2, z^3$  and so on in the expressions of  $T_\psi C_\phi z^k$  and  $(T_\psi C_\phi)^* z^k$ , we obtain that for each  $k, p \in \mathbb{N} \cup \{0\}$ ,

$$\sum_{n=-k+p}^p \binom{k}{p-n} \hat{\psi}(n) a^{p-n} b^{n+k-p} = \sum_{n=-k}^{-k+p} \binom{p}{p-n-k} \overline{\hat{\psi}(-n)} \bar{a}^{n+k} \bar{b}^{p-n-k}. \tag{12}$$

Conversely, let us assume that for each  $k, p \in \mathbb{N} \cup \{0\}$ , equation (12) holds. Then evaluating the expression  $(T_\psi C_\phi - (T_\psi C_\phi)^*) z^k$  for each  $k \in \mathbb{N} \cup \{0\}$  gives the value as zero. Hence, we obtain that the operator  $T_\psi C_\phi$  is Hermitian on  $\mathcal{H}^2$ .

Now we take  $b = 0$ . Then it can be easily evaluated that  $(T_\psi C_\phi - (T_\psi C_\phi)^*) z^k = 0$  if and only if  $\sum_{n=-k}^{\infty} \hat{\psi}(n) a^k z^{n+k} - \sum_{n=-k}^{\infty} \overline{\hat{\psi}(-n)} \bar{a}^{n+k} z^{n+k} = 0$  if and only if  $a^k \hat{\psi}(n) = \bar{a}^{n+k} \overline{\hat{\psi}(-n)}$  for every  $n \in \mathbb{Z}$  and  $k \in \mathbb{N} \cup \{0\}$ .  $\square$

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# Complex symmetric weighted composition operators on weighted Hardy space

## Opérateurs de composition pondérés symétriques complexes sur un espace de Hardy à poids

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**ABSTRACT.** In this paper various conditions under which a weighted composition operator  $W_{\psi,\phi}$  on the weighted Hardy space  $H^2(\beta)$  becomes complex symmetric with respect to some special conjugation have been explored. We also investigate some important properties of the complex symmetric operator  $W_{\psi,\phi}$ , such as hermiticity and isometry.

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### 1. Introduction and Preliminaries

Let  $\mathbb{D} = \{z \in \mathbb{C} : |z| < 1\}$  be the open unit disk and  $\overline{\mathbb{D}}$  denote the closure of the open unit disk  $\mathbb{D}$ . Let  $H(\mathbb{D})$  denote the space of all analytic functions on  $\mathbb{D}$ . Then for any given self-analytic map  $\phi$  on  $\mathbb{D}$ , the *composition operator* on  $H(\mathbb{D})$  is defined by  $C_\phi f = f \circ \phi$  for  $f \in H(\mathbb{D})$  where  $\phi$  is known as the *symbol* of the composition operator  $C_\phi$ . The restriction of the composition operator  $C_\phi$  to various Banach spaces has been studied extensively in the last several decades and [1, 10] are good sources for studying the basic theory of composition operators on various function spaces.

A Hilbert space  $\mathcal{H}$  whose vectors are functions analytic on the unit disk  $\mathbb{D}$  is called a *weighted Hardy space* [1, Page 14] if the monomials  $1, z, z^2, \dots$  constitute an orthogonal set of nonzero vectors in the Hilbert space  $\mathcal{H}$  and the polynomials are also dense in  $\mathcal{H}$ . Let  $\|\cdot\|$  denote the norm on the Hilbert space  $\mathcal{H}$ . Consider a sequence  $\{\beta(n)\}$  with  $\beta(0) = \|1\| = 1$  and  $\beta(n) = \|z^n\|$  for every  $n \in \mathbb{N}$ . Such a sequence is called a *weight sequence*. Each of the weighted Hardy space is characterized by such a weight sequence  $\{\beta(n)\}$ . For a given weight sequence  $\{\beta(n)\}$ , the associated weighted Hardy space is denoted by  $H^2(\beta)$  and is defined as:

$$H^2(\beta) = \left\{ f(z) = \sum_{n=0}^{\infty} a_n z^n : \sum_{n=0}^{\infty} |a_n|^2 \beta(n)^2 < \infty \right\}$$

and the inner product on  $H^2(\beta)$  is given by:

$$\left\langle \sum_{n=0}^{\infty} a_n z^n, \sum_{n=0}^{\infty} b_n z^n \right\rangle = \sum_{n=0}^{\infty} a_n \overline{b_n} \beta(n)^2.$$

Every function in the weighted Hardy space  $H^2(\beta)$  is analytic in  $\mathbb{D}$ . The Hardy space, the Bergman space, the Dirichlet space and the  $S^2(\mathbb{D})$  space are the weighted Hardy spaces which are identified with the weight sequences  $\beta(n) = 1$ ,  $\beta(n) = (n+1)^{-1/2}$ ,  $\beta(n) = n^{1/2}$  and  $\beta(n) = n$ , respectively. The

function  $k(z) = \sum_{n=0}^{\infty} \frac{z^n}{\beta(n)^2}$  is called the *generating function* for the weighted Hardy space  $H^2(\beta)$ . This generating function for  $H^2(\beta)$  is analytic on  $\mathbb{D}$ . For each point  $w$  in the open unit disk  $\mathbb{D}$ , evaluation of functions in  $H^2(\beta)$  at  $w$  is a bounded linear functional and for all  $f$  in  $H^2(\beta)$ ,  $f(w) = \langle f, K_w \rangle$  where  $K_w(z) = k(\overline{w}z) = \sum_{n=0}^{\infty} \frac{(\overline{w}z)^n}{\beta(n)^2}$  [1, Theorem 2.10]. The function  $K_w$  is called the *reproducing kernel* of the Hilbert space  $H^2(\beta)$ .

On a complex Hilbert space  $\mathcal{H}$ , a *conjugation*  $\mathcal{C} : \mathcal{H} \rightarrow \mathcal{H}$  is a function which satisfies the following:

1.  $\mathcal{C}$  is an antilinear mapping:  $\mathcal{C}(\alpha x + \beta y) = \overline{\alpha}\mathcal{C}(x) + \overline{\beta}\mathcal{C}(y)$  for every  $x, y$  in  $\mathcal{H}$  and for all  $\alpha, \beta$  in  $\mathbb{C}$ .
2.  $\mathcal{C}$  is an involution:  $\mathcal{C}^2 = I$  where  $I$  is an identity operator on  $\mathcal{H}$ .
3.  $\mathcal{C}$  is an isometry:  $\|\mathcal{C}x\| = \|x\|$  for every  $x$  in  $\mathcal{H}$ .

The mapping  $\mathcal{J}$ , which is defined as  $(\mathcal{J}f)(z) = \overline{f(\overline{z})}$  where  $f \in H(\mathbb{D})$ , is a conjugation and is known as the *standard conjugation*. In this paper, we consider the following generalization of the conjugation function

$$\mathcal{J}_\mu : H^2(\beta) \rightarrow H^2(\beta)$$

which is defined as

$$(\mathcal{J}_\mu f)(z) = \overline{f(\mu\overline{z})}, \quad \forall z \in \mathbb{D}$$

where  $\mu \in \mathbb{C}$  is such that  $|\mu| = 1$  and  $f \in H^2(\beta)$ . Suppose that  $\mathcal{C}$  is a conjugation on a Hilbert space  $\mathcal{H}$ , then a bounded linear operator  $T$  is said to be  *$\mathcal{C}$ -symmetric* on  $\mathcal{H}$  if  $T = \mathcal{C}T^*\mathcal{C}$ . An operator  $T$  is said to be *complex symmetric* if there exists a conjugation  $\mathcal{C}$  with respect to which  $T$  is  $\mathcal{C}$ -symmetric. Moreover, it is shown in [3] that for a complex symmetric operator  $T$  on a Hilbert space  $\mathcal{H}$ , we can find an orthonormal basis  $\{e_n\}_{n=0}^{\infty}$  of  $\mathcal{H}$  with respect to which the matrix representation of  $T$  is complex symmetric (*i.e.*  $T$  has a self-transpose matrix representation with respect to  $\{e_n\}_{n=0}^{\infty}$ ). Garcia, Putinar and Wogen [4, 5, 6] initiated the general study of the complex symmetric operators during the first decade of twenty first century. Examples of complex symmetric operators are quite diverse which includes all the normal operators, compressed Toeplitz operators, Hankel operators, Volterra integral operators etc. Many authors have studied the complex symmetric structure of the weighted composition operators on several reproducing kernel Hilbert spaces such as on the Hardy space  $H^2(\mathbb{D})$  [7, 9], on the space  $H_\gamma(\mathbb{D})$  [8] in which the reproducing kernels for the evaluation of the functions are of the form  $K_w^\gamma(z) = \frac{1}{(1-\overline{w}z)^\gamma}$ ,  $\gamma \in \mathbb{N}$ . Garcia and Hammond [2] identified several new classes of the complex symmetric weighted composition operators on the weighted Hardy space  $H^2(\beta)$ . In this article, we aim to find the characterizations of the symbols  $\phi$  and  $\psi$  so that the weighted composition operator  $W_{\psi,\phi}$  is complex symmetric on  $H^2(\beta)$  with respect to the conjugation  $\mathcal{J}_\mu$ . In the last section, we also find the conditions for hermiticity and isometry for the  $\mathcal{J}_\mu$ -symmetric operator  $W_{\psi,\phi}$ .

## 2. Complex symmetry on weighted Hardy space

Let  $\psi : \mathbb{D} \rightarrow \mathbb{C}$  and  $\phi : \mathbb{D} \rightarrow \mathbb{D}$  be two analytic maps. Then the *weighted composition operator*  $W_{\psi,\phi}$  on  $H^2(\beta)$  is defined as  $(W_{\psi,\phi}f)(z) = \psi(z) \cdot (f \circ \phi)(z)$  for  $f \in H^2(\beta)$  and  $z \in \mathbb{D}$ . In the following theorem, we find the structure of the symbols  $\phi$  and  $\psi$  so that the weighted composition operator  $W_{\psi,\phi}$  is complex symmetric with respect to the conjugation  $\mathcal{J}_\mu$  on the weighted Hardy space  $H^2(\beta)$ .

**Theorem 2.1.** Let  $W_{\psi,\phi}$  be a bounded complex symmetric weighted composition operator with respect to the conjugation  $\mathcal{J}_\mu$  on  $H^2(\beta)$ . Then

$$\phi(z) = a_0 + \beta(1)^2 a_1 z \frac{q(z)}{p(z)} \quad (2.1)$$

and

$$\psi(z) = a_2 p(z) \quad (2.2)$$

where  $a_0 = \phi(0)$ ,  $a_1 = \phi'(0)$ ,  $a_2 = \psi(0)$ ,  $p(z) = \sum_{n=0}^{\infty} \frac{(\bar{\mu}a_0 z)^n}{\beta(n)^2}$  and  $q(z) = \sum_{n=1}^{\infty} \frac{n(\bar{\mu}a_0 z)^{n-1}}{\beta(n)^2}$ .

*Proof.* Let  $W_{\psi,\phi}$  be complex symmetric with conjugation  $\mathcal{J}_\mu$ . Let  $w$  and  $z$  be the points in the open unit disk  $\mathbb{D}$ . Then  $(W_{\psi,\phi} \mathcal{J}_\mu)K_w(z) = (\mathcal{J}_\mu W_{\psi,\phi}^*)K_w(z)$  if and only if  $\psi(z)K_{\mu\bar{w}}(\phi(z)) = \psi(w)K_{\mu\phi(w)}(z)$  if and only if

$$\psi(z) \sum_{n=0}^{\infty} \frac{(\bar{\mu}w\phi(z))^n}{\beta(n)^2} = \psi(w) \sum_{n=0}^{\infty} \frac{(\bar{\mu}\phi(w)z)^n}{\beta(n)^2}. \quad (2.3)$$

On putting  $w = 0$  in (2.3), we get

$$\psi(z) \cdot \frac{1}{\beta(0)^2} = \psi(0) \cdot \sum_{n=0}^{\infty} \frac{(\bar{\mu}\phi(0)z)^n}{\beta(n)^2}.$$

Let  $a_0 = \phi(0)$ ,  $a_2 = \psi(0)$  and  $p(z) = \sum_{n=0}^{\infty} \frac{(\bar{\mu}a_0 z)^n}{\beta(n)^2}$ . Then  $\psi(z) = a_2 p(z)$ .

Substituting  $\psi(z)$  in (2.3), we obtain

$$a_2 p(z) \left( \sum_{n=0}^{\infty} \frac{(\bar{\mu}w\phi(z))^n}{\beta(n)^2} \right) = a_2 p(w) \left( \sum_{n=0}^{\infty} \frac{(\bar{\mu}\phi(w)z)^n}{\beta(n)^2} \right).$$

Differentiating the last expression with respect to  $w$ , we get

$$p(z) \left( \sum_{n=1}^{\infty} \frac{n(\bar{\mu}w\phi(z))^{n-1} \bar{\mu}\phi(z)}{\beta(n)^2} \right) = p(w) \left( \sum_{n=1}^{\infty} \frac{n(\bar{\mu}\phi(w)z)^{n-1} \bar{\mu}z\phi'(w)}{\beta(n)^2} \right) + \left( \sum_{n=1}^{\infty} \frac{n(\bar{\mu}a_0 w)^{n-1} \bar{\mu}a_0}{\beta(n)^2} \right) \left( \sum_{n=0}^{\infty} \frac{(\bar{\mu}\phi(w)z)^n}{\beta(n)^2} \right). \quad (2.4)$$

Putting  $w = 0$  in (2.4), we get

$$p(z) \frac{\bar{\mu}\phi(z)}{\beta(1)^2} = \left( \sum_{n=1}^{\infty} \frac{n(\bar{\mu}a_0 z)^{n-1} \bar{\mu}z\phi'(0)}{\beta(n)^2} \right) + \frac{\bar{\mu}a_0}{\beta(1)^2} p(z).$$

Let  $a_1 = \phi'(0)$  and  $q(z) = \sum_{n=1}^{\infty} \frac{n(\bar{\mu}a_0 z)^{n-1}}{\beta(n)^2}$ . Then,

$$\frac{p(z)\bar{\mu}\phi(z)}{\beta(1)^2} = \frac{\bar{\mu}a_0}{\beta(1)^2} p(z) + \bar{\mu}a_1 z q(z).$$

Hence,  $\phi(z) = a_0 + \beta(1)^2 a_1 z \frac{q(z)}{p(z)}$  and  $\psi(z) = a_2 p(z)$  for every  $z \in \mathbb{D}$ . □

**Corollary 2.2.** For a bounded weighted composition operator  $W_{\psi,\phi}$  on  $H^2(\beta)$ , let the analytic functions  $\phi : \mathbb{D} \rightarrow \mathbb{D}$  and  $\psi : \mathbb{D} \rightarrow \mathbb{C}$  be of the form

$$\phi(z) = a_0 + \beta(1)^2 a_1 z \frac{q(z)}{p(z)}$$

and  $\psi(z) = a_2 p(z)$  where  $a_0 = \phi(0)$ ,  $a_1 = \phi'(0)$ ,  $a_2 = \psi(0)$ ,  $p(z) = \sum_{n=0}^{\infty} \frac{(\bar{\mu} a_0 z)^n}{\beta(n)^2}$  and  $q(z) = \sum_{n=1}^{\infty} \frac{n(\bar{\mu} a_0 z)^{n-1}}{\beta(n)^2}$  for every  $z \in \mathbb{D}$ . If either of  $a_0$  or  $a_1$  is zero, then the operator  $W_{\psi,\phi}$  is complex symmetric with respect to the conjugation  $\mathcal{J}_\mu$  on  $H^2(\beta)$ .

*Proof.* It can be easily observed that if both  $a_0$  and  $a_1$  are zero, then  $W_{\psi,\phi}$  is complex symmetric with respect to the conjugation  $\mathcal{J}_\mu$ . Next, we consider the following two cases:

**Case (i) :** If  $a_0$  is zero and  $a_1$  is non-zero, then  $p(z) = 1$  and  $q(z) = \frac{1}{\beta(1)^2}$ . Thus, we get that  $\phi(z) = a_1 z$  and  $\psi(z) = a_2$ . On substituting these expressions for  $\phi(z)$  and  $\psi(z)$  in (2.3), we obtain that  $W_{\psi,\phi}$  is complex symmetric with respect to the conjugation  $\mathcal{J}_\mu$ .

**Case (ii) :** If  $a_0$  is non-zero and  $a_1$  is zero, then  $\phi(z) = a_0$  and  $\psi(z) = a_2 p(z)$ . Hence, we can see that the equation (2.3) is satisfied which proves that  $W_{\psi,\phi}$  is complex symmetric with respect to the conjugation  $\mathcal{J}_\mu$ .  $\square$

For the Hardy space  $H^2(\mathbb{D})$ , Jung *et al.* in [7] provided the structure of the symbols  $\phi$  and  $\psi$  for a  $\mathcal{J}$ -symmetric weighted composition operator  $W_{\psi,\phi}$  where  $\mathcal{J} = \mathcal{J}_\mu$  for  $\mu = 1$ . This result is stated below:

**Theorem 2.3** ([7]). Let  $\phi$  be an analytic selfmap of  $\mathbb{D}$  and let  $\psi \in H^\infty(\mathbb{D})$  be not identically zero. If the weighted composition operator  $W_{\psi,\phi}$  is complex symmetric with conjugation  $\mathcal{J}$  on  $H^2(\mathbb{D})$  where  $(\mathcal{J}f)(z) = \overline{f(\bar{z})}$ , then  $\phi(z) = a_0 + \frac{a_1 z}{1 - a_0 z}$  and  $\psi(z) = \frac{a_2}{1 - a_0 z}$  where  $a_0 = \phi(0)$ ,  $a_1 = \phi'(0)$  and  $a_2 = \psi(0)$ .

We illustrate with the help of following example that how the above theorem for the Hardy space can be obtained from Theorem 2.1:

**Example:** The Hardy space  $H^2(\mathbb{D})$  is identified by the weight sequence  $\langle \beta(n) \rangle = \langle 1 \rangle$ . Thus, on substituting  $\beta(n) = 1 = \mu$  in (2.1) and (2.2), we obtain

$$\begin{aligned} \phi(z) &= a_0 + a_1 z \frac{\sum_{n=1}^{\infty} n(a_0 z)^{n-1}}{\sum_{n=0}^{\infty} (a_0 z)^n} \\ &= a_0 + a_1 z \left( \frac{1 + 2a_0 z + 3(a_0 z)^2 + 4(a_0 z)^3 + \dots}{\sum_{n=0}^{\infty} (a_0 z)^n} \right) \\ &= a_0 + a_1 z \left( \frac{1 + a_0 z + (a_0 z)^2 + (a_0 z)^3 + \dots}{\sum_{n=0}^{\infty} (a_0 z)^n} + \frac{a_0 z + (a_0 z)^2 + (a_0 z)^3 + \dots}{\sum_{n=0}^{\infty} (a_0 z)^n} \right. \\ &\quad \left. + \frac{(a_0 z)^2 + (a_0 z)^3 + \dots}{\sum_{n=0}^{\infty} (a_0 z)^n} + \dots \right) \\ &= a_0 + a_1 z \sum_{n=0}^{\infty} (a_0 z)^n \text{ (since, we have } |a_0 z| < 1) \\ &= a_0 + \frac{a_1 z}{1 - a_0 z} \end{aligned}$$

and  $\psi(z) = a_2 p(z) = a_2 \sum_{n=0}^{\infty} (a_0 z)^n = \frac{a_2}{1 - a_0 z}$  for every  $z \in \mathbb{D}$ .

Next, we find the conditions for a bounded composition operator  $C_\phi$  on  $H^2(\beta)$  to be complex symmetric with respect to the conjugation  $\mathcal{J}_\mu$ .

**Corollary 2.4.** *A bounded composition operator  $C_\phi$  on  $H^2(\beta)$  is complex symmetric with respect to the conjugation  $\mathcal{J}_\mu$  if and only if for all  $z \in \mathbb{D}$ ,  $\phi(z) = az$  where  $a \in \overline{\mathbb{D}}$ .*

*Proof.* Taking  $\psi \equiv 1$  in Theorem 2.1, we get  $\psi(0) = a_2 = 1$  and  $p(z) = 1$  for all  $z \in \mathbb{D}$ . Hence, if  $C_\phi$  is complex symmetric on  $H^2(\beta)$  with respect to the conjugation  $\mathcal{J}_\mu$  then  $\phi(z) = a_1z$  where  $a_1 = \phi'(0)$ .

Conversely, if  $\phi(z) = az$  is a self-analytic map on  $\mathbb{D}$  then it can be seen directly using simple calculations that

$$C_\phi \mathcal{J}_\mu K_w(z) = \sum_{n=0}^{\infty} \frac{(a\bar{\mu}wz)^n}{\beta(n)^2} = \mathcal{J}_\mu C_\phi^* K_w(z)$$

for all  $z, w \in \mathbb{D}$ . Hence,  $C_\phi$  is complex symmetric with conjugation  $\mathcal{J}_\mu$ . □

**Lemma 2.5** ([6]). *If  $T^2$  is normal, then  $T$  is a complex symmetric operator.*

In the next result, we deduce the conditions under which the converse of Lemma 2.5 holds for a weighted composition operator on the weighted Hardy space.

**Theorem 2.6.** *Let  $W_{\psi,\phi}$  be a bounded operator on  $H^2(\beta)$  such that  $\phi(0) = 0$ . If  $W_{\psi,\phi}$  is  $\mathcal{J}_\mu$ -symmetric, then  $W_{\psi,\phi}^2$  is a normal operator.*

*Proof.* Suppose that  $W_{\psi,\phi}$  is  $\mathcal{J}_\mu$ -symmetric where  $\phi(0) = 0$ . Then  $\psi(z) = a_2$  and  $\phi(z) = a_1z$  where  $a_1 = \phi'(0)$  and  $a_2 = \psi(0)$ . Hence, we obtain that  $W_{\psi,\phi}^2$  is a normal operator as  $W_{\psi,\phi}^2 (W_{\psi,\phi}^2)^* K_w(z) = |a_2|^4 K_{|a_1|^4 w}(z) = (W_{\psi,\phi}^2)^* W_{\psi,\phi}^2 K_w(z)$  for every  $w, z \in \mathbb{D}$ . □

We say that an analytic function  $\phi : \mathbb{D} \rightarrow \mathbb{D}$  is an automorphism on  $\mathbb{D}$  if it is bijective. It is well known that the automorphisms of the unit disk are the functions of the form

$$\phi(z) = k \frac{c - z}{1 - \bar{c}z}$$

where  $k \in \mathbb{C}$ ,  $|k| = 1$  and  $|c| < 1$ .

In the next result, we explore the condition on  $\phi$  so that it is an automorphism on  $\mathbb{D}$  and simultaneously satisfies (2.1).

**Proposition 2.7.** *Let  $W_{\psi,\phi}$  be bounded and complex symmetric with respect to conjugation  $\mathcal{J}_\mu$  on  $H^2(\beta)$ . If  $\phi$  is an automorphism on  $\mathbb{D}$ , then either one of the following holds:*

1. *there exists  $k \in \mathbb{C}$ ,  $|k| = 1$  such that*

$$\phi(z) = -kz$$

*where  $a_0 = 0$  and  $a_1 = -k$ .*

2. *there exist  $c \in \mathbb{D}$ ,  $c \neq 0$  and  $k \in \mathbb{C}$  with  $|k| = 1$  such that*

$$\phi(z) = k \frac{c - z}{1 - \bar{c}z}$$

*where  $a_0 = kc$ ,  $a_1 = \frac{\bar{\mu}ck^2(|c|^2-1)\beta(2)^2}{\beta(1)^2(2\beta(1)^2\bar{\mu}ck-\bar{c}\beta(2)^2)}$  and  $k = \frac{\bar{c}\beta(1)^2\beta(2)^2}{c\bar{\mu}(2\beta(1)^4-\beta(2)^2)}$ .*

*Proof.* Since  $W_{\psi,\phi}$  is  $\mathcal{J}_\mu$ -symmetric on  $H^2(\beta)$ , Theorem 2.1 gives that

$$\phi(z) = a_0 + \beta(1)^2 a_1 z \frac{q(z)}{p(z)} \quad (2.5)$$

where  $a_0 = \phi(0)$ ,  $a_1 = \phi'(0)$ ,  $a_2 = \psi(0)$ ,  $p(z) = \sum_{n=0}^{\infty} \frac{(\bar{\mu}a_0z)^n}{\beta(n)^2}$  and  $q(z) = \sum_{n=1}^{\infty} \frac{n(\bar{\mu}a_0z)^{n-1}}{\beta(n)^2}$  for every  $z \in \mathbb{D}$ . If  $\phi$  is an automorphism on  $\mathbb{D}$ , then there exist complex numbers  $c$  and  $k$  where  $|c| < 1$  and  $|k| = 1$  such that for all  $z \in \mathbb{D}$ , we have  $\phi$  of the form

$$\phi(z) = \frac{kc - kz}{1 - \bar{c}z}. \quad (2.6)$$

For an analytic function  $\phi$  given by (2.5) to be of the form given in (2.6), we equate (2.5) and (2.6) which gives

$$a_0 + \beta(1)^2 a_1 z \frac{q(z)}{p(z)} = \frac{kc - kz}{1 - \bar{c}z}$$

or, equivalently we have

$$a_0 p(z) - a_0 \bar{c} z p(z) + \beta(1)^2 a_1 z q(z) - \beta(1)^2 \bar{c} a_1 z^2 q(z) = k c p(z) - k z p(z).$$

Comparing the constants on both the sides, we get

$$a_0 = ck. \quad (2.7)$$

Again, comparing the coefficients of  $z$  and  $z^2$  respectively, we obtain

$$\frac{\bar{\mu}a_0^2}{\beta(1)^2} - a_0 \bar{c} + a_1 = \frac{\bar{\mu}a_0 ck}{\beta(1)^2} - k \quad (2.8)$$

and

$$\frac{\bar{\mu}^2 a_0^3}{\beta(2)^2} - \frac{\bar{\mu}a_0^2 \bar{c}}{\beta(1)^2} + \frac{2\bar{\mu}\beta(1)^2 a_0 a_1}{\beta(2)^2} - a_1 \bar{c} = \frac{\bar{\mu}^2 a_0^2 ck}{\beta(2)^2} - \frac{\bar{\mu}a_0 k}{\beta(1)^2}. \quad (2.9)$$

If  $c = 0$ , then (2.7) gives  $a_0 = 0$ . Putting  $a_0 = 0$  in (2.8), we obtain  $a_1 = -k$ . Substituting  $a_0 = 0$  in the expressions for  $q(z)$  and  $p(z)$ , we get  $q(z) = \frac{1}{\beta(1)^2}$  and  $p(z) = 1$  for all  $z \in \mathbb{D}$ . Thus, we have  $\phi(z) = -kz$  where  $|-k| = 1$ .

Let  $c \in \mathbb{D}$  and  $c \neq 0$ . Putting  $a_0 = ck$  in (2.9), we get

$$a_1 = \frac{\bar{\mu}ck^2(|c|^2 - 1)\beta(2)^2}{\beta(1)^2(2\beta(1)^2\bar{\mu}ck - \bar{c}\beta(2)^2)}.$$

Further substituting  $a_0$  and  $a_1$  in (2.8), we obtain

$$k(|c|^2 - 1) - \frac{\bar{\mu}ck^2(|c|^2 - 1)\beta(2)^2}{\beta(1)^2(2\beta(1)^2\bar{\mu}ck - \bar{c}\beta(2)^2)} = 0.$$

Since  $|c| < 1$ , we get that  $1 - |c|^2 \neq 0$ . Also,  $k \neq 0$  as  $|k| = 1$ . Therefore, we have

$$k = \frac{\bar{c}\beta(1)^2\beta(2)^2}{c\bar{\mu}(2\beta(1)^4 - \beta(2)^2)}. \quad (2.10)$$

Hence,  $\phi(z) = k \frac{c-z}{1-\bar{c}z}$  where  $k$  is given by (2.10). □



An operator  $T \in B(\mathcal{H})$  is said to be idempotent if  $T^2 = T$ . We obtain the structure of the symbols  $\phi$  and  $\psi$  for an idempotent weighted composition operator  $W_{\psi,\phi}$  on  $H^2(\beta)$ .

**Theorem 2.8.** *Let  $W_{\psi,\phi} : H^2(\beta) \rightarrow H^2(\beta)$  be a weighted composition operator where  $\psi : \mathbb{D} \rightarrow \mathbb{C}$  is an analytic map and  $\phi : \mathbb{D} \rightarrow \mathbb{D}$  is a non-constant self-analytic map. If  $W_{\psi,\phi}$  is an idempotent operator, then  $\psi(z) = 1$  for all  $z \in \mathbb{D}$  (i.e.  $\psi \equiv 1$ ).*

*Proof.* Suppose that  $W_{\psi,\phi}$  is an idempotent operator. Then

$$W_{\psi,\phi}^2 K_w(z) = W_{\psi,\phi} K_w(z)$$

if and only if

$$\psi(\phi(z))K_w(\phi^2(z)) = K_w(\phi(z)) \tag{2.11}$$

for every  $z, w \in \mathbb{D}$ . On putting  $w = 0$  in (2.11), we get that  $(\psi \circ \phi)(z) = 1$  for every  $z \in \mathbb{D}$ . Since  $\phi$  is a non-constant self-analytic map on  $\mathbb{D}$ , the image of the unit disk  $\mathbb{D}$  under  $\phi$  (i.e.  $\phi(\mathbb{D})$ ) is an open and connected set in  $\mathbb{D}$ . As  $\psi(z) = 1$  for every  $z \in \phi(\mathbb{D})$ , on using the identity theorem we get that  $\psi(z) = 1$  for every  $z \in \mathbb{D}$ .  $\square$

**Remark 2.9.** *The converse of the above theorem is not true in general. For example, if we consider  $\phi(z) = -z$  then  $\phi$  is a non-constant self-analytic map on  $\mathbb{D}$  but (2.11) does not hold as  $K_w(\phi^2(z)) = K_w(z) \neq K_w(-z) = K_w(\phi(z))$  for every  $z, w \in \mathbb{D}$ . Hence,  $W_{\psi,\phi}$  is not idempotent.*

*But the converse holds if we consider  $\phi$  to be an idempotent self-analytic function on  $\mathbb{D}$ , then (2.11) holds which implies that  $W_{\psi,\phi}$  is idempotent.*

It can also be noted that if we consider  $\phi$  to be a constant map on  $\mathbb{D}$  i.e.  $\phi(z) = c$  for every  $z \in \mathbb{D}$  where  $c \in \mathbb{D}$  and take  $\psi : \mathbb{D} \rightarrow \mathbb{C}$  to be analytic, then it follows from (2.11) that the weighted composition operator  $W_{\psi,\phi}$  is an idempotent operator if and only if  $\psi(c) = 1$ .

**Proposition 2.10.** *Let  $\phi$  be an automorphism on  $\mathbb{D}$ . Then  $\phi^2(z) = \phi(z)$  for every  $z \in \mathbb{D}$  if and only if  $\phi(z) = z$  for every  $z \in \mathbb{D}$ .*

The following lemma provides condition under which a bounded linear operator on a separable complex Hilbert space  $\mathcal{H}$  becomes complex symmetric.

**Lemma 2.11** ([6]). *If  $T \in B(\mathcal{H})$  is algebraic of degree less than or equal to two, then  $T$  is a complex symmetric operator.*

As a consequence of the previous lemma, we have that if  $T$  is idempotent (i.e.  $T^2 = T$ ) or nilpotent of order 2 (i.e.  $T^2 = 0$ ), then the operator  $T$  is complex symmetric.

**Corollary 2.12.** *Let  $W_{\psi,\phi}$  be a bounded weighted composition operator on  $H^2(\beta)$ . If the symbols  $\phi$  and  $\psi$  satisfy either of the following:*

1.  $\phi$  is an idempotent self-analytic map on  $\mathbb{D}$  and  $\psi \equiv 1$ ,
2.  $\phi$  is a constant function, say  $c$  (where  $|c| < 1$ ) and  $\psi$  is any analytic map on  $\mathbb{D}$  with  $\psi(c) = 1$ ,

*then  $W_{\psi,\phi}$  is a complex symmetric operator on  $H^2(\beta)$ .*

*Proof.* It follows from both the cases that  $W_{\psi,\phi}$  is an idempotent operator and hence,  $W_{\psi,\phi}$  is complex symmetric.  $\square$

### 3. Properties of complex symmetric operator $W_{\psi,\phi}$

Recall that a bounded linear operator  $T$  on  $\mathcal{H}$  is said to be *Hermitian* if  $T = T^*$ . If a bounded linear operator  $T$  is Hermitian, then it is complex symmetric on  $\mathcal{H}$ . In the following theorem, we determine the necessary and sufficient conditions under which a bounded and  $\mathcal{J}_\mu$ -symmetric weighted composition operator becomes Hermitian on  $H^2(\beta)$ .

**Theorem 3.1.** *Let the weighted composition operator  $W_{\psi,\phi}$  be bounded and complex symmetric with respect to the conjugation  $\mathcal{J}_\mu$  where the symbols  $\phi$  and  $\psi$  are as in (2.1) and (2.2). Then  $W_{\psi,\phi}$  is Hermitian if and only if  $a_1, a_2 \in \mathbb{R}$  and  $\bar{\mu}a_0 = \bar{a}_0$  where  $a_0 = \phi(0)$ ,  $a_1 = \phi'(0)$  and  $a_2 = \psi(0)$ .*

*Proof.* Since  $W_{\psi,\phi}$  is complex symmetric with respect to the conjugation  $\mathcal{J}_\mu$ , we have  $\mathcal{J}_\mu W_{\psi,\phi} = W_{\psi,\phi}^* \mathcal{J}_\mu$ . We can observe that  $W_{\psi,\phi} = W_{\psi,\phi}^*$  if and only if  $W_{\psi,\phi} \mathcal{J}_\mu = W_{\psi,\phi}^* \mathcal{J}_\mu = \mathcal{J}_\mu W_{\psi,\phi}$ . Let us suppose that  $W_{\psi,\phi}$  is Hermitian. Then, for  $z, w \in \mathbb{D}$ , we have

$$W_{\psi,\phi} \mathcal{J}_\mu K_w(z) = \mathcal{J}_\mu W_{\psi,\phi} K_w(z)$$

which yields

$$\psi(z) K_{\mu\bar{w}}(\phi(z)) = \overline{\psi(\mu\bar{z})} K_{\bar{w}}(\overline{\phi(\mu\bar{z})}). \quad (3.1)$$

On putting  $w = 0$  in (3.1), we obtain that for every  $z \in \mathbb{D}$

$$\psi(z) = \overline{\psi(\mu\bar{z})} \quad (3.2)$$

which implies that

$$a_2 \sum_{n=0}^{\infty} \frac{(\bar{\mu}a_0 z)^n}{\beta(n)^2} = \bar{a}_2 \sum_{n=0}^{\infty} \frac{(\bar{a}_0 z)^n}{\beta(n)^2}. \quad (3.3)$$

On putting  $z = 0$  in (3.3), we get that  $a_2 = \bar{a}_2$ . It can be noted that on differentiating (3.3) on the both sides with respect to  $z$  and then substituting  $z = 0$ , we have  $\frac{a_2 \bar{\mu} a_0}{\beta(1)^2} = \frac{\bar{a}_2 \bar{a}_0}{\beta(1)^2}$  which further implies that  $\bar{\mu} a_0 = \bar{a}_0$ .

For  $z \in \mathbb{D}$ , write  $\frac{q(z)}{p(z)} = \sum_{m=0}^{\infty} c_m z^m$  where  $c_m \in \mathbb{C}$  for every  $m \in \mathbb{N} \cup \{0\}$ . Now, from (3.1) and (3.2) we observe that  $K_{\mu\bar{w}}(\phi(z)) = K_{\bar{w}}(\overline{\phi(\mu\bar{z})})$  for all  $z, w \in \mathbb{D}$ . This implies that for every  $z, w \in \mathbb{D}$ ,

$$\sum_{n=0}^{\infty} \frac{(\bar{\mu} w \phi(z))^n}{\beta(n)^2} = \sum_{n=0}^{\infty} \frac{(w \overline{\phi(\mu\bar{z})})^n}{\beta(n)^2}. \quad (3.4)$$

First, on differentiating (3.4) on the both sides with respect to  $z$  and putting  $z = 0$  and then differentiating again the resulting expressions on the both sides with respect to  $w$  and on putting  $w = 0$ , we get  $\bar{\mu} a_1 c_0 = \bar{\mu} \bar{a}_1 \bar{c}_0$ . Since  $c_0 = q(0)/p(0) = 1/\beta(1)^2$  is real, we conclude that  $a_1 = \bar{a}_1$ .

Conversely, let us suppose that  $a_1, a_2 \in \mathbb{R}$  and  $\bar{\mu} a_0 = \bar{a}_0$ . Then in order to show that  $W_{\psi,\phi}$  is Hermitian, it is sufficient to prove that (3.1) holds for every  $z, w \in \mathbb{D}$ . It can be noted that  $p(z) = \sum_{n=0}^{\infty} \frac{(\bar{\mu} a_0 z)^n}{\beta(n)^2} =$

$\sum_{n=0}^{\infty} \frac{(\overline{a_0 z})^n}{\beta(n)^2} = \overline{p(\mu \bar{z})}$  and  $q(z) = \sum_{n=1}^{\infty} \frac{n(\overline{\mu a_0 z})^{n-1}}{\beta(n)^2} = \sum_{n=1}^{\infty} \frac{n(\overline{a_0 z})^{n-1}}{\beta(n)^2} = \overline{q(\mu \bar{z})}$  for every  $z \in \mathbb{D}$ . Hence,  $\psi(z) = a_2 p(z) = \overline{a_2 p(\mu \bar{z})} = \overline{\psi(\mu \bar{z})}$  for all  $z \in \mathbb{D}$ . Also, we have that for all  $z, w \in \mathbb{D}$

$$\begin{aligned} K_{\mu \bar{w}}(\phi(z)) &= \sum_{n=0}^{\infty} \frac{(\overline{\mu w \phi(z)})^n}{\beta(n)^2} \\ &= \sum_{n=0}^{\infty} \frac{\left( a_0 \overline{\mu w} + \overline{\mu} \beta(1)^2 a_1 w z \frac{q(z)}{p(z)} \right)^n}{\beta(n)^2} \quad (\text{using eq.(2.1)}) \\ &= \sum_{n=0}^{\infty} \frac{\left( \overline{a_0 w} + \overline{\mu} \beta(1)^2 \overline{a_1} w z \frac{\overline{q(\mu \bar{z})}}{p(\mu \bar{z})} \right)^n}{\beta(n)^2} \\ &= \sum_{n=0}^{\infty} \frac{(w \phi(\mu \bar{z}))^n}{\beta(n)^2} \\ &= K_{\bar{w}}(\phi(\mu \bar{z})). \end{aligned}$$

Thus, (3.1) holds true for every  $z, w \in \mathbb{D}$  and we get that the weighted composition operator  $W_{\psi, \phi}$  is Hermitian on  $H^2(\beta)$ .  $\square$

The next theorem provides necessary and sufficient conditions under which a bounded and  $\mathcal{J}_\mu$ -symmetric operator  $W_{\psi, \phi}$  is a coisometry.

**Theorem 3.2.** *Let  $W_{\psi, \phi}$  be a bounded and  $\mathcal{J}_\mu$ -symmetric weighted composition operator on  $H^2(\beta)$  such that  $\phi(0) = 0$ . Then  $W_{\psi, \phi}$  is a coisometry if and only if  $\psi(0)$  and  $\phi'(0)$  are unimodular.*

*Proof.* For every  $w, z \in \mathbb{D}$ , we compute

$$\begin{aligned} W_{\psi, \phi} W_{\psi, \phi}^* K_w(z) &= W_{\psi, \phi}(\overline{\psi(w)}) K_{\phi(w)}(z) \\ &= \psi(z) \overline{\psi(w)} K_{\phi(w)}(\phi(z)) \\ &= \psi(z) \overline{\psi(w)} \sum_{n=0}^{\infty} \frac{(\overline{\phi(w)} \phi(z))^n}{\beta(n)^2}. \end{aligned}$$

Since  $W_{\psi, \phi}$  is  $\mathcal{J}_\mu$ -symmetric, Theorem 2.1 implies that  $\phi(z) = a_1 z$  and  $\psi(z) = a_2$  where  $a_1 = \phi'(0)$  and  $a_2 = \psi(0)$ .

Also,  $W_{\psi, \phi} W_{\psi, \phi}^* = I$ . Thus, for all  $w, z \in \mathbb{D}$ ,  $W_{\psi, \phi} W_{\psi, \phi}^* K_w(z) = K_w(z)$  implies that

$$|a_2|^2 \left( 1 + \sum_{n=1}^{\infty} \frac{(|a_1|^2 \overline{w} z)^n}{\beta(n)^2} \right) = 1 + \sum_{n=1}^{\infty} \frac{(\overline{w} z)^n}{\beta(n)^2}. \quad (3.5)$$

In particular, taking  $w = z = 0$  in (3.5), we obtain that  $|a_2| = 1$ . Next, on differentiating (3.5) with respect to  $z$ , we get

$$|a_1|^2 \overline{w} \left( \frac{1}{\beta(1)^2} + \sum_{n=2}^{\infty} \frac{n(|a_1|^2 \overline{w} z)^{n-1}}{\beta(n)^2} \right) = \overline{w} \left( \frac{1}{\beta(1)^2} + \sum_{n=2}^{\infty} \frac{n(\overline{w} z)^{n-1}}{\beta(n)^2} \right). \quad (3.6)$$

On putting  $z = 0$  in (3.6), we deduce that  $|a_1| = 1$ . Conversely, if  $|a_1| = 1 = |a_2|$ , then the equation (3.5) holds true for every  $w, z \in \mathbb{D}$ . Hence, the operator  $W_{\psi, \phi}$  is a coisometry.  $\square$

**Lemma 3.3.** *Suppose that the operator  $W_{\psi,\phi}$  is bounded and complex symmetric with respect to conjugation  $\mathcal{J}_\mu$  on  $H^2(\beta)$  such that  $\phi(0) = 0$ . Then  $W_{\psi,\phi}^* W_{\psi,\phi} K_w(z) = |\psi(0)|^2 K_{|\phi'(0)|^2 w}(z)$  for every  $w, z \in \mathbb{D}$ .*

*Proof.* On taking  $\phi(0) = 0$  in (2.1), we get  $\phi(z) = a_1 z$  and  $\psi(z) = a_2$ . For every  $w, z \in \mathbb{D}$ , the expression  $W_{\psi,\phi}^* W_{\psi,\phi} K_w(z)$  is evaluated as follows:

$$\begin{aligned} W_{\psi,\phi}^* W_{\psi,\phi} K_w(z) &= W_{\psi,\phi}^* (\psi(z) K_w(\phi(z))) \\ &= W_{\psi,\phi}^* \left( a_2 \sum_{n=0}^{\infty} \frac{(a_1 \bar{w} z)^n}{\beta(n)^2} \right) \\ &= a_2 W_{\psi,\phi}^* K_{\bar{a}_1 w}(z) \\ &= a_2 \overline{\psi(\bar{a}_1 w)} K_{\phi(\bar{a}_1 w)}(z) \\ &= |a_2|^2 \left( \sum_{n=0}^{\infty} \frac{(|a_1|^2 \bar{w} z)^n}{\beta(n)^2} \right). \end{aligned}$$

Hence, we obtain that  $W_{\psi,\phi}^* W_{\psi,\phi} K_w(z) = |\psi(0)|^2 K_{|\phi'(0)|^2 w}(z)$ . □

In the following result, we have obtained the equivalence of isometry and coisometry of a bounded and  $\mathcal{J}_\mu$ -symmetric weighted composition operator on  $H^2(\beta)$  under a certain condition.

**Theorem 3.4.** *Let  $W_{\psi,\phi}$  be a bounded and  $\mathcal{J}_\mu$ -symmetric weighted composition operator on  $H^2(\beta)$  such that  $\phi(0) = 0$ . Then  $W_{\psi,\phi}$  is an isometry if and only if  $W_{\psi,\phi}$  is a coisometry.*

*Proof.* It can be obtained from Lemma 3.3 and equation (3.5) that for every  $w, z \in \mathbb{D}$ ,  $W_{\psi,\phi}$  is an isometry if and only if  $W_{\psi,\phi}^* W_{\psi,\phi} K_w(z) = K_w(z)$  if and only if  $|a_2|^2 \left( \sum_{n=0}^{\infty} \frac{(|a_1|^2 \bar{w} z)^n}{\beta(n)^2} \right) = \sum_{n=0}^{\infty} \frac{(\bar{w} z)^n}{\beta(n)^2}$  if and only if  $W_{\psi,\phi} W_{\psi,\phi}^* K_w(z) = K_w(z)$ . □

**Corollary 3.5.** *Let  $W_{\psi,\phi}$  be a bounded and  $\mathcal{J}_\mu$ -symmetric weighted composition operator on  $H^2(\beta)$  such that  $\phi(0) = 0$ . Then  $W_{\psi,\phi}$  is unitary if and only if  $W_{\psi,\phi}$  is an isometry.*

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## Guru Ghasidas University Campus Greenery for off setting Carbon Dioxide and Improving Students' Academic Performance

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### Abstract

The greenery in academic institution reduces CO<sub>2</sub> and creates stress free environment to the students' learning. Guru Ghasidas Central University, Bilaspur, India, spread in 262 ha with ample green space, is an education hub for over 9000 students. The land use pattern, greenery, and tree CO<sub>2</sub> stock were assessed by laying out 54 sample plots (0.1 ha) across the university. Students' likelihood of greenery and its effects on students' behavior and academic performance were evaluated during 2019-20. The university has 2/3 green space, 10.64% area under water bodies, and a total built-up area restricted to 15.22%. A total of 61 tree species were identified with a population of 124662 trees on the campus with the highest abundance of *Peltophorum ferrugineum* (17.31%), *Eucalyptus globulus* (13.69%) among planted tree species. In naturally occurring tree species, *Acacia nilotica* occupied highest (88.35%) followed by *Butea monosperma* (10.04%). The trees of the university campus stocked 10942.6 tons of CO<sub>2</sub>. Analysis showed that students rated higher preference to campus greenery with 2.71 points in 0-4 points Likert scale, and improved student's academic performance.



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### Introduction


University is a student-centric place where teaching-learning practices take place for producing future generations.<sup>1-3</sup> Students spend most of the time in a university environment to attend class, sit in

examinations, and do other extra curricular activities. All these tasks demand direct attention and raise mental fatigue and stress in students.<sup>4-6</sup> The green campus allows a place as a pedagogy and enhances the environmental awareness among students

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# THREATS AND OPPORTUNITIES IN DIGITALIZING ACCOUNTING SYSTEMS

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## **Abstract**

The challenges and opportunities presented by digital transformation in accounting were the primary focus of this research. The implementation of digital technology into the accounting process ought to result in accurate financial accounts. Before it can generate compliant financial reports, the system needs to be able to satisfy certain criteria. Information of a superior caliber might be obtained from external sources. Research data may be obtained from a variety of sources. The following are examples of secondary sources: books, journals, the Internet, newspapers, and reports. According to this research, digitization has altered the way accountants think and carry out their work. The majority of accountants are familiar with both the benefits and drawbacks of digitalization. Usability, accessibility, and cost-effectiveness are at the forefront of developers' minds while creating software for digital accounting. Certain research has suggested that a comparison of digital and manual accounting systems has been suggested as a possible solution. The effectiveness of accounting software and its widespread use are both contingent on the user's level of expertise. The collection of one-of-a-kind data is not only pricey but also time-consuming and requires a COVID-19. Understanding and utilization of accounting software were both improved as a result of the study. This study takes the viewpoint of accountants to investigate the positives and negatives associated with the use of digital technology in accounting. It demonstrates the limitations and viewpoints of accountants. The findings of this study suggest that accountants who make use of digital accounting software may have a better understanding of both theory and practice. More topics are required for more advanced study. The processes of accounting in the information age are identified in this paper.

**Keywords:** Digital Transformation, Accountant, Manual Accounting, Book-keeping, Digitalization of Accounting.





# Spatial variability in soil physicochemical parameters across land use classes in the peri-urban landscape

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## Abstract

Rising population and urban expansion have ushered drastic transformations in land use patterns, which can considerably affect soil components and processes. Peri-urban regions at the rural-urban interface are of specific concern because of their dynamic and complex land use pattern. Here, we investigated the spatial variability in soil physicochemical parameters of the surface soil (0–30 cm) in peri-urban landscape of Ghaziabad district, located in the upper Gangetic plain of Uttar Pradesh, India. A total of 45 sites belonging to five different land use classes namely agriculture, park, residential, industrial and bare land were sampled from December 2019 to January 2020. Descriptive analysis of data showed wide variability in the soil properties, with chemical properties being more variable than physical properties. We observed significant differences in soil properties across land use types and their heterogeneous distribution across the three sites. Industrial land use with low vegetation cover was distinctly differentiated from other anthropogenic land use and land cover by high bulk density. Residential land use with high nutrient input from domestic waste and physical disturbance from construction activities was separated from other overlapping land use types by high water-holding capacity and calcium (Ca) concentration. Overall, the results of the study suggest that multifaceted anthropogenic disturbances including modification of parent material, extensive fertilization and irrigation, transportation and waste dumping entail significant changes in soil characteristics and may have serious implications on soil structure and function. Such regional and local studies would help in developing scientifically informed practical measures to improve and maintain the soil quality. Hence, further detailed research exploring the impact of anthropogenic land uses on soil characteristics is needed for management and preservation of the soil mantle.

**Keywords** Soil physicochemical properties · Land use · Urban soil · Peri-urban · Nutrient

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## NECESSARY CONDITIONS FOR HYPONORMALITY OF TOEPLITZ OPERATORS ON THE BERGMAN SPACE

ANURADHA GUPTA AND AMITA AGGARWAL

*Abstract.* In this paper, we present necessary conditions for the hyponormality of Toeplitz operator  $T_\phi$  on the Bergman space  $L_a^2(\mathbb{D})$  when the symbol  $\phi$  is a polynomial in  $z$  and  $\bar{z}$ .

### 1. INTRODUCTION

Let  $T$  be a bounded linear operator acting on a complex Hilbert space  $H$ . The operator is said to be hyponormal if its self commutator  $[T^*, T] = T^*T - TT^*$  is positive semi-definite, where  $T^*$  denotes the adjoint of  $T$ . This is equivalent to saying that  $\|Tu\| \geq \|T^*u\|$  for every  $u$  in  $H$ .

Let  $\mathbb{D}$  denote the open unit disc in the complex plane and  $dA$  the normalized area measure on  $\mathbb{D}$ . Let the space  $L^2(\mathbb{D})$  be the Hilbert space of square integrable measurable functions with the inner product

$$\langle f, g \rangle = \int_{\mathbb{D}} f(z) \overline{g(z)} dA(z).$$

The Bergman space  $L_a^2(\mathbb{D})$  is the subspace of  $L^2(\mathbb{D})$  consisting of analytic functions on  $\mathbb{D}$ , that is,

$$L_a^2(\mathbb{D}) = \{f : \int_{\mathbb{D}} |f(z)|^2 dA(z) < \infty, f \text{ is analytic on } \mathbb{D}\}.$$

Let  $P$  denote the orthogonal projection of  $L^2(\mathbb{D})$  onto  $L_a^2(\mathbb{D})$ . Let  $L^\infty(\mathbb{D})$  denote the space of bounded measurable functions on the unit disc  $\mathbb{D}$ . Let  $\phi$  be a function in  $L^\infty(\mathbb{D})$ . The multiplication operator  $M_\phi$ , induced by the symbol  $\phi$ , is defined as  $M_\phi f = \phi f$  for every  $f \in L^2(\mathbb{D})$ . The Toeplitz operators are the compressions of the multiplication operators to the subspace  $L_a^2(\mathbb{D})$  and are defined as  $T_\phi f = P(\phi f)$  for every  $f \in L_a^2(\mathbb{D})$ .

In [1, 2], C. Cowen completely characterised the hyponormality of Toeplitz operators (in the setting of Hardy spaces) by the properties of its symbol  $\phi \in L^\infty(\mathbb{D})$ . To prove this characterisation, he used dilation theorem due to D. Sarason [11] and the fact that space  $(H^2)^\perp$  is the space of conjugate of functions in  $zH^2$ . But in the Bergman space setting, Sarason dilation theorem's equivalence is lacking. Additionally, the space  $(L_a^2)^\perp$  is much larger than the space of conjugates of functions in  $zL_a^2$ .

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*Keywords:* Bergman space, hyponormal operators, Toeplitz operators.

The characterisation of the hyponormal Toeplitz operators acting on the Bergman space turns out to be elusive. However, a substantial amount of work has been done by H. Sadraoui [10], I. S. Hwang [6, 7], Čučković and R. Curto [3], A. Phukon [9], J. Lee [8], and A. Gupta and S. K. Singh [5] for the polynomial harmonic symbol  $\phi$ . Very recently, Matthew Fleeman and Constanze Liaw [4] studied the necessary condition on the coefficients of the non-harmonic polynomial  $\phi$ , under which  $T_\phi$  is hyponormal. They showed that the Toeplitz operator  $T_\phi$  with symbol  $\phi(z) = a_{m,n}z^m\bar{z}^n$ ,  $m \geq n$ ,  $a_{m,n} \in \mathbb{C}$  is always hyponormal. However, this is not the case when  $\phi$  is a two-term non harmonic polynomial. These results were further extended by Brian Simanek [12]. We shall consider  $\phi$  the sum of the polynomial harmonic and non harmonic symbols and obtain the necessary conditions for the hyponormality.

## 2. THE NECESSARY CONDITIONS

In this section, we shall present some necessary conditions for the Toeplitz operator acting on the Bergman space to be hyponormal, when the symbol  $\phi$  is a polynomial in  $z$  and  $\bar{z}$ . Some well known properties of the Toeplitz operators on the Bergman space are listed here.

**Proposition 2.1.** [10] *Let  $f, g \in L^\infty(\mathbb{D})$ , then*

- (i)  $T_{f+g} = T_f + T_g$ ;
- (ii)  $T_f^* = T_{\bar{f}}$ ;
- (iii)  $T_f^*T_g = T_{\bar{f}g}$ , if  $f$  or  $g$  is analytic .

**Proposition 2.2.** [6] *For any non negative integers  $s$  and  $t$ , we have*

$$P(\bar{z}^t z^s) = \begin{cases} \frac{s-t+1}{s+1} z^{s-t} & \text{if } s \geq t \\ 0 & \text{if } s < t \end{cases},$$

where  $P$  is an orthogonal projection on  $L_a^2(\mathbb{D})$ .

A result given in [4] will be helpful in deriving the necessary conditions.

**Proposition 2.3.** [4] *Let  $H$  be a complex Hilbert space and  $T$  and  $S$  be the operators on  $H$ , then*

$$\begin{aligned} \langle [(T+S)^*, T+S]u, u \rangle &= \langle Tu, Tu \rangle - \langle T^*u, T^*u \rangle + 2\text{Re}[\langle Tu, Su \rangle - \langle T^*u, S^*u \rangle] \\ &\quad + \langle Su, Su \rangle - \langle S^*u, S^*u \rangle \end{aligned}$$

for every  $u$  in  $H$ .

**Theorem 2.4.** *Let  $\phi(z) = f(z) + g(z)$ , where  $f(z) = \alpha z^m + \beta z^m \bar{z}^n$  and  $g(z) = \gamma \bar{z}^m + \delta \bar{z}^m z^n$ ,  $m > n$ . If  $T_\phi$  is hyponormal, then*

- (i)  $\frac{m^2}{(m+1)^2}(|\alpha|^2 - |\gamma|^2) \geq \frac{2m^3 - n^3 + m^2 - m^2n - n^2}{(2m+1)(m+n+1)^2}(|\delta|^2 - |\beta|^2)$ ;
- (ii)  $\frac{(2m-n+1)^2}{(2m+1)^2(3m-n+1)^2}|\beta|^2|\delta|^2 \leq \left\{ \frac{m^2}{(m+1)^2(2m+1)}(|\alpha|^2 - |\gamma|^2) + \frac{2m^3 - n^3 + m^2 - m^2n - n^2}{(2m+1)^2(m+n+1)^2}(|\beta|^2 - |\delta|^2) \right\}$

$$\left\{ \frac{m^2}{(4m-2n+1)(3m-2n+1)^2} (|\alpha|^2 - |\gamma|^2) + \frac{4m^3 + n^3 - 2mn^2 - 3m^2n + m^2 - n^2}{(4m-2n+1)^2(3m-n+1)^2} (|\beta|^2 - |\delta|^2) \right\}.$$

*Proof.* Let  $u = az^m + bz^{m+j}$ , where  $a$  and  $b$  are complex numbers and  $j$  is a non-negative integer. Then,

$$\begin{aligned} fu &= \alpha az^{2m} + \alpha bz^{2m+j} + \beta az^{2m}\bar{z}^n + \beta bz^{2m+j}\bar{z}^n, \\ gu &= \gamma az^m\bar{z}^m + \gamma bz^{m+j}\bar{z}^m + \delta az^{m+n}\bar{z}^m + \delta bz^{m+n+j}\bar{z}^m. \end{aligned}$$

Taking  $j = 2(m-n)$  and using Proposition 2.2, we get

$$\begin{aligned} Pfu &= \alpha az^{2m} + \alpha bz^{4m-2n} + \beta a \frac{2m-n+1}{2m+1} z^{2m-n} + \beta b \frac{4m-3n+1}{4m-2n+1} z^{4m-3n}, \\ Pgu &= \gamma a \frac{1}{m+1} + \gamma b \frac{2m-2n+1}{3m-2n+1} z^{2m-2n} + \delta a \frac{n+1}{m+n+1} z^n \\ &\quad + \delta b \frac{2m-n+1}{3m-n+1} z^{2m-n}. \end{aligned}$$

Using the definition of inner product on the Bergman space,

$$\begin{aligned} \langle Pfu, Pgu \rangle &= \bar{a}\bar{b}\bar{\beta}\bar{\delta} \frac{2m-n+1}{(3m-n+1)(2m+1)}, \\ \langle Pfu, Pfu \rangle &= \frac{1}{2m+1} |\alpha a|^2 + \frac{1}{4m-2n+1} |\alpha b|^2 \\ &\quad + \frac{2m-n+1}{(2m+1)^2} |\beta a|^2 + \frac{4m-3n+1}{(4m-2n+1)^2} |\beta b|^2, \\ \langle Pgu, Pgu \rangle &= \frac{1}{(m+1)^2} |\gamma a|^2 + \frac{2m-2n+1}{(3m-2n+1)^2} |\gamma b|^2 \\ &\quad + \frac{n+1}{(m+n+1)^2} |\delta a|^2 + \frac{2m-n+1}{(3m-n+1)^2} |\delta b|^2. \end{aligned}$$

Similarly, computing for  $P\bar{f}u$  and  $P\bar{g}u$ , we have

$$\begin{aligned} \langle P\bar{f}u, P\bar{g}u \rangle &= \bar{a}\bar{b}\bar{\beta}\bar{\delta} \frac{2m-n+1}{(3m-n+1)(2m+1)}, \\ \langle P\bar{f}u, P\bar{f}u \rangle &= \frac{1}{(m+1)^2} |\alpha a|^2 + \frac{2m-2n+1}{(3m-2n+1)^2} |\alpha b|^2 \\ &\quad + \frac{n+1}{(m+n+1)^2} |\beta a|^2 + \frac{2m-n+1}{(3m-n+1)^2} |\beta b|^2, \\ \langle P\bar{g}u, P\bar{g}u \rangle &= \frac{1}{2m+1} |\gamma a|^2 + \frac{1}{4m-2n+1} |\gamma b|^2 \\ &\quad + \frac{2m-n+1}{(2m+1)^2} |\delta a|^2 + \frac{4m-3n+1}{(4m-2n+1)^2} |\delta b|^2. \end{aligned}$$

Since  $T_\phi$  is hyponormal, we have  $\langle (T_\phi^* T_\phi - T_\phi T_\phi^*)u, u \rangle \geq 0$ . Using Propositions 2.1 and 2.3, we get

$$\|T_f u\|^2 - \|T_f^* u\|^2 + 2\operatorname{Re}[\langle T_f u, T_g u \rangle] - \langle T_f^* u, T_g^* u \rangle + \|T_g u\|^2 - \|T_g^* u\|^2 \geq 0.$$

Substituting for  $T_f u, T_g u, T_f^* u$  and  $T_g^* u$  (and using Proposition 2.1), we have

$$\begin{aligned} & \left[ |a|^2 \left( \frac{1}{2m+1} - \frac{1}{(m+1)^2} \right) + |b|^2 \left( \frac{1}{4m-2n+1} - \frac{2m-2n+1}{(3m-2n+1)^2} \right) \right] (|\alpha|^2 - |\gamma|^2) \\ & + 2\operatorname{Re}(a\bar{b}\beta\bar{\delta}) \left[ \frac{2m-n+1}{(2m+1)(3m-n+1)} \right] + \left[ |a|^2 \left( \frac{2m-n+1}{(2m+1)^2} - \frac{n+1}{(m+n+1)^2} \right) \right. \\ & \left. + |b|^2 \left( \frac{4m-3n+1}{(4m-2n+1)^2} - \frac{2m-n+1}{(3m-n+1)^2} \right) \right] (|\beta|^2 - |\delta|^2) \geq 0. \end{aligned}$$

Further, using the inequality  $\operatorname{Re}(xy) \leq |x||y|$ , we get

$$\begin{aligned} & |a|^2 \left[ \left( \frac{m^2}{(2m+1)(m+1)^2} \right) (|\alpha|^2 - |\gamma|^2) + \left( \frac{2m^3 - n^3 + m^2 - m^2n - n^2}{(2m+1)^2(m+n+1)^2} \right) (|\beta|^2 - |\delta|^2) \right] \\ & + 2|a||b| \left[ \frac{2m-n+1}{(2m+1)(3m-n+1)} \right] |\beta\delta| + |b|^2 \left[ \left( \frac{m^2}{(4m-2n+1)(3m-2n+1)^2} \right) \right. \\ & \left. (|\alpha|^2 - |\gamma|^2) + \left( \frac{4m^3 - 2mn^2 - 3m^2n + m^2 + n^3 - n^2}{(4m-2n+1)^2(3m-n+1)^2} \right) (|\beta|^2 - |\delta|^2) \right] \geq 0. \quad (2.1) \end{aligned}$$

The following cases arise:

Case (i) Let  $b = 0$ , then from inequality (2.1), it follows that

$$\left( \frac{m^2}{(2m+1)(m+1)^2} \right) (|\alpha|^2 - |\gamma|^2) \geq \left( \frac{2m^3 - n^3 + m^2 - m^2n - n^2}{(2m+1)^2(m+n+1)^2} \right) (|\delta|^2 - |\beta|^2). \quad (2.2)$$

Case (ii) Let  $b \neq 0$ , then again using inequality (2.1), we have

$$\begin{aligned} & \left| \frac{a}{b} \right|^2 \left[ \left( \frac{m^2}{(2m+1)(m+1)^2} \right) (|\alpha|^2 - |\gamma|^2) + \left( \frac{2m^3 - n^3 + m^2 - m^2n - n^2}{(2m+1)^2(m+n+1)^2} \right) (|\beta|^2 - |\delta|^2) \right] \\ & + 2 \left| \frac{a}{b} \right| \left[ \frac{2m-n+1}{(2m+1)(3m-n+1)} \right] |\beta\delta| + \left( \frac{m^2}{(4m-2n+1)(3m-2n+1)^2} \right) (|\alpha|^2 - |\gamma|^2) \\ & + \left( \frac{4m^3 - 2mn^2 - 3m^2n + m^2 + n^3 - n^2}{(4m-2n+1)^2(3m-n+1)^2} \right) (|\beta|^2 - |\delta|^2) \geq 0, \quad (2.3) \end{aligned}$$

which is a quadratic polynomial in  $|a/b|$  and takes only non negative values. We know that, if a quadratic polynomial  $f(x) = a_2x^2 + a_1x + a_0$  (for  $a_2, a_1, a_0$  real and  $a_2 \geq 0$ ) takes only non negative values for all  $x$ , then it cannot have non distinct real roots. Thus, its discriminant is non positive. Consequently, from (2.2) and (2.3), it follows that

$$\begin{aligned} & \frac{(2m-n+1)^2}{(2m+1)^2(3m-n+1)^2} |\beta|^2 |\delta|^2 \\ & \leq \left\{ \frac{m^2}{(m+1)^2(2m+1)} (|\alpha|^2 - |\gamma|^2) + \frac{2m^3 - n^3 + m^2 - m^2n - n^2}{(2m+1)^2(m+n+1)^2} (|\beta|^2 - |\delta|^2) \right\} \\ & \left\{ \frac{m^2}{(4m-2n+1)(3m-2n+1)^2} (|\alpha|^2 - |\gamma|^2) \right\} \end{aligned}$$

$$+ \frac{4m^3 + n^3 - 2mn^2 - 3m^2n + m^2 - n^2}{(4m - 2n + 1)^2(3m - n + 1)^2} (|\beta|^2 - |\delta|^2) \Big\}$$

as required.  $\square$

**Remark 2.5.** The following example shows that the conditions in the theorem are only necessary but not sufficient:

Let  $\phi(z) = 2z^3 + 2z^3\bar{z} + \bar{z}^3 + 3\bar{z}^3z$ , then the conditions of Theorem 2.4 are satisfied. Using Proposition 2.2, we get that

$$T_\phi(z) = 2z^4 + \frac{8}{5}z^3 \quad \text{and} \quad T_\phi^*(z) = z^4 + \frac{12}{5}z^3.$$

Therefore, we have  $\|T_\phi(z)\|^2 = \frac{36}{25}$  and  $\|T_\phi^*(z)\|^2 = \frac{41}{25}$ . Thus, it follows that  $\|T_\phi(z)\| \leq \|T_\phi^*(z)\|$ , showing  $T_\phi$  is not hyponormal.

**Corollary 2.6.** Let  $\phi(z) = f(z) + g(z)$ , where  $f(z) = \alpha z^m + \beta z^m \bar{z}^{m-1}$  and  $g(z) = \gamma \bar{z}^m + \delta \bar{z}^m z^{m-1}$ ;  $m > 1$ . If  $T_\phi$  is hyponormal, then

- (i)  $\frac{m^2}{(m+1)^2} (|\alpha|^2 - |\gamma|^2) \geq \frac{4m-1}{4m(2m+1)} (|\delta|^2 - |\beta|^2)$ .
- (ii)  $\frac{(m+2)^2}{4(m+1)^2(2m+1)^2} |\beta|^2 |\delta|^2 \leq$   
 $\left\{ \frac{m^2}{(m+1)^2(2m+1)} (|\alpha|^2 - |\gamma|^2) + \frac{4m-1}{4m(2m+1)^2} (|\beta|^2 - |\delta|^2) \right\}$   
 $\left\{ \frac{m^2}{(2m+3)(m+3)^2} (|\alpha|^2 - |\gamma|^2) + \frac{4m^2+3m-2}{4(m+1)^2(2m+3)^2} (|\beta|^2 - |\delta|^2) \right\}$ .

**Theorem 2.7.** Let  $\phi(z) = f(z) + g(z)$ , where

$$f(z) = \sum_{i=1}^k \alpha_i z^{m+i} \bar{z}^m \quad \text{and} \quad g(z) = \sum_{i=1}^k \beta_i \bar{z}^{m+i} z^m.$$

If  $T_\phi$  is hyponormal, then

- (i)  $\sum_{i=1}^k \frac{i+1}{(m+i+1)^2} (|\alpha_i|^2 - |\beta_i|^2) \geq 0$ .
- (ii)  $\left( \sum_{i=1}^k \frac{i+1}{(m+i+1)^2} (|\alpha_i|^2 - |\beta_i|^2) \right) \left( \sum_{i=1}^k \frac{i+2}{(m+i+2)^2} (|\alpha_i|^2 - |\beta_i|^2) \right)$   
 $+ \frac{1}{(m+2)^2} (|\beta_1|^2 - |\alpha_1|^2) \geq \left| \sum_{i=2}^k \frac{(\alpha_i \bar{\alpha}_{i-1} - \bar{\beta}_i \beta_{i-1})(i+1)}{(m+i+1)^2} \right|^2$ .

*Proof.* Let  $u = a + bz$ , where  $a$  and  $b$  are complex numbers. Then,

$$T_\phi(u) = P\phi(a + bz)$$

$$= P \left[ a \left( \sum_{i=1}^k \alpha_i z^{m+i} \bar{z}^m + \sum_{i=1}^k \beta_i \bar{z}^{m+i} z^m \right) + b \left( \sum_{i=1}^k \alpha_i z^{m+i+1} \bar{z}^m + \sum_{i=1}^k \beta_i \bar{z}^{m+i} z^{m+1} \right) \right]$$

$$= a \sum_{i=1}^k \alpha_i \frac{i+1}{m+i+1} z^i + b \left( \sum_{i=1}^k \alpha_i \frac{i+2}{m+i+2} z^{i+1} + \frac{\beta_1}{m+2} \right)$$

(using Proposition 2.2). Therefore,

$$\begin{aligned} \langle T_\phi^* T_\phi u, u \rangle &= |a|^2 \sum_{i=1}^k \frac{i+1}{(m+i+1)^2} |\alpha_i|^2 + 2\operatorname{Re} \left[ a\bar{b} \sum_{i=2}^k \alpha_i \overline{\alpha_{i-1}} \frac{i+1}{(m+i+1)^2} \right] \\ &\quad + |b|^2 \left( \sum_{i=1}^k \frac{i+2}{(m+i+2)^2} |\alpha_i|^2 + \frac{|\beta_1|^2}{(m+2)^2} \right). \end{aligned} \quad (2.4)$$

Using Proposition 2.1, we have

$$\begin{aligned} T_\phi^*(u) &= P\bar{\phi}(a+bz) \\ &= P \left[ a \left( \sum_{i=1}^k \overline{\alpha_i z^{m+i}} z^m + \sum_{i=1}^k \overline{\beta_i z^{m+i} z^m} \right) + b \left( \sum_{i=1}^k \overline{\alpha_i z^{m+i}} z^{m+1} + \sum_{i=1}^k \overline{\beta_i z^{m+i+1} z^m} \right) \right] \\ &= a \sum_{i=1}^k \overline{\beta_i} \frac{i+1}{m+i+1} z^i + b \left( \sum_{i=1}^k \overline{\beta_i} \frac{i+2}{m+i+2} z^{i+1} + \frac{\overline{\alpha_1}}{m+2} \right). \end{aligned}$$

Again, using the definition of inner product, we get

$$\begin{aligned} \langle T_\phi T_\phi^* u, u \rangle &= |a|^2 \sum_{i=1}^k \frac{i+1}{(m+i+1)^2} |\beta_i|^2 + 2\operatorname{Re} \left[ a\bar{b} \sum_{i=2}^k \overline{\beta_i} \beta_{i-1} \frac{i+1}{(m+i+1)^2} \right] \\ &\quad + |b|^2 \left( \sum_{i=1}^k \frac{i+2}{(m+i+2)^2} |\beta_i|^2 + \frac{|\alpha_1|^2}{(m+2)^2} \right). \end{aligned} \quad (2.5)$$

Since  $T_\phi$  is hyponormal, from (2.4) and (2.5) it follows that

$$\begin{aligned} \langle (T_\phi^* T_\phi - T_\phi T_\phi^*) u, u \rangle &= |a|^2 \sum_{i=1}^k \frac{i+1}{(m+i+1)^2} (|\alpha_i|^2 - |\beta_i|^2) \\ &\quad + 2\operatorname{Re} \left[ a\bar{b} \sum_{i=2}^k (\alpha_i \overline{\alpha_{i-1}} - \overline{\beta_i} \beta_{i-1}) \frac{i+1}{(m+i+1)^2} \right] \\ &\quad + |b|^2 \left( \sum_{i=1}^k \frac{i+2}{(m+i+2)^2} (|\alpha_i|^2 - |\beta_i|^2) + \frac{|\beta_1|^2 - |\alpha_1|^2}{(m+2)^2} \right) \geq 0. \end{aligned}$$

Using Theorem 1.5 [9], we have

(i) If  $b = 0$ , then  $\sum_{i=1}^k \frac{i+1}{(m+i+1)^2} (|\alpha_i|^2 - |\beta_i|^2) \geq 0$ .

(ii) If  $b \neq 0$ , then

$$\left( \sum_{i=1}^k \frac{i+1}{(m+i+1)^2} (|\alpha_i|^2 - |\beta_i|^2) \right) \left( \sum_{i=1}^k \frac{i+2}{(m+i+2)^2} (|\alpha_i|^2 - |\beta_i|^2) \right)$$

$$+ \frac{1}{(m+2)^2} (|\beta_1|^2) - |\alpha_1|^2) \geq \left| \sum_{i=2}^k \frac{(\alpha_i \overline{\alpha_{i-1}} - \overline{\beta_i} \beta_{i-1})(i+1)}{(m+i+1)^2} \right|^2$$

as required. □

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## Letter of Acceptance

03<sup>rd</sup> May 2023

Dear Dr. Neha Rohra, University of Delhi

Dr. Anita, University of Delhi

Your manuscript entitled: "IMPACT OF MERGERS & ACQUISITIONS - A CRITICALREVIEW OF LITERATURE" has been accepted to published under Academy of Entrepreneurship Journal (AEJ) Volume 29 Special Issue 3 2023.

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# Women's Role in Society's Peace Building

Lalita Kumari

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Delhi College of Arts and Commerce,  
University of Delhi, India*

## Abstract:

Since the beginning of time, women have battled for equality, peace, and safety. They have not been acknowledged for their involvement in any of the peace attempts. As armed conflict breaks out in more and more parts of the globe, there is an urgent need to take action to guarantee that women play an active role in the process of building peace and that their efforts are recognised and appreciated. Participation in the form of mediation and envoys is essential to attaining a durable, long-lasting, and optimistic peace with post-conflict humanities. Additionally, their comprehensive role may assist in preventing disagreements that could lead to the outbreak of war. Women have a more nuanced understanding of the variables at play in conflicts than men do. This article explores the roles that women should play in fostering peace as well as the challenges they confront in doing so. It will investigate the contributions that women have made to the process of resolving conflicts and fostering peace. This research investigates the roles that women should play in peacemaking endeavours. Let's take a closer look at the claim that including women in peace negotiations can increase both the quality and the longevity of the peace.

**Keywords-** Role of women, Conflict, equality, Peace building, Peace Transformation.

## Introduction

Women have long been deemed weak, therefore they've faced assault, disdain, and inequality. Being treated equally is a basic right, but gender inequality persists across the world. They've faced all forms of prejudice, from being denied healthcare and education to being prevented from speaking out against injustice. It was difficult for the UN to promote equality internationally without a single leader to oversee its efforts. UN Women was formed in 2010 to combat gender injustice and empower women. " UN Member States took a historic step toward gender equality and women's empowerment. UN Women was created as part of the UN reform effort to consolidate resources and missions. It unites and develops on the work of four UN sections that focused entirely on gender equality and women's empowerment. UN Women prioritises gender equality and women's empowerment. It was created to promote global women's empowerment. Sustainable development requires peace, and for that, women and girls' contributions must be recognised, along with equitable involvement in all aspects of society. Thus, individuals may cooperate with government systems, lawmaking agencies, and civil societies to establish laws, policies, programmes, and services, have greater impact, and benefit equally from natural disaster avoidance, man-made conflict prevention, and humanitarian action.

## Peace Building

Humanity has always suffered from wars. Conflict limits relief and communication, killing, displacing, and starving civilians. The violence has also damaged healthcare facilities and other amenities, making it difficult to serve people. Conflicts may block off entire neighbourhoods from livelihoods and services. Peace building was created to address the "underlying causes" of violent war-like circumstances wherever they are on the globe, namely conflict assessment and resolution. All eliciting elements that might have had impacts on peaceful conditions need attention and early action to promote sustainable peace and avoid the return of the repercussions of conflict via reconciliation, institution building, and political and economic reform. In his 1975 book *"Three Approaches to Peace: Peacekeeping, Peacemaking, and Peace building," Johan Galtung* invented the word peace building. He argued in this paper that "Peace is different from peacekeeping and ad hoc peacemaking. Peace mechanisms should be embedded into the system and used as a reservoir... Specifically, mechanisms must be established to remove war causes and give alternatives to conflict." The 18 January 2008 publication UN Peacekeeping Operations: Principles and Guidelines define peace building. "Peace-building entails enhancing national skills for conflict management and creating the basis for lasting peace to reduce the danger of war relapse. It's a difficult, long-term process that addresses the structural roots of violent conflict to create good and durable peace. Peace-building measures address societal and state-level challenges. They aim to improve the state's ability to carry out its essential tasks effectively and lawfully. UN Agencies, Funds & Programs, International Financial Institutions, and NGOs all work to foster peace." **Lederach says**, "is more than post-accord rebuilding" and "encompasses, creates, and sustains the complete array of processes, methodologies, and phases needed to turn conflict into sustainable, peaceful partnerships." The word encompasses both pre- and post-peace deal activity. Peace is a metaphor, not a state or situation." Recent examples of conflict scenarios including:

- The conflict in Ethiopia seems to be just as complicated and drawn out as in other countries. Ethiopians have been forced to endure war after war as a result of their country's ongoing conflict with neighbouring Eritrea, internal power struggles, and the almost two-year-long, divesting civil war that has been raging in the province of Tigray.

Lalita Kumari



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# Online teaching in Indian higher education institutions during the pandemic time

Ajay Kumar Singh<sup>1</sup> · Mukesh Kumar Meena<sup>1,2</sup>

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## Abstract

The objective of this study was to analyze the gap in expected benefits and actual benefits of virtual classrooms used at the time of nationwide lockdown for the teaching–learning process for faculty members and students in higher education during the COVID-19 pandemic. A total of 893 responses have been used for this study. The overall mean of expected benefits, from 305 faculty members and 588 students of higher education institutes/colleges/universities, is higher than the overall mean of actual benefits and that difference value is 0.250055, with a Sig. (2-tailed) value of 0.036 which is less than 0.05 for faculty members and 0.3872827, with a Sig. (2-tailed) value of 0.000 which is less than 0.05 for students. We found that the network connectivity was the major challenge faced by the faculty members with a mean value of 3.68 followed by a 3.17 mean value for lack of professional environment at home, 3.03 for lack of teaching material at home, 2.92 for lack of personal computer/laptop. From students' responses, we found the lack of a professional environment at home with a mean value of 3.59 was the major challenge faced by the students followed by 3.57 for lack of teaching material at home (for lack of printed teaching- learning material at home), and 3.35 for network connectivity, 3.31 for lack of personal computer/laptop. The moderation effects of challenges between expected benefits and actual benefits is found significant for faculty and students both. The moderation effects of challenges between expected benefits and actual benefits is found significant for faculty ( $\beta_{\text{Expected Benefit\_Challenges}} = -0.110$ ,  $p < 0.05$ ) and students ( $\beta_{\text{Expected Benefit\_Challenges}} = -0.094$ ,  $p < 0.05$ ) both. The faculty members and students both were able to perceive higher actual benefits

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due to the low challenges of virtual classrooms. Further, the faculty members and students both were able to perceive lower actual benefits when challenges are more. The policymakers of higher education must work to resolve the issues and challenges of virtual classrooms to improve the effectiveness of the virtual classroom. The post-COVID higher education may require a continued focus on flexibility, adaptability, technology integration, student engagement, equity, and well-being. By prioritizing these areas, institutions can create a resilient and inclusive learning environment for their students and faculty in the post-pandemic era. The COVID-19 pandemic has highlighted the critical importance of organizational learning in responding to crises. Organizational scholars can contribute by advancing knowledge on effective learning patterns, documenting best practices, and incorporating these lessons into teaching and practice. By doing so, we can help organizations be better prepared for future crises, including pandemics, and ensure that the lessons learned are not forgotten. post-COVID higher education may require a continued focus on flexibility, adaptability, technology integration, student engagement, equity, and well-being. By prioritizing these areas, institutions can create a resilient and inclusive learning environment for their students and faculty in the post-pandemic era. It's important to note that effective online instruction often involves a combination of different learning theories, depending on the nature of the content, the goals of the instruction, and the characteristics of the learners. Online instructors should consider how these theories can inform their instructional design and delivery to create meaningful and effective online learning experiences. Learning theories have a significant impact on the performance of higher education institutes in the context of online education. By aligning instructional strategies, course design, assessments, feedback, and learner support with learning theories, higher education institutes can optimize their online education programs and enhance student performance. The pandemic has necessitated the use of various teaching strategies in higher education institutions to adapt to remote and online learning. Blended learning, technology-enhanced instruction, student-centered approaches, flexible assessments, active learning strategies, and social-emotional support are some of the most appropriate teaching strategies that have been used during the pandemic to support student learning and engagement. It is important for instructors to continually assess and adapt their teaching strategies based on student needs and feedback to ensure effective learning outcomes.

**Keywords** Virtual classroom · COVID-19 · Pandemic · Higher education · Teaching–learning process · Benefits · Challenges

## 1 Introduction

COVID-19 affected most of the sectors of the economy whether it is the manufacturing or service sectors by disrupting the supply chain, reducing the demand, and tourism sector by restricting the traveling among countries. One of the most affected sectors because of COVID-19 has been the Education sector as the lockdown resulted in the closure of schools and colleges across countries. UNESCO estimated



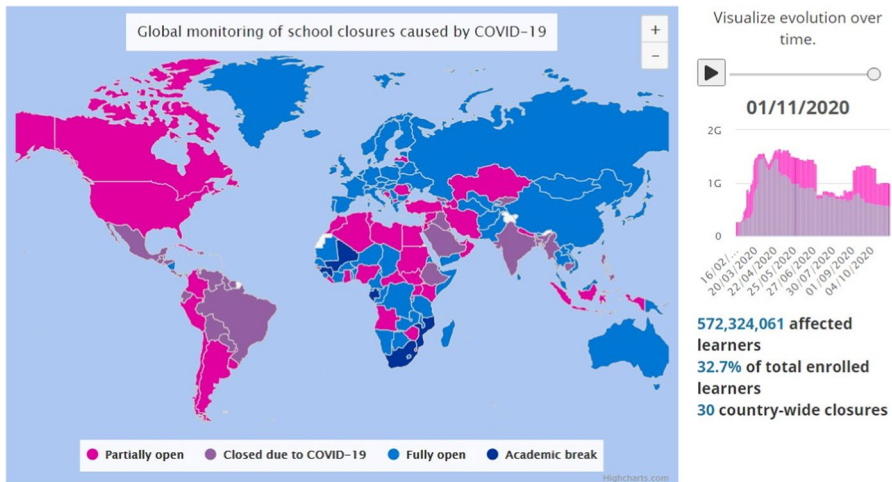


Fig. 1 (Source: UNESCO, 2020)

that the pandemic affected 1,576,873,546 learners worldwide which was 90.1% of the total enrolled learners in 190 countries till mid-April 2020 due to the closure of schools but it reduced to 572,324,061 learners which are 32.7% of the total enrolled learners in 30 countries till the 1<sup>st</sup> November 2020 (Fig. 1).

Global Monitoring of School Closure locally and countrywide and School Open during COVID- 19 as per UNESCO (2020). The government of India announced a first countrywide lockdown on 25<sup>th</sup> March 2020 and it was for 21 days up to 14<sup>th</sup> April 2020, but as the cases were increasing, the lockdown further extended till 3<sup>rd</sup> May 2020, after that it continued but Government started giving relaxation regarding economic activities as it opened the manufacturing sector, various Government offices and other activities with rules and regulations regarding social distancing, wearing the mask, avoiding unnecessary travel, etc. But, schools and colleges remain closed for a long time. COVID-19 has disrupted the teaching–learning process of learners and faculty members because of the closure of schools and colleges. The examinations were canceled or postponed during the pandemic time till uncertain periods which created uncertainties among students, especially for those who were about to complete their schooling and were supposed to be admitted to colleges and among final year students of universities who were likely to take jobs. As per UNESCO (2020) total number of 32,07,13,810 learners were affected due to the COVID-19 lockdown in India. Onyema et al. (2020) concluded that COVID 19 disrupted the learning, increased student debt, limited access to education facilities, increased job loss in the education sector, and reduced loss of learning among students. Management of schools and colleges encouraged their students and faculty members to continue the online learning process. In this technology-driven world, with the help of digital platforms such as Zoom, Skype, Google Meet, Microsoft Team, Google classroom, etc., faculty members and students can continue their teaching–learning process during this pandemic period.

Online teaching–learning has benefits but various challenges and drawbacks are also associated with it. Various infrastructure and logistic facilities are required for the effectiveness of online teaching and learning. Online learning has been initiated by various schools and colleges without providing the necessary infrastructure and technical assistance and training for usefulness for online teaching and learning. This study is conducted to find out benefits received from the virtual classroom and if any gap exists in expected and perceived benefits from virtual classrooms then what could be possible reasons for this gap?, at the time of the lockdown implemented due to the COVID-19 pandemic.

Various studies have been conducted to determine the challenges and drawbacks perceived by faculty members and students during online classes. Students' participation was less due to the lack of in-person conversations with faculty members which could result in mental stress for students and faculty members (Surkhali & Garbuja, 2020a, b). They also reported that an accessible & affordable internet connection was the main problem faced by students and faculty members and less participation, interaction, and technical disturbance led to less engagement and disturbance in online classes. Faculty members found technical, logistical, and pedagogical problems during online classes because of an unprepared transition from face-to-face teaching to online teaching. More efforts were required from the faculty members' side to ensure that students are studying the correct study material and providing information about the assignment. Students opted for online education because it offered greater flexibility but required more self-discipline by students (Daymont et al., 2011; Squire, 2021; Jain et al., 2020; Willermark, 2021; Neuwirth et al., 2021; Egielewa et al., 2022). Students' perceptions of vocational studies on online mode stated that as vocational studies require not only knowledge but skills as well, online learning did not improve student's productivity, and also the experience was not up to expectation (Syauqi et al., 2020).

Volery and Lord (2000) in their study recognized three critical success factors for online learning 1) Technology that is easy to use and navigate, user-friendly visual structure and design of the course and level of interaction with the course; 2) instructor characteristics which are determined by attitudes of instructor towards students, technical competency and classroom interaction encouraged by the instructor; and 3) student's characteristics such as ability to use technology by students.

Martínez and Gamboa (2020) in their study of how poverty affects the emerging educational program at the time of the COVID-19 situation found that poverty reduced the access to goods such as the internet, electronic equipment with connectivity, and television and radio for the school work at home and distance education. They stated that these programs were not designed for the diverse needs of the students of all areas, especially in rural areas which would result in educational gaps which led to inequalities and social injustice.

During the nationwide lockdown, the virtual classroom using the online platforms was looking like a good alternative for face-to-face mode interaction, which was not possible during pandemic time. In the past also before the time of covid-19 pandemic virtual classrooms were appraised and have been positioned as an alternative to face-to-face mode classrooms. This study aims to identify whether all the critical

success factors of virtual classrooms before the COVID-19 era will be able to help us in reality at the time of lockdown. Because face-to-face mode classrooms are not possible during a pandemic. Will the expected success factor of virtual classrooms become a real success factor during the pandemic time? Will the expected benefits of virtual classrooms be achieved as actual benefits during the pandemic lockdown? If not, then what may be the reason for this gap? Is it a usual habit that the expected is always higher than the actual benefit? If the gap exists between the expected and actual benefit of the virtual classroom, then what are the factors due to which this gap does exist? Else this gap is by chance.

## 2 Review of literature

Due to the pandemic, the lockdown was implemented, during that time educational institutes were closed. This was the first time when at such a large level virtual classrooms were adopted for teaching the learning process. The virtual classroom was the only hope for the students and faculty members to save these academic years. In the absence of a virtual classroom, this academic year could have been lost. All the stakeholders in the education sector were looking forward to continuing the teaching–learning process even during the lockdown. The virtual classroom was the best solution available during the lockdown to save the academic year. Students and faculty members were expecting something good with the presence of a virtual classroom during the lockdown time.

### 2.1 Benefits of online teaching–learning

Online teaching and learning can be fruitful for students as well as faculty members to complete their syllabus and assessment, provide moral support, and reduce stress levels during the COVID-19 pandemic. It would also enable the interaction between the faculty members and learners. But for effective learning and teaching, infrastructure and technological support are required. Online teaching and learning could be advantageous as through which faculty members can motivate students, complete syllabus, provide accessibility to learning and teaching from any time and any place, etc. Castro and Tumibay (2019) stated that Online learning is more flexible in access as it can provide content and instruction at any time, from any place. However, technological and infrastructure support is required for the successful implementation of online teaching and learning. A study by Cheawjindakarn et al. (2013, p. 14) recognized five critical success factors for online learning such as “1) institutional management which comprises of the framework, operation ability and cost of the program 2) learning environment which consists of the course management system, technical infrastructure, access and navigation of the program, 3) instructional design which includes objectives, content quality, learning strategies, the psychology of learning and learning assessment of the course 4) services support for the course as training, communication tools, help desk, and 5) course evaluation”. Kuo et al. (2013) analyzed the interaction between learner and content of the study

such as the design of online study material, document layout, use of videos, learner-instructor interaction as a level of communication between learners and instructor, and self-efficacy of the students on internet measured as the ability of the students to use the internet were the main factors of student's satisfaction in online education programs.

Although online teaching is helpful to maintain the continuity of the teaching and learning process, it also requires various technological and infrastructure facilities for the smooth functioning of online learning and the limited availability of these facilities could affect the quality of education. Various research studies have been undertaken to know the challenges faced by faculty members in online teaching. Through online teaching students can have interaction with the faculty members which could be helpful to provide moral support and reduce the stress level of students during the COVID 19 Pandemic. Yulia (2020) concluded that online teaching is effective during this COVID-19 pandemic time for preventing the students from going away from home. Online teaching can have challenges such as poor internet connectivity, non-availability of appropriate electronic devices, lack of a teaching environment at home, and less ICT knowledge among students and faculty members can result in less engagement of students and faculty members in the teaching and learning process.

## 2.2 Challenges of online teaching-learning

Oneyma et al. (2020, p. 116) found that *“poor digital skills of faculty members and students, lack of electricity facilities, less availability and accessibility of internet, connection issues, and inadequate facilities, training, funding, and unacceptability of technology, etc. were the barriers of online education at the time of closure of colleges due to COVID-19 pandemic.”* The success of online learning depends on various factors. Students can also have a casual attitude, less attendance, feeling of isolation and less interaction can lead to mental distress, and spending more time in front of a computer could be hazardous for health too (Baid & Rao, 2017; Kang & Sidhu, 2015; Rana et al., 2021). Surkhali and Garbuja (2020a, b), Trotter (2002), Gilbert (2001), and Irawan et al. (2020) concluded spending more time in front of a computer could result in health problems and it was difficult for the faculty members to ensure participation of students due to less in-person conversation and less socialization and less participation can result in mental distress. They also stated the problem of accessibility and affordability of internet connection was the main problem of virtual learning. They also found that low internet bandwidth and technical disturbance, less interaction, and minimum participation led to less engagement and disturbance during online classes.

Moore (1991, 1995, 2002, 2005) concept is the Technology Adoption Life Cycle. Based on Everett Rogers' observations on the diffusion of innovations specifically, that adoption or diffusion of innovation occurs as adoption by a sequence of adopter segments. Moore observed the emergence of the personal computer industry and

related technologies during the 1970s and 1980s. He noted that technical innovations are adopted by different market segments in sequence.

Rodicio-García et al. (2020) in their study of the current situation of distance teaching "imposed" by Covid-19, found that although the majority of students had electronic gadgets such as mobile phones, computers, or tablets and internet access for online classes. But some students who were living in areas with less than 10000 habitants had insufficient resources, fewer skills, and training for online education. They also stated that the age gap was an important element as older students had inadequate technical skills and faced problems due to constant changes in ICT than younger students. They found no significant difference between genders.

Surkhali and Garbuja (2020a, b) found that students' participation was less due to the lack of in-person conversations with teachers which could result in mental stress for students and teachers. They also reported that an accessible & affordable internet connection was the main problem faced by students and teachers and less participation, interaction, and technical disturbance led to less engagement and disturbance in online classes. They also stated that online classes could be hazardous to health. Czepczyński and Kunikowska (2020) examined the quality of online teaching of the students of nuclear medicine at the time of the coronavirus pandemic and concluded that teachers accepted online teaching during the unprecedented pandemic situation but found it less effective than face to face teaching. Teachers stated that more personal commitment is necessary for making online teaching successful. Teachers found technical, logistical, and pedagogical problems during online classes because of unprepared transition from physically present teaching to online teaching. A study by Chenoweth et al. (2006) concluded that the technical problem was the main problem for both teachers and students. More efforts were required from the teachers' side to ensure that students are studying the correct study material and providing information about the assignment. Daymont et al. (2011) found that students opted for online education because it offered greater flexibility but required more self-discipline by students. A study by Mahaye (2020) stated that blended learning (Online Learning) can be effectively used regardless of distance during this COVID-19 pandemic and provide access to online materials to learners and it would also enable the interaction between the teachers and learners. But for effective learning and teaching, infrastructure and technological support are required. Wang et al. (2008) found that instructors faced pedagogical challenges in designing a new curriculum, adopting a new teaching method, learning new interaction approaches, and new ways of assessment of the students for e-learning. They observed that time management was the main personal challenge because of the more time and effort required to prepare e-content for e-learning. The instructor also encountered the technology challenges because of a lack of technical literacy, network bandwidth, poor quality of audio/video, poor network quality, and lack of technical skills for communication. These challenges faced by the instructor reduce the personal motivation of the instructor to adopt e-learning teaching. Mailizar et al. (2020) in their study of mathematics teachers' observation regarding important barriers to online learning during the time of the COVID-19 pandemic examined 159 teachers and concluded that student barriers were the main obstacle for the teachers in e-learning implementation as less knowledge and skills of students regarding the use of e-learning device and there was also

lack of accessibility to device and internet connection to students for e-learning. They also found that school plays a very important role in conquering the problems faced by students in e-learning. A study conducted by Lloyd et al. (2012, p. 9) on the perceived barrier to online education of faculty found that (1) *interpersonal barriers because of fewer interpersonal relationships between students and teachers, and impersonal teaching environment, and less interaction among the students* (2) *institutional barriers as no specific rules and regulations for online courses; issue over property rights; low involvement of faculty in course decision making* (3) *training and technology barriers as inadequate training to the instructor; less technology support; recurrent failures of technology; and rapidly changing software or delivery systems* and (4) *cost/benefit analysis barriers as increased workload; more time is taken; less time for student assessment and feedback; and insufficient compensation for instruction.*” They also reported that barriers were more perceived by men than women in online education. Faculty with online teaching experience perceived fewer barriers than those who did not have online experience.

Through online teaching students can have interaction with the teacher which could be helpful to provide moral support and reduce the stress level of students during the COVID 19 Pandemic. Yulia (2020) concluded that online teaching is effective during this COVID-19 pandemic time for preventing the students from going away from home. Mahaye (2020) stated that blended learning (Online Learning) which is technology-based learning can be effectively used regardless of distance during this COVID-19 pandemic and provide access to online materials to learners and it would also enable the interaction between the teachers and learners. Online learning can be effective in many ways as it is convenient to use, affordable, enhances personal skills, has flexible timing, sharpens digital skills, etc. With the availability of the network, virtual learning can be accessed from anywhere anytime with a mobile device and computer. So online teaching can be advantageous to enhance learning during this crisis time. Girik Allo (2020) studied the perception of learners in online learning amid a COVID-19 pandemic and found that they supported online learning and found it helpful during the COVID-19 pandemic but also stated that students found difficulty in understanding the online study material.

Online teaching can pose challenges such as poor internet connectivity, non-availability of appropriate electronic devices, lack of a teaching environment at home, and less ICT knowledge among students and teachers can result in less engagement of students and teachers in the teaching and learning process. Oneyma et al. (2020, p. 116) found that “*poor digital skills of teachers and students, School policies, lack of electricity facilities, less availability and accessibility of internet, connection issues, and inadequate facilities, training, funding, and unacceptability of technology, etc. were the barriers of online education at the time of closure of schools due to COVID-19 pandemic.*” The success of online learning depends on various factors. A study by Volery and Lord (2000) surveyed 47 students and identified three essential success factors for online learning 1) Technology which comprises easy accessibility and navigation, visual structure and design of the course, and level of interaction with the course 2) instructor characteristics such as attitudes of the instructor towards students, technical proficiency and how the instructor encouraged the interaction among students 3) characteristics of the students as previous use of

technology by students. They also stated that learning styles and instructor feedback influenced the perceived learning outcome.

### **2.3 Drawbacks of online teaching–learning**

Students can also have a casual attitude, less attendance, feeling of isolation and less interaction can lead to mental distress, spending more time in front of a computer could be hazardous for health too. A study by Surkhali and Garbuja (2020a, b) concluded spending more time in front of a computer could result in health problems and it was difficult for the teacher to ensure the participation of students due to less in-person conversation and less socialization and less participation can result in mental distress. They also stated the problem of accessibility and affordability of internet connection was the main problem of virtual learning. They also found that low internet bandwidth and technical disturbance, less interaction, and minimum participation led to less engagement and disturbance during online classes. Trotter (2002) stated that less interaction between teachers and students was the main drawback of online courses. Gilbert (2001) found that the effectiveness of online learning depends on students' self-discipline and responsibility.

Students can also face difficulty in those subjects which require practical and lab experiments. Virtual classes can also increase the stress level of students and teachers. A study by Irawan et al. (2020) found that online learning has an adverse psychological effect on students and stated that students faced emotional disturbance and anxiety due to online teaching.

Although online teaching is helpful to maintain the continuity of the teaching and learning process it also requires various technological and infrastructure facilities for the smooth functioning of online learning and the limited availability of these faculties could affect the quality of education. So a study is conducted to find out the benefits which students expected and perceived from online classes, challenges faced by students during these virtual classes, drawbacks, and reasons for not attending the online classes. The study will be helpful to develop effective online teaching.

Online teaching–learning has benefits but various challenges and drawbacks are also associated with it. Various infrastructure and logistical facilities are required for the effectiveness of online teaching and learning. Online learning has been initiated by various schools and colleges without providing the necessary infrastructure and technical assistance and training for usefulness for online teaching and learning. A study is conducted to find out the motivation behind taking online classes, benefits received, challenges faced, and drawbacks of the online/ virtual classes at the time of the COVID-19 pandemic.

### **2.4 Teaching learning in Post-Covid**

COVID-19 has significantly impacted health and safety policies in higher education institutions (HEIs). As noted by Archila et al. (2020), students may be reminded

about the nearest hand sanitizing stations to promote good hand hygiene and reduce the risk of infection. Additionally, efforts may be made to ease congestion at building entrances and exits to support physical distancing measures. While traditional-age students may not be at serious risk of developing complications from COVID-19, many HEI employees may be more vulnerable. As a result, HEIs have updated their rules and regulations to include specific COVID-19 procedures. These procedures may outline guidelines for wearing masks, maintaining physical distance, and following hygiene practices, among others.

Furthermore, HEIs may have clarified the consequences for violations of these COVID-19 procedures. This may include disciplinary actions, such as warnings, fines, or even suspension or expulsion in severe cases. These consequences serve as a deterrent to encourage compliance with the updated health and safety policies and help maintain a safe environment within the HEI community. It is essential for HEIs to regularly review and update their COVID-19 procedures and consequences for violations, taking into account the evolving nature of the pandemic and the guidance from local health authorities. Clear communication and education to both students and employees about these procedures and consequences are crucial to promote a culture of safety and protect the well-being of the entire HEI community.

It is important for Higher Education Institutions (HEIs) that have opened their doors to students and lecturers during the ongoing COVID-19 pandemic to implement and enforce strict health and safety measures to prevent the spread of the virus (Chronicle, 2020). These measures may include:

**Wearing masks:** HEIs may require students, lecturers, and staff to wear masks in all public spaces, including outdoors. This helps to minimize the transmission of respiratory droplets that may carry the virus.

**Social distancing:** HEIs may implement social distancing measures, such as maintaining a distance of at least 2 m (or 6 feet) between individuals in all areas of the campus, including classrooms, hallways, elevators, and stairwells. This helps to reduce the risk of close contact and potential transmission of the virus.

**Limiting gatherings:** HEIs may restrict the size of gatherings, including events and gatherings in public spaces, to minimize the risk of spreading the virus among larger groups of people.

**Daily symptom screenings:** HEIs may require students, lecturers, and staff to undergo daily symptom screenings before entering the campus to identify and isolate individuals with potential symptoms of COVID-19, such as fever, cough, or difficulty breathing.

**Hygienic measures:** HEIs may implement strict hygienic measures, such as frequent handwashing, use of hand sanitizers, and regular cleaning and disinfection of high-touch surfaces in public spaces to reduce the risk of transmission through contact.

**Compliance with signage:** HEIs may have signage in hallways, elevators, stairwells, and other areas of the campus to guide individuals on maintaining social distancing, wearing masks, and following other health and safety



measures. Compliance with these signages is important to ensure consistent adherence to the guidelines.

It is crucial for students, lecturers, and staff to follow these requirements and guidelines to protect themselves and others from COVID-19 and contribute to creating a safe and healthy campus environment during the pandemic.

### 3 Objectives of the study

This study has been conducted while looking at the temporary replacement of face-to-face mode classrooms with the virtual classroom in the COVID-19 pandemic situation. To continue the academic activities, the higher education authorities like the Ministry of Education, University Grant Commission, and All India Council for Technical Education decided to use a virtual classroom. So the use of a virtual classroom in a pandemic situation is a welcome move, but it comes with its drawbacks and challenges.

The main objective of this study is to analyze any significant difference between expected benefits and actual benefits perceived from virtual classrooms by faculty members and students in higher education. On the basis of literature review support, we also want to analyze the effect of the factors on achieving the expected benefits from virtual classrooms.

### 4 Hypotheses

**HA1** There are significant differences between expected benefits and actual benefits perceived from virtual classrooms by faculty members and students in higher education.

**HA2** Faculty members with a greater level of challenges faced while using virtual classrooms are less likely to achieve the expected benefits.

**HA3** Students with a greater level of challenges faced while using virtual classrooms are less likely to achieve the expected benefits.

### 5 Research methodology

In this study ECT has been used to determine the factors affecting the benefits of online classrooms. Expectation confirmation theory (ECT) is an intellectual hypothesis that attempts to clarify post-buy or post-reception fulfillment as a component of desires, execution, and disconfirmation of convictions (Oliver, 1980), and, relatedly, the satisfaction of desires leads to positive changes in resolve. the basic model based on ECT, including its four principles of expectations (Expected Benefits), perceived

performance, disconfirmation (Challenges faced by faculty and students during virtual classroom teaching–learning process), and fulfillment (Actual Benefits). The higher education institutes were using Google-meet/ZOOM/Microsoft office teams’ platforms for the teaching–learning process during the lockdown. We have collected data from the faculty members and students of higher education at the undergraduate level, and postgraduate levels. The data was collected from the faculty members and students during the COVID-19 lockdown period. Because in this period, all the Higher Education Institutes (HEIs)/Universities/Colleges were closed after instructions from the Ministry of Education, University Grant Commission, and All India Council for Technical Education. All the teaching–learning practices had been conducted through virtual mode in lockdown. The class mode shifted from face-to-face mode to a virtual classroom. This was the best time to analyze the actual benefits perceived from the virtual classroom by the faculty members and students of the higher education department in India. India has a total of 1043 universities, 42,343 colleges, and 11,779 stand-alone institutes in higher education institutes (AISHE, 2020). The higher education institutes (HEIs) include 45 central universities, 442 state universities, 126 deemed universities, 131 institutes of national importance, 397 private universities, and 420 universities located in rural areas. There are 17 universities, which are exclusively for women. There are 522 generals, 177 technical, 63 agriculture & allied, 66 medicals, 23 law, 12 Sanskrit, and 11 languages universities specifically and the rest are of other categories. (AISHE, 2020).

**Population** - As per AISHE (2020) total students’ enrolment in higher education is 385,00,000 which has 196,00,000 males and 189,00,000 females. The female students constitute 49% of the total enrollment. The total number of faculty members working in higher education institutes (HEIs) is 15,03,156, out of which 57.5% are male and 42.5% are female faculty.

**Sample Size** - The sample size formula for finite population is Cochran (1963):

$$SS/[1 + \{(SS - 1)/Pop\}]$$

where:

*SS* Sample size

*Z* Given *Z* value

*p* Percentage of population

*C* Confidence level

*Pop* Population

Population size for faculty members = 15,03,156 confidence level - 5%

Sample size for faculty members (Cochran, 1963): 316

Population size for students = 38500000 confidence level - 5%

Sample size for students (Cochran, 1963): 316

India is a diverse country in terms of culture, economic status, gender, and geographical background. For a better understanding, the response from all parts of geographical regions was required, but the whole country was facing a nationwide lockdown due to a pandemic during the time of this study so the physical movements for data collection were not possible due to law and order in lockdown. The responses were collected from faculty members and students using random sampling techniques. The data has been collected using Gmail, WhatsApp official groups, LinkedIn, and Google Classroom platforms.

The standardized questionnaire was circulated to all parts of India (North, west, east, and south) and the responses have been received from all the geographical locations of the country like Delhi, Rajasthan, Uttar Pradesh, Madhya Pradesh, Himachal Pradesh, Uttarakhand, Maharashtra, Gujrat, Ladakh, Tamilnadu, West Bengal. The responses have been received from 287 higher education institutes (HEIs) throughout the country. which includes the north, south, west, and eastern part of the country, which represents the geographical, economic, and cultural diversity of the respondents. The responses.

For this study, we have considered the 893 (305 faculty members+588 students) total responses from faculty members and students of higher education. Two structured questionnaires were shared through digital platforms like Gmail, and personal messages on mobile, WhatsApp, and Facebook to the faculty members, and students of higher education respectively. Due to the nationwide lockdown face to face interaction was not possible. The structured questionnaire for students was shared with 4978 students of Higher Education Institutes (HEIs) at all Indian levels. Out of which 946 responses were received from students with a response rate of 19.5 percent. After the data cleaning process, and removing incomplete responses, only 867 responses from students were considered for this study. Out of 867 students, only 588 students were using the virtual classroom. So we have considered 588 students for analyzing the benefits of virtual classrooms and the challenges faced by them during the virtual classroom. And we have asked the rest of the 267 students for their reasons for not joining the virtual classroom, which they were not able to join virtual classrooms.

The structured questionnaire for faculty members was shared with 2392 faculty members of Higher Education Institutes (HEIs) at all India levels. Out of which 344 responses were received with a response rate of 14.3 percent. After the data cleaning process, and removing incomplete responses, only 335 responses from faculty members were considered for this study. Out of 335 faculty members, only 305 faculty members were using the virtual classroom, and 30 were not using the virtual classroom. Only 305 faculty members' responses have been considered to analyze the benefits of virtual classrooms and the challenges faced by them during virtual classrooms and the remaining 30 faculty members were asked about the reason for not adopting virtual classrooms, due to which they were not able to use virtual classrooms. The data has been received from national Higher Education Institutes (HEIs).

To complete the analysis part of the study, SPSS software has been used to compare the mean of actual benefits and expected benefits. AMOS software was used

**Table 1** Reliability test

Factors	Cronbach's Alpha for faculty members	Cronbach's Alpha for students
Expected benefits	0.927	0.953
Actual benefits	0.939	0.960

Source: SPSS output of authors' data analysis

**Table 2** Demographics of sample data

	Total no. of faculty members = 305		Total no. of students = 588	
	Number	%	Number	%
Age group (in Years)				
Up to 30	157	51.47	588	99.88
> 30	148	48.52	0	0.11
Gender				
Female	209	68.52	386	65.64
Male	96	31.47	202	34.35
Level of teaching/Courses				
Only UG	180	59.10	465	79.12
Only PG	48	15.52	107	18.10
UG & PG Both/ other	78	25.37	16	2.76

to check the model fit and moderation analyses for perceived benefits from virtual classrooms.

This study has been done with the help of primary data collected through a questionnaire. To measure the actual and expected benefits of the virtual classroom a standardized questionnaire (Sun et al., 2008; Arora & Srinivasan, 2020) has been used. This questionnaire was framed after the shifting of Indian higher education institutes from face-to-face mode to virtual mode. The whole questionnaire consisted of five sections consisting of expected benefits, actual benefits, and demographic information consisting one section for each. To check the internal consistency of the structured questionnaire the Cronbach Alpha Reliability test has been used for the internal consistency of the questionnaire during pilot testing.

Table 1 is showing the results of internal consistency for each factor. The Cronbach alpha test of internal consistency giving value  $\geq 0.7$  is considered to be good. From the faculty members' sample of this study Cronbach's alpha value for expected benefits, and the actual benefit is 0.927, and 0.939 for each respectively. From the student's sample of this study Cronbach's alpha value for expected benefits, and actual benefits are 0.953, and 0.960 for each respectively.

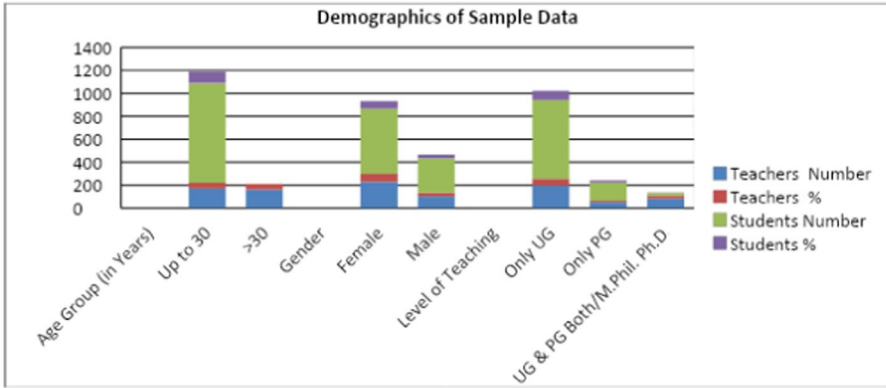
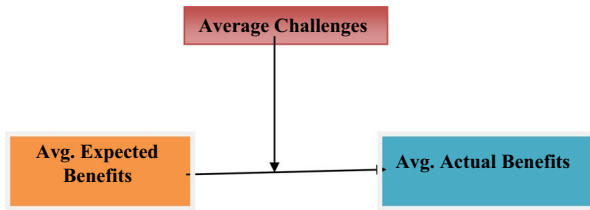


Fig. 2 (Source – Data analysis)

Fig. 3 Moderation analyses



## 6 Data analysis

### 6.1 Demographics of sample data

Table 2 is showing the demographic results of the faculty members and students. Out of 305 faculty members, 51.34 percent belong to the age group of “up to 30” years and 48.65 percent of faculty members were from the age group of “> 30” years. Out of the total respondents, 68.65 percent of faculty members were female and only 31.34 were male faculty members. Among the total faculty members, 37.61 percent were with teaching experience of “0–3” years and around 40 percent of faculty members were having teaching experience of “4–10” years. Around 20 percent of faculty members were having more than 10 years of teaching experience. That means the majority of respondents were young and working at the assistant professor, or associate professor level.

The demographic information of the students, out of 588 students, 99.88 percent belonged to the age group of “up to 30” years and 0.11 percent of students were from the age group of “> 30” years. Out of the total respondents, 65.62 percent of students were female and 34.37 percent were male students. Out of the total respondents, 79.12 percent of students were studying at the undergraduate level and 18.10 percent of students were studying at the postgraduate level (Figs. 2 and 3).

**Table 3** Uses/adoption rate of virtual classrooms

Respondent's reply	Total no. of faculty members = 335		Total no. of students = 867	
	Number of respondents	%(out of 335)	Number of respondents	%(out of 867)
Yes	305	91.04	588	67.8
No	30	8.95	279	32.20
Total	335	100	867	100

Source: author's data analysis output

## 6.2 Adoption rate of virtual classroom among faculty members and students

Out of the total 335 faculty members, only 91.04 percent of faculty members were using the virtual classroom to interact with students for the teaching–learning process during the nationwide lockdown due to COVID-19. When this study was conducted, 30 faculty members were not using the virtual classroom to interact and Out of the total 867 students, only 67.80 percent of students were attending the virtual for the learning process during the nationwide lockdown due to COVID-19. And 32.20 percent of students were not attending the virtual classroom when this study was conducted (Table 3). We communicated through Gmail with those faculty members and students, who were not using the virtual classroom for the teaching–learning process when this study was conducted. We have received replies from 26 faculty members and 254 students about the reason for not attending the virtual classroom. 17 faculty members have cited the reason that they were thinking that virtual classrooms will not be easy for teaching. Hence, they communicated with students through WhatsApp and Gmail. But after receiving positive reviews from their colleagues they started using the virtual classroom. These were conservatives/ late majority who were waiting to adopt until they see a clear advantage specifically for their own situations and it is easy to use the technology offered (Moore, 1991). 9 faculty members have cited the reason that when the lockdown was implemented they were able to complete the major part of the syllabus, and for the remaining part, they were using WhatsApp and Gmail. But in the new semester, there was no option left, so they started using the virtual classroom. These are Skeptics/ laggards who hold out until they have no choice but to adopt. Often they take pride in not adopting. They insist that the “old way” of doing something is good enough (Moore, 1991).

103 students have cited the reasons for not attending virtual classrooms as not the availability of better quality internet, network issues, lack of computer/laptop/ Smartphone, etc. these students were facing infrastructural issues in the beginning. But after some time the majority of them have made the arrangements when they find that the lockdown may go on for a long time. And 151 students have cited the reason that lockdown was just implemented for a month only in the beginning. Then it was continuously extended by one month again and again. When they found that it is going long, now they feel that it may create academic losses for them, there was

no other option for them and then they started attending the virtual classroom. These are Skeptics/ laggards who hold out until they have no choice but to adopt. Often they take pride in not adopting. They insist that the “old way” of doing something is good enough (Moore, 1991).

In this study, we are considering virtual classrooms as online live classrooms that can be conducted with the help of Microsoft Team, Google Meet, ZOOM, and other live platforms. Those faculty members and students were attending classes on the above-mentioned platforms, and we have considered that those students and faculty members have adopted virtual classrooms for the teaching–learning process.

### 6.3 Impact of COVID-19 lockdown on online teaching–learning

Out of the total 305 faculty members who were using the virtual classroom for interaction with students, 90.20 percent of faculty members started using virtual classrooms after the COVID-19 pandemic. Only 30 faculty members were using virtual classrooms before the COVID-19 pandemic. Out of the total of 588 students who were attending a virtual classroom, 87.80 percent of students started using virtual classrooms after the COVID-19 pandemic. Only 12.20 percent of students were using virtual classrooms before the COVID-19 pandemic.

That shows the majority of faculty members and students in Higher Education Institutes (HEIs) were not using virtual classrooms before the COVID-19 pandemic. (Table 4) The above results are indicating a significant change in the teaching–learning process due to the COVID-19 pandemic in higher education.

### 6.4 Paired samples test results

This study was carried out by comparing the expected benefits of the virtual classroom prior to attendance with the actual benefits of the virtual classroom after attendance. This concept has been used for both faculty members as well as students at the higher education level. The above Table 8 indicates the mean value of expected benefits and actual benefits of all 12 pairs for faculty members and students respectively.

**Table 4** Novel COVID-19 reaction to uses/attendance of virtual classrooms

Respondent's reply	Total no. of faculty members = 305		Total no. of students = 588	
	Number of respondents	%	Number of respondents	%
Started before novel COVID-19	30	9.8	72	12.20
Started after novel COVID-19	275	90.20	516	87.80
Total	305	100	588	100

Source: author's data analysis output

The mean response value of expected benefits is higher than the actual benefits mean value in all 12 pairs for faculty members. This indicates the actual benefits perceived from the virtual classroom are less than the expected benefits.

The mean response value of expected benefits is higher than the actual benefits mean value in 08 pairs for students. In one pair of students, expected benefits mean values are equal to actual benefits. And in one pair students' expected benefits mean values are less than the actual benefits mean value. That indicates the major expected benefits of the virtual classroom are not perceived by students from the virtual classroom.

As we can see from the above table, the mean value of expected and actual benefits is more than the 3 on the 1 to 5 Likert scale for 11 pairs out of 12 pairs of expected and actual benefits. The mean value of expected benefit benefits is higher than the mean value of actual benefits for 11 pairs and 08 pairs in the case of faculty members and students respectively. The reason behind this gap is network problems, lack of internet facilities, consistent connectivity issues, availability of infrastructure, and lack of classroom environment at home. And the gap in the mean value of expected benefits and actual benefits is higher in the case of students than in comparison to faculty members. Because faculty members have monthly income, they can afford the expenditure for the development of online classroom infrastructure, laptops, internet connectivity, etc., and students are not supported by any personal income. They are dependent on the family income only. During the pandemic time, even the university and colleges have not launched any financial support for students to develop the infrastructure for virtual classrooms.

Table 9 is shows individual statistics of the faculty members' expected benefits and actual benefits differences for all 12 pairs. The difference between expected benefits and actual benefits is significant ( $<0.05$ ) for 7 pairs out of 12 pairs. And the difference is not significant for the 5 pairs. Table 9 results are in continuation of Table 8 results. Table 9 is shows the significant level for each expected benefit and actual benefit. The difference in actual and expected benefits for the following 7 pairs was found significant which are as follows: Convenient to Use, Able to connect with Students, Enhancing Personal Learning, Class Attendance Will Increase, Able to Cover Practical Subjects, Less Disturbance from Students and Effective Time Management. And for the following 5 pairs, the difference in expected benefits and actual benefits is found to be insignificant ( $>0.05$ ), which are as follows: Able to Cover Syllabus Timely, Enhance Creativity, Introduction to Education, Sharpened My Digital Skills, and Schedule Flexibility.

From Table 10, we can conclude the difference in students' expected benefits and actual benefits is found significant ( $<0.05$ ) for all 12 pairs of virtual classroom benefits. Table 10 results are in continuation of Table 8 results. Table 10 is shows the significant level for each expected benefit and actual benefit. The difference in actual and expected benefits for the following 12 pairs found significant which are as follows: Convenient to Use, Able to connect with Students, Enhancing Personal Learning, Class Attendance Will Increase, Able to Cover Practical Subjects, Less Disturbance from Students, Effective Time Management, Able to Cover Syllabus



Timely, Enhance Creativity, introduces to Education, Sharpened My Digital Skills and Schedule Flexibility.

In this study, the paired sample t-test has been conducted in SPSS software to know whether there is any significant difference between expected benefit and actual benefits from the adoption of the virtual classroom during the COVID-19 pandemic to interact with students. The results of the paired-sample t-test have shown in Tables 8, 9, 10, and 11.

The mean difference between expected benefits from the virtual classroom and actual benefits from the classroom is positive. That indicates the overall mean of expected benefits is higher than the overall mean of actual benefits. And that difference value is 0.250055, with a Sig. (2-tailed) value of 0.036 which is less than 0.05. That indicates the significant difference between means of actual benefits and expected benefits (Table 11).

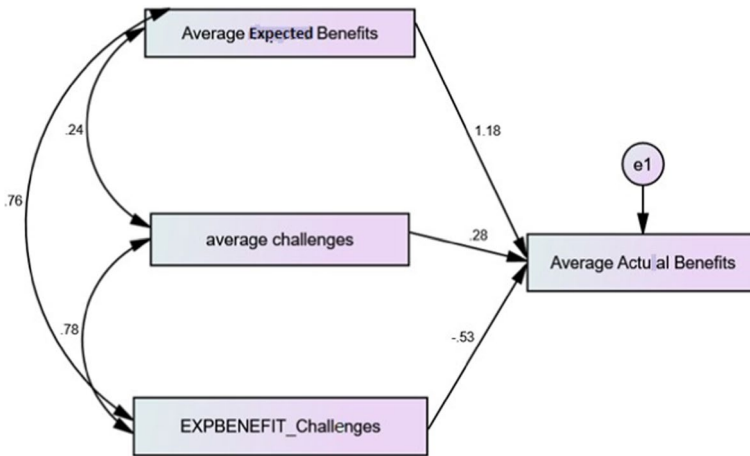
So here we reject the null hypothesis “H01: There are not any significant differences between expected benefits and actual benefits perceived from virtual classrooms by faculty members in higher education.”, that is the true mean difference is equal to zero. We have sufficient evidence to reject the null hypothesis and accept the alternate hypothesis “HA1: There are significant differences between expected benefits and actual benefits perceived from virtual classrooms by faculty members in higher education.” From the above results, we can conclude that there is a significant difference between the means of expected benefits and actual benefits.

The common reason for this can be less attendance among students, the casual attitude among students, the possibility of proxy attendance, no strict monitoring of students in a virtual classroom, network connectivity, and lack of a professional environment at home.

To know exactly out of 12 pairs of individuals which pair has a significant difference, further we have conducted t statistics for individual pairs. As per the output results shown in Table 7, out of 12 pairs of benefits, seven pairs have a statistically significant difference in the mean score of expected benefits and actual benefits. Which are convenient to use, connect with students, increase class strength, effective time management, less disturbance from the student, and so on. And for the remaining five pairs, we do not find any significant differences in the mean score of expected benefits and actual benefits.

The mean difference between the expected benefits of attending the virtual classroom and actual benefits from the virtual classroom is positive. That indicates the overall mean of expected benefit is higher than the overall mean of actual benefits. And that difference value is 0.3872827, with a Sig. (2-tailed) value of 0.000 which is less than 0.05. That indicates the significant difference between means of actual benefits and expected benefits (Table 11).

So here we reject the null hypothesis “H01: There are not any significant differences between expected benefits and actual benefits perceived from virtual classrooms by students in higher education.”, that is the true mean difference is equal to zero. We have sufficient evidence to reject the null hypothesis and accept the alternate hypothesis “HA1: There are significant differences between expected benefits and actual benefits perceived from virtual classrooms by



**Fig. 4** Moderation analysis for HEIs faculty members

**Table 5** Regression weights: (Group number 1—Default model)

			Estimate	S.E	C.R	P	Label
AverageActualBenefits	<---	AverageExpetedBenefits	1.263	0.107	11.822	***	
AverageActualBenefits	<---	averagechallenges	0.291	0.107	2.710	0.007	
AverageActualBenefits	<---	EXPBENEFIT_Challenges	-0.110	0.032	-3.433	***	

students in higher education.” From the above results, we can conclude that there is a significant difference between the means of expected benefits and actual benefits.

The common reason for this may be less attendance among students, the casual attitude among students, the possibility of proxy attendance, no strict monitoring of students in a virtual classroom, network connectivity, and lack of a professional environment at home.

To know exactly out of 12 pairs individually which pair has a significant difference, further, we have conducted t statistics for individual pairs. As per the output results shown in Table 11, out of 12 pairs of benefits, all 12 pairs have a statistically significant difference in the mean score of expected benefits and actual benefits.

## 7 Moderation of challenges between expected benefits and actual benefits for faculty and students

Here we have also performed the moderation analysis using the AMOS software. We have conducted a moderation analysis of challenges between expected benefits and actual benefits for higher education faculties and students separately.

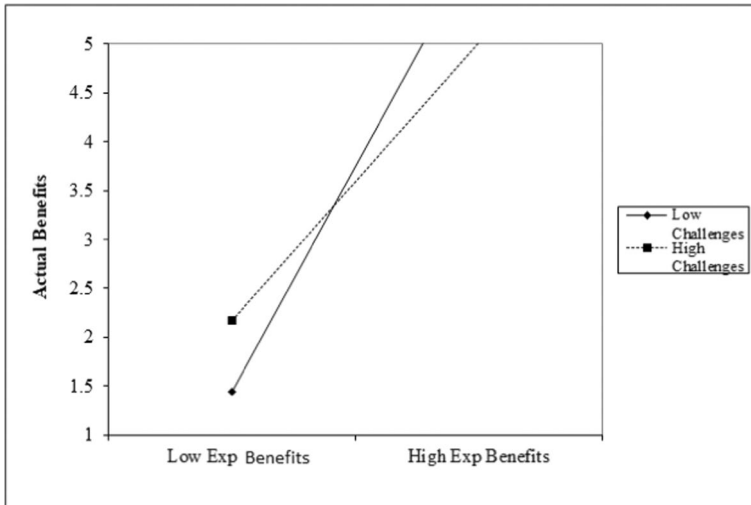


Fig. 5 Moderation analysis graphical for HEIs faculty members

Further, we have used AMOS software to analyze the effect of challenges as a moderator between the expected benefits and actual benefits of the virtual classroom for HEIs faculty members and students separately.

## 7.1 Moderation analysis for faculty

Figure 4 is representing the three paths. The first path expects benefits and actual benefits, the second path represents the challenges and actual benefits and the third path represents expected benefits with challenges and actual benefits for faculty members.

The results of the analysis about the effects of expected benefits and challenges on actual benefits are shown in Table 5. The effect of expected benefits and challenges on actual benefits was significant, although the sign was positive ( $\beta_{\text{Exp Benefit}} = 1.263$ ,  $\text{Challenges} = 0.291$ ,  $p < 0.05$ ). The effect of the mixed variable Expected Benefit\_Challenges on Actual benefits is also significant with a negative sign ( $\beta_{\text{Expected Benefit\_Challenges}} = -0.110$ ,  $p < 0.05$ ). Therefore, Hypothesis 2, “Faculty members with a greater level of challenges faced while using virtual classrooms are less likely to achieve the expected benefits”, was significant. Students’ participation was less due to the lack of in-person conversations with faculty members which could result in mental stress for students and faculty members (Surkhali & Garbuja, 2020a, b). They also reported that an accessible & affordable internet connection was the main problem faced by students and faculty members and less participation, interaction, and technical disturbance led to less engagement and disturbance in online classes. Faculty members found technical, logistical, and pedagogical problems during online classes because of an unprepared transition from face-to-face teaching to online teaching.

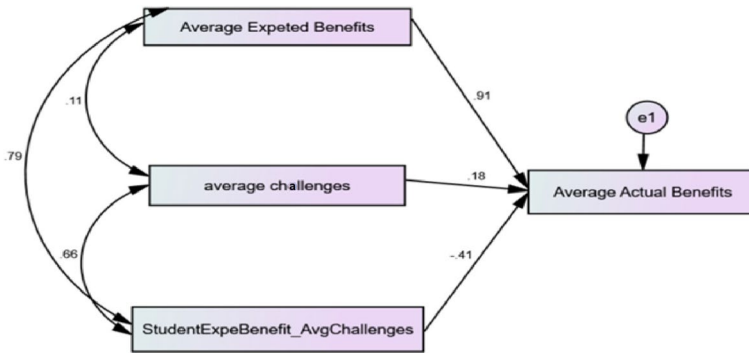


Fig. 6 Moderation analysis for HEIs students

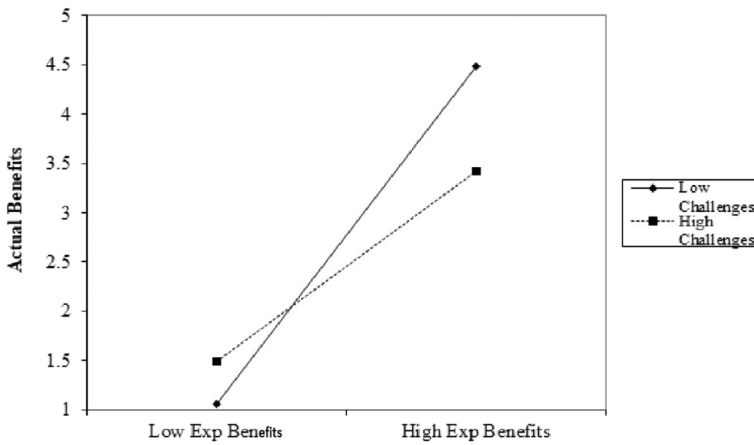


Fig. 7 Moderation analysis graphical for HEIs students

Table 6 Regression weights: (Group number 1—default model)

		Esti mate	S.E	C.R	P	Label
AverageActualBene fits	<--- AverageExpetedBenefits	0.951	0.113	8.404	***	
AverageActualBene fits	<--- averagechallenges	0.203	0.102	1.998	0.046	
AverageActualBene fits	<--- StudentExpeBenefit_AvgChallenges	-0.094	0.033	-2.867	0.004	

The Fig. 5 is also supporting the results of AMOS moderation analysis for faculty members. We can analyze that the actual benefits perceived from expected benefits are declining in the presence of high challenges. The faculty members are able to perceive higher actual benefits due to the low challenges of virtual classrooms. Further, the faculty members were able to perceive lower actual benefits when challenges are more (Figs. 6 and 7).

## 7.2 Moderation analysis for students

Figure 1 is representing the three paths. The first path expected benefits and actual benefits, the second path represents the challenges and actual benefits and the third path represents expected benefits with challenges and actual benefits for students of HEIs (Table 6).

The results of the analysis about the effects of expected benefits and challenges on actual benefits are shown in Table 5. The effect of expected benefits and challenges on actual benefits was significant, although the sign was positive ( $\beta_{\text{Exp Benefit}} = 0.951$ ,  $\text{Challenges} = 0.203$ ,  $p < 0.05$ ). The effect of the mixed variable Expected Benefit\_Challenges on Actual benefits is also significant with a negative sign ( $\beta_{\text{Expected Benefit_Challenges}} = -0.0094$ ,  $p < 0.05$ ). Therefore, Hypothesis 3, “Students with a greater level of challenges faced while using virtual classrooms are less likely to achieve the expected benefits”, was significant. Students’ participation was less due to the lack of in-person conversations with faculty members which could result in mental stress for students and faculty members (Surkhali & Garbuja, 2020a, b). They also reported that an accessible & affordable internet connection was the main problem faced by students and faculty members and less participation, interaction, and technical disturbance led to less engagement and disturbance in online classes. Faculty members found technical, logistical, and pedagogical problems during online classes because of an unprepared transition from face-to-face teaching to online teaching.

The Figure 4 shows the results of AMOS moderation analysis for students of higher education institutes (HEIs). We can analyze that the actual benefits perceived from expected benefits are declining in the presence of high challenges. The HEI’s students are able to perceive higher actual benefits in the presence of low challenges in the virtual classroom and the students are able to perceive lower actual benefits when challenges are more. Various studies have been done to determine the challenges and drawbacks faced by faculty members and students during online classes. Students’ participation was less due to the lack of in-person conversations with faculty members which could result in mental stress for students and faculty members (Surkhali & Garbuja, 2020a, b). They also reported that an accessible & affordable internet connection was the main problem faced by students and faculty members and less participation, interaction, and technical disturbance led to less engagement and disturbance in online classes. Faculty members found technical, logistical, and pedagogical problems during online classes because of an unprepared transition from face-to-face teaching to online teaching. More efforts were required from the faculty members’ side to ensure that students are studying the correct study material and providing information about the assignment. Students opted for online education because it offered greater flexibility but required more self-discipline by students (Daymont et al., 2011). Students’ perceptions of vocational studies on online mode stated that as vocational studies require not only knowledge but skills as well, online learning did not improve student’s productivity, and also the experience was not up to expectation (Syauqi et al., 2020). The flexibility and convenience ODE offers and the much-needed push for the change it has inspired cannot be denied. However, its efficiency in terms of student outcome as compared to traditional education is still a

point of dispute. It is therefore imperative to continue investigating online education. Policymakers should take the findings of research on education seriously in order to bridge whatever gaps may be present (Abu Talib et al., 2021).

### 7.3 Reason for the gap between expected benefits and actual benefits of virtual classroom

After the real experience of the virtual classroom during COVID-19 by teachers and students, there must be some challenges faced by them, as the shifting to virtual classroom was conducted in a short span of time. From the output of data analysis of this study, we found that the network connectivity was the major challenge faced by the faculty members with a mean value of 3.68 followed by a 3.17 mean value for lack of professional environment at home, 3.03 for lack of teaching material at home, 2.92 for lack of personal computer/laptop. The least mean value of 2.38 has shown for the option “there is no lacking”. There are significant major challenges faced by teachers of HEIs from virtual classrooms, that indicates the majority of faculty members are facing challenges with network connectivity, professional environment at home, material, and personal laptop/computer.

From a student’s responses, we found that the lack of a professional environment at home with a mean value of 3.59 was the major challenge faced by the students followed by 3.57 for lack of teaching material at home, and 3.35 for network connectivity, 3.31 for lack of personal computer/laptop. The least mean value of 2.10 has shown for the option “there is no lacking”. There are significant major challenges faced by students of HEIs from virtual classrooms.” That indicates the majority of students as shown in Table 7 are facing challenges with network connectivity, professional environment at home, material, and personal laptop/computer. The HEIs, Ministry of Education, and University Grant Commission need to fix the issues related to internet connectivity, internet infrastructure in rural India, and lack of mobile/laptop/computers among poor family students, to enhance the teaching–learning process.

The above challenges of virtual classrooms are the reason for the gap between expected benefits and actual benefits of the virtual classroom. The challenges of virtual classrooms were acting as a moderator between the expected benefits and actual benefits of learners. A research study from Jiang et al. (2021) also stated that Chinese university students’ satisfaction with online learning platforms are directly and indirectly impacted by their computer self-efficacy and the perceived ease of use and usefulness of the platforms.

## 8 Discussion

The difference between the mean value of expected benefits and actual benefits is found to be statistically significant in the case of faculty members as well as students. Virtual classroom teaching and learning can be fruitful for students as well as faculty members to complete their syllabus and assessment, provide moral support,

**Table 7** Major challenges with virtual classroom

	Faculty members			Students		
	Freq	%(out of 305)	Mean response	Freq	%(out of 588)	Mean response
Lack of awareness	305	100	2.86	588	100	2.99
Resistance to change	305	100	2.76	588	100	2.98
Lack of training	305	100	3.07	588	100	3.16
Network connectivity	305	100	3.68	588	100	3.35
Lack of personal		100	54	com	100	puter/laptop 305
Lack of professional environment at home	305	100	3.17	588	100	3.59
Lack of teaching material at home	305	100	3.03	588	100	3.57
There is no lacking	305	100	2.38	588	100	2.10

and reduce stress levels during the COVID-19 pandemic. it would also enable the interaction between the faculty members and learners. But for effective learning and teaching, infrastructure and technological support are required. Online teaching and learning could be advantageous as through which faculty members can motivate students, complete syllabus, provide accessibility to learning and teaching from any time and any place, etc. Stated that Online learning is more flexible in access as it can provide content and instruction at any time, from any place. However, technological and infrastructure support is required for the successful implementation of online teaching and learning through virtual classrooms (Castro & Tumibay, 2019). Through virtual classroom teaching students can have interaction with the faculty members which could be helpful to provide moral support and reduce the stress level of students during the COVID-19 Pandemic. Online teaching is effective during this COVID-19 pandemic time for preventing the students from going away from home. Online teaching can have challenges such as poor internet connectivity, non-availability of appropriate electronic devices, lack of a teaching environment at home, and less ICT knowledge among students and faculty members can result in less engagement of students and faculty members' in the teaching and learning process (Yulia, 2020). virtual schools dramatically outperformed brick and mortar schools when it comes to promoting active learning, communicating effectively, managing a classroom, and providing high-quality instruction. The magnitude of the difference was less among students of color, whose parents reported a substantially better experience with online instruction in brick and mortar schools than did white or Asian parents (Kingsbury, 2021).

Poor digital skills of faculty members and students, lack of electricity facilities, less availability and accessibility of internet, connection issues, inadequate facilities, training, funding, and unacceptability of technology, etc. were the barriers to online education at the time of closure of colleges due to COVID-19 pandemic (Oneyma et al., 2020). Students can also have a casual attitude, less attendance, feeling of isolation and less interaction can lead to mental distress, spending more time in front of a computer could be hazardous for health too (Surkhali & Garbuja, 2020a, b). A research study by Alzahrani and Seth (2021) finding states that during the pandemic, service quality did not influence students' satisfaction, although both information quality and self- efficacy had significant impacts on satisfaction. Neither self-efficacy nor satisfaction impacted personal outcome expectations, although prior experience and social influence did. The findings have practical implications for education developers, policymakers, and practitioners seeking to develop effective strategies for and improve the use of learning management systems during the pandemic.

The reasons behind this gap in perceived benefits are network problems, lack of internet facilities, consistent connectivity issues, availability of infrastructure, and lack of classroom environment at home. And the gap in the mean value of expected benefits and actual benefits is higher in the case of students than in comparison to faculty members. Because faculty members have monthly income, they can afford the expenditure for the development of online classroom infrastructure, laptops, internet connectivity, etc., and students are not supported by any personal income. They are dependent on the family income only. During the pandemic time, even



the university and colleges have not launched any financial support for students to develop the infrastructure for virtual classrooms.

One of the challenge of COVID-19 was that, not all the students are able to join an online classroom due to the non-availability of internet connection or mobile devices or laptops. Thus, we have to ensure that students without access to assignments or tests could be addressed separately (Meena, 2020a). Resistance to remote teaching and learning has subsided significantly. Necessarily, higher education has embraced remote OL learning. But we are not there yet. Much needed to effectively teach in OL platforms. Colleges and universities must provide faculty and students with the necessary training and resources (Meena, 2020b). Higher Education Institutes (HEIs) faculty members, as well as students, were not able to perceive actual benefits in full in comparison to expected benefits due to the presence of challenges in the virtual classroom as moderators. Virtual classrooms have challenges such as poor internet connectivity, non-availability of appropriate electronic devices, lack of a teaching environment at home, and less ICT knowledge among students and faculty members can result in less engagement of students and faculty member's in the teaching and learning process. The findings of this study will help Higher Education Institutes (HEIs), the Ministry of Education, the University Grant Commission, and the faculty member's in effectively implementing the virtual classrooms during this pandemic. This study will help the Higher Education Institutes to reduce the challenges of the virtual classroom. Students' participation was less due to the lack of in-person conversations with faculty members which could result in mental stress for students and faculty members (Meena & Sharma, 2020; Surkhali & Garbuja, 2020a, b). They also reported that an accessible & affordable internet connection was the main problem faced by students and faculty members and less participation, interaction, and technical disturbance led to less engagement and disturbance in online classes. faculty members found technical, logistical, and pedagogical problems during online classes because of an unprepared transition from face-to-face teaching to online teaching (Singh & Meena, 2022). More efforts were required from the faculty members' side to ensure that students are studying the correct study material and providing information about the assignment. Students opted for online education because it offered greater flexibility but required more self-discipline by students (Daymont et al., 2011). Students' perceptions of vocational studies on online mode stated that asvocational studies require not only knowledge but skills as well, online learning did not improve student's productivity, and also the experience was not up to expectation (Syauqi et al., 2020). The common reasons for the difference in expected benefits and actual benefits of virtual classrooms may be less attendance among students, the casual attitude among students, the possibility of proxy attendance, no strict monitoring of students in a virtual classroom, network connectivity, and lack of a professional environment at home. Digital platforms were used as an additional facility to improve the teaching–learning process in higher education and they were extensively used free of cost by the students during the pandemic time. Due to the COVID-19 pandemic, many HEIs are able to conduct classes, evaluations, and admission-related work completely in virtual mode. So, this pandemic has given exposure to HEIs. Now the HEIs, Ministry of Education, UGC, and All India Council for technical education (AICTE) are in better understanding of

virtual teaching–learning implementation benefits and challenges (Singh & Meena, 2022). Those Faculty members and students who were not participating in the virtual classroom, we have considered they have not adopted the virtual classroom for the teaching–learning process. Maybe they are just using online material available on the internet etc. because in India when the lockdown was implemented for the first time, many faculty members were just sharing the study material with students through Gmail and WhatsApp. Because at the beginning of the lockdown there was no proper observation of online classes by the university administration, college principals, and heads of the departments. Online teaching pedagogies should be incorporated into regular mandatory teacher professional development programs to provide teachers with ongoing skills in online teaching. Furthermore, a mechanism should be developed to manage student behaviors in the course of online teaching as well as effectively supervise the students to evaluate their understanding (Ma et al., 2021). Due to the pandemic's involvement, several higher education institutions were forced to immediately adapt their teaching methods in order to ensure the safety of all students and staff. It was a certainty that school settings would be outlawed with the implementation of social distance. Introducing online tools and technology to universities was not a tough process because most campuses in the twenty-first century were accustomed to having eLearning as an option for students conducting distant learning or blended learning. However, virtual teaching was not a possibility this time around; instead, the internet technique was used to continue offering instruction. Many colleges soon turned to give existing and prospective students with students who have access to previously recorded classes and online assignments so that they can be provided during the transition from traditional or hybrid learning to full online or virtual education in the beginning atmosphere. Providing prerecorded courses as an asynchronous form learning for students made it difficult for professors to get control of the situation. There was a difficulty with delivering assignments or administering tests, but most significantly, there was an issue with of class involvement and attendance, both of which are required for successful education. Many obstacles arose with the introduction of online teaching, the most significant of which was acclimating to using online resources to educate, which deviated from the norm of education. It may also be claimed that the use of online tools and technology is really late, and that if they had been utilized earlier, they would have been easier to use now since they would have revolutionized and updated education as we know it.

## 8.1 Challenges of online teaching learning during pandemic time

The coronavirus, which first appeared in Wuhan, China at the end of 2019, has already spread on a worldwide scale, and on January 30, 2020, the Director of the World Health Organization will declare a global emergency.

The World Health Organization (WHO) has designated this Covid-19 outbreak a Public Health Emergency of International Concern (Kim & Niehm, 2009). The World Health Organization recommended an official name for the virus in February: Covid-19, an abbreviation that stands for the coronavirus illness of 2019. The

educational government declared in March that all schools and institutions in the nation would be closed, and that students would be required to learn from home, avoiding all kinds of gathering in public locations to complete their education (Senecal & Nantel, 2004). The introduction of online courses has shown to be the most effective way in retaining students' retention power and maintaining access to learning throughout these periods. Due to the shutdown of educational institutions to combat Covid-19, schools and universities were obliged to provide education through distant learning to assure students' continuing access to learning. Lectures were presented utilising different online tools and technologies such as Zoom and Black Board Study extreme, which allowed students to learn from the comfort of their own home or business. This transition from the traditional classroom environment to a virtual higher education experience presented several concerns, including educational expenses, employment and data privacy, and cybercrime, all of which were not evident prior to the virus's arrival. Tuition costs were one of the major factors that impacted many institutions and the parents of present and incoming students during this off-campus form of education. The parents believe that because all of the facilities given on campus are not fully utilised, as well as owing to financial difficulties as the economy slows, the fees should be cut (Oneyma et al., 2020). Universities, on the other hand, said that they are spending more than ever before due to the increased usage of technology, as well as the additional regular outlay of pay for their personnel and rents for the leasing premises. Because of the advent of distant learning, there has been a drop in the usage of labs, libraries, and other non-academic services supplied. Universities that have previously invested in technology and tools with well-equipped online systems and have trained their faculties will have an advantage and will be able to offer an increase in class size by allowing their students to register for courses with more access and even across campuses in different emirates, as physical distance will no longer be an issue. This might have a favourable influence on students getting an education and experience regardless of campus or professor, but it also has a little detrimental impact on teaching staff personnel (Pelliccione et al., 2019).

## **8.2 Opportunities of online teaching learning during pandemic time**

Researchers have discovered that in order to conduct eLearning articulately, they must master various chambers of this industry. A leading researcher in eLearning has been able to provide an eight-dimensional framework with contents including; pedagogical, technological, institutional, interface design, evaluation, management, resource support, and ethical. All of these characteristics must be created by the institution in order for virtual learning to be conducted professionally (Scheinkman, 2008). Many effective measures must be implemented step by step in order to provide efficient services. Not only must the providers of these numerous online tools provide critical information on how to operate their apparatus, but students and personnel must also learn to adapt to the new functions and find a way to do their best despite how little they have. Not only must the providers of these numerous online tools provide critical information on how to use their instrument, but students and

personnel must also learn to adapt to the new functions and find a way to do their best despite the limited resources available. The shift from the traditional classroom to online is facilitated by live lectures in which instructors can watch their students and offer interactive lectures in which students may ask questions and get answers straight away (Diekmann, 2016).

### **8.3 Impact of online teaching learning during pandemic time on students physical/ mental wellbeing and access to healthcare**

During the lockdown, young people faced appointment cancellations and increased care demands, which Topriceanu et al. (2020) ascribed to the lockdown's impact on schooling, housing, relationships, jobs, and income. Furthermore, the Community Mental Health Survey highlighted difficulty in obtaining mental health services during the lockdown, including support and wellness, crisis treatment, and access to care. These services were already strained and under pressure prior to the lockdown (The Kings Fund, 2015). More recently, as a result of the pandemic, 43% of psychiatrists noticed an increase in urgent and emergency patients following the lockdown, particularly crisis care services. In order to implement a hybrid or hyflex strategy, institutional delivery methods must incorporate improved staff training in helping students with mental health challenges. Mental health help should be easily available, for example, via department/module intranet pages. Students should also be given training on how to encourage their classmates in a safe manner (Reedy, 2019).

There are also practical and managerial implications to consider, particularly in sessions where class room discussions around case studies are required: it necessitates a higher level of staffing numbers to deliver quality teaching to larger cohorts of students, given that at least two staff members are required in these sessions; one to respond to pupils in the class room setting and one to monitor chat from remote students: having one academic Models combining distant students into a live on campus session might provide substantial challenges and potential burnout for staff, given the present workload demands academic staff experience owing to large student numbers, producing compelling material, and increasingly high grading loads. The half and half worldview consolidates conventional up close and personal exercises like research facility practical's with web based learning choices. Understudies who take part in grounds exercises approach social, wellness, and recreation conveniences (Shadiev & Huang, 2020).

A new survey at Aston College viewed that as 49% of first-year undergrad biosciences understudies favored a blended showing methodology (which included both up close and personal and online material conveyance). Moreover, 44% of first-year understudies announced working part-time in the ongoing review, and these understudies might invite the adaptability given by the half and half conveyance of their course. Predictable timetabling that suits the requests of understudies is expected for the advantages of half and half to be understood, which is ordinarily an obstruction for universities. The pandemic has demonstrated the adaptability of both academics and understudies in the advanced education

context to continue with online learning and assessment, however it has also demonstrated an expanded should be conscious of advanced impoverishment and concerns affecting understudy prosperity. The pandemic has prepared students to function from a distance, which is an important aspect of conveying a successful half breed model and replicates the global changes made by various organizations to adapt to increasing rules, constraints, and direction. There are apparent advantages to online learning, as well as important opportunities for institutions to gain from increased web- based entertainment use. In any way, our examination identified a fair online learning test: ensuring our understudies are open to interacting and connecting with on the web. Colleges may use camcorders as a tool for duplicating homeroom connections on the web, but teachers should be aware of their students' usage preferences. Training providers must incorporate examples from internet education and create opportunities for a blended approach to teaching, learning, and assessment (Kim & Stoel, 2004; Sprague et al., 2007; Do-Hyung et al., 2007).

#### 8.4 Teaching learning in Post-COVID world

The COVID-19 pandemic has had a significant impact on higher education, leading to changes in teaching and learning methods. As we navigate the post-COVID era, here are some considerations for teaching and learning in higher education:

**Bended and online learning:** The pandemic has accelerated the adoption of online and blended learning approaches, where traditional face-to-face instruction is combined with online components. Institutions may continue to offer these options post-COVID, allowing for flexibility in course delivery and accommodating diverse student needs (Adams et al., 2019).

**Technology integration:** Effective use of technology has become crucial in the post-COVID higher education landscape. Faculty members and students may need to continue using digital tools and platforms for communication, collaboration, content delivery, and assessment. Institutions may invest in appropriate technology infrastructure and provide training and support to ensure smooth integration (Alqurashi, 2018).

**Focus on student engagement:** Student engagement has become a key concern during the pandemic, as remote learning can lead to isolation and reduced interaction. Post-COVID, faculty members may need to continue finding creative ways to promote student engagement, such as through interactive online activities, group discussions, and virtual collaborations (Azmuiddin et al., 2020).

**Mental health and well-being:** The pandemic has taken a toll on the mental health and well-being of students and faculty alike. Institutions may need to prioritize mental health support services, such as counseling and wellness programs, to help students and faculty members cope with the ongoing challenges and stressors (Barger, 2020).

**Flexibility and adaptability:** Post-COVID higher education may require flexibility and adaptability in response to changing circumstances. Institutions may

need to develop contingency plans for potential disruptions, such as outbreaks or other foreseen events, and be prepared to adjust instructional delivery accordingly (Barro et al., 2020).

**Equity and inclusion:** The pandemic has highlighted existing disparities in higher education, such as access to technology and internet connectivity, which can disproportionately affect students from marginalized sections. Institutions may need to continue addressing these equity and inclusion issues in post-COVID teaching and learning, through measures such as providing technology resources, accommodating diverse learning needs, and promoting inclusive pedagogical practices (Girik Allo, 2020).

**Assessment and evaluation:** Assessing student learning in the post-COVID era may require rethinking traditional assessment methods. Institutions may explore alternative assessment strategies, such as authentic assessments, project-based assessments, and competency-based assessments, to ensure valid and reliable evaluations of student learning outcomes (Donlon et al., 2020).

**Professional development:** Faculty and staff may need ongoing professional development opportunities to enhance their pedagogical skills for effective post-COVID teaching and learning. Institutions may invest in training programs, workshops, and resources to support faculty and staff in adapting to evolving educational practices (Ceglie, 2020; Anderson, 2008; Ally, 2004; Chu et al., 2021).

In the Post-COVID world higher education may require a continued focus on flexibility, adaptability, technology integration, student engagement, equity, and well-being. By prioritizing these areas, institutions can create a resilient and inclusive learning environment for their students and faculty in the post-pandemic era.

## 8.5 Learning theories and online education

There are several learning theories that support online teaching, which is the process of delivering educational content and facilitating learning experiences through online platforms. These learning theories provide frameworks and principles that can guide the design and delivery of effective online instruction. Here are some of the main learning theories that are commonly applied in online teaching:

**Constructivism:** Constructivism is a learning theory that emphasizes the active construction of knowledge by learners through their experiences and interactions with the environment. In the online teaching context, this can be supported by providing opportunities for learners to engage in collaborative activities, problem-solving tasks, and discussions. Online instructors can also facilitate meaningful interactions among learners, such as through online forums or virtual group projects, to promote the construction of knowledge through social interaction (Aydin, 2005).

**Connectivism:** Connectivism is a learning theory that focuses on the idea that learning is a process of making connections and networking with information sources, peers, and experts. In the online teaching context, this can be facilitated

by leveraging the power of technology to create networks of resources and connections, such as through online communities, social media, and online databases. Online instructors can encourage learners to engage in self-directed learning and networked learning, where they actively seek out and share information from various sources to build their knowledge and skills (Eom et al., 2006).

**Cognitive Load Theory:** Cognitive Load Theory is a learning theory that focuses on how the cognitive load of learning tasks can impact learners' ability to process and retain information. In the online teaching context, this theory suggests that instructional design should aim to minimize cognitive overload by presenting information in a clear and organized manner, providing appropriate scaffolding, and avoiding unnecessary distractions. Online instructors can use multimedia elements, such as videos, images, and interactive simulations, strategically to optimize cognitive load and enhance learning outcomes (Geoffrey & Regis, 1991).

**Andragogy:** Andragogy is a learning theory that focuses on adult learners and their unique characteristics, such as their self-directedness, prior experiences, and motivation. In the online teaching context, this theory suggests that online instruction should be designed to meet the needs and preferences of adult learners, such as by providing opportunities for self-paced learning, allowing for flexibility in learning paths, and acknowledging the relevance of learners' prior experiences. Online instructors can also use strategies that promote learner motivation, such as setting clear learning goals, providing feedback, and recognizing learners' achievements (Rogers, 2003).

**Behaviorism:** Behaviorism is a learning theory that emphasizes the role of external stimuli and reinforcement in shaping learners' behaviors. In the online teaching context, this theory can be applied by providing clear instructions, presenting information in a systematic and organized manner, and using assessments and feedback to reinforce desired behaviors. Online instructors can also use gamification elements, such as badges, points, and leaderboards, to incentivize and reinforce learners' engagement and progress (Ceglie, 2020; Anderson, 2008; Ally, 2004; Chu et al., 2021).

These are just a few examples of the learning theories that can support online teaching. It's important to note that effective online instruction often involves a combination of different learning theories, depending on the nature of the content, the goals of the instruction, and the characteristics of the learners. Online instructors should consider how these theories can inform their instructional design and delivery to create meaningful and effective online learning experiences.

## 8.6 Implications of learning theories

Learning theories have a significant impact on the performance of higher education institutes in the context of online education. Here are some ways in which learning theories can influence the performance of higher education institutes for online education:

**Pedagogical Approach:** Learning theories provide the foundation for the pedagogical approach followed by higher education institutes in delivering online education. For instance, behaviorist theories may emphasize providing clear instructions, immediate feedback, and repetitive practice, while constructivist theories may focus on learner-centered approaches, collaborative learning, and problem-solving. The pedagogical approach adopted by an institution can greatly impact student engagement, motivation, and overall learning outcomes in the online environment (Sprague et al., 2007).

**Course Design:** Learning theories inform the design of online courses, including the organization of content, instructional materials, and assessments. For example, cognitive theories may emphasize the importance of presenting information in manageable chunks, using multimedia elements to enhance understanding, and incorporating opportunities for reflection and application. Effective course design aligned with learning theories can enhance students' ability to process and retain information, leading to improved performance in online education (Do-Hyung et al., 2007).

**Interaction and Engagement:** Learning theories highlight the significance of social interaction and learner engagement in the learning process. Online education institutes that incorporate learning theories into their instructional strategies may emphasize the importance of fostering interaction and engagement among students, as well as between students and instructors. This can be achieved through various online tools and technologies, such as discussion forums, virtual classrooms, and collaborative projects, which can enhance students' understanding, critical thinking, and problem-solving skills (Kim & Stoel, 2004).

**Assessment and Feedback:** Learning theories also influence the design of assessments and feedback mechanisms in online education. For instance, formative assessments aligned with constructivist theories may focus on authentic tasks that promote deep learning and reflection, while summative assessments aligned with behaviorist theories may emphasize objective measures of learning outcomes. Feedback mechanisms can also be designed based on learning theories, such as providing timely and constructive feedback that promotes self-regulation and metacognition. Effective assessment and feedback practices can help students gauge their progress and make improvements, thereby enhancing their overall performance in online education (Memon et al., 2014).

**Learner Support:** Learning theories also impact the provision of learner support services in online education. Institutes that apply learning theories may offer academic and technical support services that are aligned with the learning needs and preferences of online learners. For example, based on cognitive theories, institutions may provide support for time management, study skills, and metacognitive strategies to enhance online learners' self-regulation and learning efficacy. Learner support services that are designed based on learning theories can contribute to better performance in online education by reducing barriers to learning and promoting student success (Ceglie, 2020; Anderson, 2008; Ally, 2004; Chu et al., 2021).



Learning theories have a significant impact on the performance of higher education institutes in the context of online education. By aligning instructional strategies, course design, assessments, feedback, and learner support with learning theories, higher education institutes can optimize their online education programs and enhance student performance.

### **8.7 Most appropriate teaching strategies used in higher education institutions during the pandemic time**

During the pandemic, higher education institutions have faced numerous challenges in adapting to remote and online learning. As a result, various teaching strategies have emerged as effective approaches to support student learning during these unprecedented times. Here are some of the most appropriate teaching strategies used in higher education institutions during the pandemic:

**Blended Learning:** Blended learning, which combines in-person and online instruction, has become a popular approach during the pandemic. Instructors can use a mix of synchronous (real-time) and asynchronous (self-paced) activities, such as online lectures, discussions, group projects, and assessments, to engage students and facilitate learning. Blended learning allows for flexibility and can provide opportunities for students to interact with course content and peers in different ways (Fearnley & Amora, 2020).

**Technology-Enhanced Instruction:** The use of technology has become essential in delivering remote and online instruction during the pandemic. Instructors have utilized a wide range of educational technologies, such as learning management systems (LMS), video conferencing tools, interactive simulations, and digital assessment tools, to facilitate engagement and interaction with course materials. These technologies can enhance student learning experiences and promote active participation, collaboration, and feedback (Hasan & Bao, 2020).

**Student-Centered Approaches:** Student-centered teaching strategies, such as problem-based learning, inquiry-based learning, and case-based learning, have been effective during the pandemic as they encourage active student engagement and critical thinking skills. Students are encouraged to take ownership of their learning, collaborate with peers, and apply their knowledge to real-world scenarios. These approaches can foster self-directed learning and promote higher-order thinking skills which are important for lifelong learning (Kapasia et al., 2020).

**Flexible Assessments:** Traditional assessments, such as exams and quizzes, may not be suitable in the remote learning environment due to issues related to cheating and accessibility. As a result, instructors have employed flexible assessment strategies, such as open-book exams, authentic assessments, and project-based assessments, that allow students to demonstrate their understanding of the course material in different ways. These assessments can be

designed to promote critical thinking, problem-solving, and application of knowledge (Kearney et al., 2020).

**Active Learning Strategies:** Active learning strategies, such as discussions, debates, group activities, and problem-solving exercises, have been effective in engaging students during remote instruction. These strategies encourage students to actively participate and apply their knowledge in meaningful ways. Instructors can use online platforms to facilitate virtual discussions, breakout rooms for small group activities, and collaborative tools for project-based learning. Active learning strategies promote student engagement, critical thinking, and peer interaction, which are crucial for effective learning (Ledger & Fischetti, 2020).

**Social-Emotional Support:** The pandemic has also impacted the mental health and well-being of students. Therefore, providing social-emotional support has become an important teaching strategy. Instructors can incorporate opportunities for students to connect with peers, provide emotional support, and engage in self-care activities. Instructors can also communicate openly and empathetically with students to understand their challenges and provide appropriate accommodations (Ceglise, 2020; Anderson, 2008; Ally, 2004; Chu et al., 2021).

The pandemic has necessitated the use of various teaching strategies in higher education institutions to adapt to remote and online learning. Blended learning, technology-enhanced instruction, student-centered approaches, flexible assessments, active learning strategies, and social-emotional support are some of the most appropriate teaching strategies that have been used during the pandemic to support student learning and engagement. It is important for instructors to continually assess and adapt their teaching strategies based on student needs and feedback to ensure effective learning outcomes.

## 9 Conclusion and implications of the study

This study shows that higher education faculty members and students both were not able to perceive full utilization of virtual classrooms during lockdown due to the existence of many challenges. It is a challenge to provide high-quality education to all students while continuing with this contingency. The faculty and students' use and acceptance of online learning in an emergency context, like the COVID-19 pandemic, differs. The students have faced more challenges in comparison to faculty members. This study shows that the mean value for 12 pairs of expected benefits were higher in comparison to actual benefits for faculty members and students both but out of the 12 pairs (Convenient to Use, Able to connect with Students, Enhancing Personal Learning, Class Attendance Will Increase, Able to Cover Practical Subjects, Less Disturbance from Students, Effective Time Management, Able to Cover Syllabus Timely, Enhance Creativity, introduces to Education, Sharpened My Digital Skills and Schedule Flexibility) of expected and actual benefits, only for 7 pairs there was significant difference ( $<0.05$ ) in expected and actual benefits for faculty members. but in the case of students there is a significant ( $<0.05$ ) difference in expected benefits and actual benefits for all the 12 pairs. The mean value of

expected benefits is higher than the mean value of actual benefits for 07 pairs and all 12 pairs in the case of faculty members and students respectively. Technical barriers are the reasons for not being able to achieve the expected benefits from virtual classrooms in full capacity by students as well as by faculty members. Poor digital skills of faculty members and students, lack of electricity facilities, less availability and accessibility of internet, connection issues, inadequate facilities, training, funding, and unacceptability of technology, etc. were the barriers to online education at the time of closure of colleges and universities due to COVID-19 pandemic. The study indicates that overall both students and faculty members failed to meet expectations of virtual classroom benefits, as the mean value for expected benefits is found higher in comparison to mean value of actual benefits for faculty members and students both. further we have explained all the comparative analysis of expected and actual benefits of virtual classroom:

**Convenient to use:**

The difference in mean value of expected and actual convenience to use for faculty members is -0.125 and 0.381 for students. That means the virtual classroom was more convenient in actuality but students' experience was not as much as it was expected by them. The higher education authorities should focus more on students, so they can have better experience with virtual classrooms.

**Able to connect with students:**

The difference in mean value of expected and actual is positive 0.488 & 0.089 for both students and faculty members respectively. The student and faculty members both were not able to connect with each other as it was expected from a virtual classroom. The higher education authorities' may provide more insights to faculty and students about the usefulness of virtual classrooms.

**Able to cover syllabus timely:**

The difference in mean value of expected and actual is 0.447 for students and -0.075 for faculty members. That means students' experience was not good with a virtual classroom for completing the syllabus timely. The higher education authorities may provide more insights to the students about the usefulness of virtual classrooms.

**Enhancing personalized learning:**

The difference in mean value of expected and actual is 0.357 for students and -0.131 for faculty members. That means students' experience was not good with a virtual classroom about enhancing personal learning. The higher education authorities may provide more insights to faculty and students about the usefulness of virtual classrooms.

**Enhance Creativity:**

The difference in mean value of expected and actual is 0.401 for students and -0.043 for faculty members. That means students' experience was not good with a virtual classroom about enhancing creativity. The higher education authorities may provide more insights to faculty and students about the usefulness of virtual classrooms.

**Class attendance will increase:**

The difference in mean value of expected and actual is 0.495 for students and 0.210 for faculty members. Due to the existence of technological challenges with students, many of the students may not have seen consistency in attending the classes. The higher education authorities may provide more insights to faculty and students about the usefulness of virtual classrooms.

**Introduction to education technologies:**

The difference in mean value of expected and actual is 0.308 for students and 0.013 for faculty members. The higher education authorities may provide more insights to faculty and students about the usefulness of virtual classrooms.

**Sharpe digital Skills:**

The difference in mean value of expected and actual is 0.323 for students and 0.007 for faculty members. The higher education authorities may provide more insights to faculty and students about the usefulness and creativity of virtual classrooms.

**Schedule flexibility:**

The difference in mean value of expected and actual is 0.388 for students and 0.082 for faculty members. The higher education authorities may provide more insights to faculty and students about the usefulness of virtual classrooms.

**Less disturbance:**

The difference in mean value of expected and actual is 0.405 for students and 0.023 for faculty members. The higher education authorities may provide more insights to faculty and students about the usefulness of virtual classrooms.

**Able to cover practical subjects:**

The difference in mean value of expected and actual is 0.318 for students and -0.052 for faculty members. The higher education authorities may provide more insights to faculty and students about the usefulness of virtual classrooms.

**Effective time management:**

The difference in mean value of expected and actual is 0.439 for students and 0.046 for faculty members. The higher education authorities may provide more insights to faculty and students about the usefulness of virtual classrooms.

The technological infrastructure and socioeconomic context of the country play an important role, As the results of this study indicates that the students have faced more challenges during virtual classroom teaching learning practice, as the mean value of all the 7 challenges (Lack of awareness, Resistance to change, Lack of training, Network connectivity, Lack of personal computer/laptop, Lack of professional environment at home and Lack of teaching material at home) was higher for students in comparison to mean value of challenges for faculty members. Higher Education Institutes (HEIs) faculty members, as well as students, were not able to perceive actual benefits in full in comparison to expected benefits due to the presence of challenges in the virtual classroom as moderators. Network connectivity was the major challenge faced by the faculty members with a mean value of 3.68 followed by a 3.17 mean value for Lack of Professional Environment at Home, 3.03 for Lack of Teaching Material at Home, 2.92 for Lack of Personal Computer/Laptop. Lack of Professional Environment at Home with a mean value of 3.59 was the major challenge faced by the students followed by 3.57 for Lack of Teaching Material at Home,

3.35 for Network Connectivity, and 3.31 for Lack of Personal Computer/Laptop. Virtual classrooms have challenges such as poor internet connectivity, non-availability of appropriate electronic devices, lack of a teaching environment at home, and less ICT knowledge among students and faculty members can result in less engagement of students and faculty members in the teaching and learning process. The findings of this study will help Higher Education Institutes (HEIs), the Ministry of Education, the University Grant Commission, and the faculty members in effectively implementing the virtual classrooms during this pandemic. This study will help the Higher Education Institutes to reduce the challenges of the virtual classroom. Students' participation was less due to the lack of in-person conversations with faculty members which could result in mental stress for students and faculty members. This could be interpreted as faculty members and students learning technology and using it, but this is not a factor that affects learning outcomes. The use of technology increased significantly after the transition to online learning, but that does not necessarily mean that students are going to be cognitively engaged.

These results are also supported by the moderation analysis results of this study. The moderation analysis results indicate that during the virtual classroom teaching–learning practices faculty members and students both were not able to fully perceive the benefits of virtual classroom as it was expected by them, due the existence of challenges. The challenges are moderating the relationship between expected benefits and actual benefits.

The need to build faculty members and students capabilities for online teaching cannot be overemphasized, considering the advances in information and communication technology of the twenty-first century. Both students and teachers should be equipped with the technological skills necessary to cope with unexpected changes due to crises/disasters such as COVID-19. Similarly, online teaching pedagogies should be incorporated into regular mandatory teacher professional development programs to provide teachers with ongoing skills in online teaching. Furthermore, a mechanism should be developed to manage student behaviors in the course of online teaching as well as effectively supervise the students to evaluate their understanding.

These results have to be considered when faculty members and higher education institutions (HEIs) add new technologies or software to the classroom. Students may learn and use new technologies, but that does not mean that they will have better academic outcomes. The pandemic forced faculty members and students to use technology in the classroom. Higher education institutions are incorporating online learning as part of their educational programs. Therefore, higher education institutions should provide training to faculty members and students to ensure that better technological systems and instructional strategies are incorporated. Faculty members should be able to select virtual classroom technologies for students as a part of regular teaching- learning practices based on quality of the content, interactivity, ease of use, and licensing. Faculty members and students can use national and international repositories where resources can be used without specific technical skills. There is need to develop specific strategies and/or interventions that can increase students' sense of academic self-efficacy, especially when this is a factor that predicts cognitive engagement in students from different countries digital platforms available at the national level in India “Webs of Active Learning for Young Aspiring Minds”

(SWAYAM), “SWAYAM Prabha”, “the National Digital Library of India” (NDL), “Free and Open Source Software for Education” (FOSSEE), Online MOOC courses, On-Air– Shiksha Vani, Digitally Accessible Information System (DAISY), e-Path-Shala, e-PgPathShala National Repository of Open Edonline Resources (NROER) to develop e-content and energized books, telecast through TV channels, E-learning portals, webinars, chat groups, distribution of books. As of now, all these digital platforms were used as an additional facility to improve the teaching–learning process in higher education and they were extensively used free of cost by the students during the pandemic time. Due to the COVID-19 pandemic, many HEIs are able to conduct classes, evaluations, and admission-related work completely in virtual mode. So, this pandemic has given exposure to HEIs. Now the HEIs, Ministry of Education, UGC, and All India Council for technical education (AICTE) are in better understanding of virtual teaching–learning implementation benefits and challenges. Administrators and faculty members have to analyze the particular circumstances of their students and become not only supportive educators but also be encouraging of their students. No matter the subject, the emergency online learning transition has been a difficult experience for many students around the globe.

The higher education authorities, colleges/institutes/universities need to fix the above issues to enhance the teaching–learning process. The higher education authorities, institutes/colleges/universities must work together to resolve the issues and challenges of virtual classrooms to improve their effectiveness. Higher Education Institutes (HEIs) may provide technical support, and training to the faculty members as well as students for a better experience in the virtual classroom. Students who are lacking technical infrastructures like computers/laptops, internet connectivity, and Higher Education Institutes (HEIs) may provide financial and technical support to the students. The Higher Education Institutes (HEIs) may also invite such students in a phased manners to institute hostels. So the students can use the infrastructure for learning. Higher Education Institutes (HEIs) can also provide digital libraries, and journals access to the students at home, so they can improve their learning in the lockdown.

Whenever the higher education authorities are introducing new technology in ICT, the student and faculty members must provide practical training for the better implementation of that technology. Because as per the cycle of the technology adoption life cycle there are conservatives/ late majority and ladders/Skeptics. Which are delaying the adoption of adopting technology. Which is going to affect the consistent implementation of the technology. If we ignore the pandemic situation, other than the pandemic situation the virtual teaching–learning process is a compulsory requirement in INDIA, as the Indian Education System is introducing so many changes one of the important changes are the introduction of the New Education Policy 2020. The New Education policy framework implementation will be incomplete without talking about virtual teaching–learning. Other existing studies were focused on a limited scenario of circumstances caused by pandemics only, the finding of this study will help authorities in the long-term implementation of the New Education Policy 2020 Framework. existing studies were based only on teachers’ or students’ responses only, but this study has considered both faculty members’ and pupils’ responses in the

same study. Other existing studies have supported challenges of virtual teaching–learning through literature only but the results of this study are supported by literature as well as by the statistical tools. The results of the gap in expected and actual benefits of virtual teaching–learning due to the existence of challenges for faculty members and students. The existence of challenges between expected benefits and actual benefits is supported by moderation analysis, which is also supported by the individual statistical analysis of each benefit and each challenge. This in-depth analysis of challenges and benefits will help the authorities to tackle these challenges and improve the effectiveness of virtual teaching–learning for future situations. As the New Education Policy 2020 Framework has also the role of virtual teaching–learning. This study will help authorities in the effective implantation of the New Education Policy 2020. The Ministry of Education, Government of India is also framing guidelines to allow students two regular degrees simultaneously. In this way there will be an increase in the need of virtual classrooms technologies and platforms to make teaching–learning practice successful. The ongoing COVID-19 pandemic has highlighted the critical role of organizational learning in responding to crises and saving lives. Organizations, including businesses, governments, and non-profit entities, have had to rapidly adapt and learn from their responses to the pandemic. Organizational learning theory can help us understand how organizations discover effective actions in response to new goals, such as protecting the health and safety of workers, customers, and other stakeholders during a pandemic. Problemistic search, which involves exploring and experimenting with different solutions to address challenges, becomes crucial in the face of unprecedented crises like a pandemic. Organizations need to be agile and adaptive, willing to try new approaches and learn from both successes and failures. Moreover, organizational learning is not limited to individual organizations. Lessons learned from early responses to a pandemic can be disseminated throughout society through vicarious learning, where organizations learn from the experiences of others. This highlights the importance of knowledge sharing and collaboration among organizations, as well as the role of scholars in documenting and disseminating effective learning patterns. It's important to note that the effects of pandemics and other crises can be mitigated through organizational learning. By analyzing and documenting effective learning patterns, organizational scholars can contribute to the development of best practices that can be incorporated into organizational strategies and policies to better prepare for future crises, including pandemics. Teaching these lessons to organizations can help them be better equipped to respond to crises and be more resilient in the face of uncertainty. However, as you rightly pointed out, because pandemics are rare events, organizations may not retain these lessons in the long term. Hence, it becomes crucial to institutionalize the learning from the pandemic into organizational routines and practices, so that the knowledge gained is not lost and can be applied in the future.

In conclusion, the COVID-19 pandemic has highlighted the critical importance of organizational learning in responding to crises. Organizational scholars can contribute by advancing knowledge on effective learning patterns, documenting best practices, and incorporating these lessons into teaching and practice. By doing so, we can help organizations be better prepared for future crises, including pandemics, and ensure that the lessons learned are not forgotten.

## 9.1 Limitations and further scope of the study

This study has been conducted taking faculty members and students of Higher Education Institutes (HEIs) as the target population. The semi-urban and rural Higher Education Institutes (HEIs) may have faced a higher impact of COVID-19 than urban Higher Education Institutes (HEIs) due to infrastructure limitations. This will provide a more in-depth analysis of the impact of COVID-19 on the higher education teaching–learning process. Because in Higher Education Institutes (HEIs) infrastructure plays an important role. The Higher Education Institutes (HEIs) having good IT infrastructure have faced less impact of COVID-19 on the teaching–learning process. Possible reasons for high expectations are not fulfilled neither for faculty members nor students’ answers could be analyzed further. Further studies can also focus on Higher Education Institutes (HEIs) operating in rural and semi urban areas. Further studies can also include the school level students and faculty members. A comparative study can also be presented in the context of comparing the situation in another developing country. appropriate measures must be implemented step by step in order to deliver prompt services.

## 9.2 Further scope for the study

The integration of education technologies in higher education has been accelerated due to the COVID-19 pandemic, and it is likely to continue to be the norm in the foreseeable future. Higher education institutions (HEIs) need to invest in online learning infrastructures, resources, and facilitating conditions to benefit their students and faculty employees. By doing so, HEIs can improve their legitimacy with societal stakeholders, attract prospective students, lure prolific faculty members and researchers, and raise the quality and standards of their higher education services. There is indeed a need for further research to investigate the impact of remote teaching through digital and mobile learning technologies on students’ learning journey. Prospective research can use different methodologies, sampling frames, and analytical techniques to gain more insights into the implementation and effectiveness of remote learning. Future studies can explore students’ perceptions about the service quality and performance of higher education services that rely on distance learning approaches. They may also examine the effects of fully virtual and remote course delivery on students’ experience and their learning outcomes. Research in this area can provide valuable insights for HEIs to optimize their online learning strategies and improve the overall quality of education. It can help identify best practices, address challenges, and inform policy decisions related to the integration of education technologies in higher education. By continuously evaluating and improving remote learning approaches, HEIs can ensure that their students receive a high-quality education that meets the needs of the modern digital era.



Appendix

Table 8 Paired Samples Statistics

		Faculty							
		Mean	N	Std. deviation	Std. error mean	Mea n	N	Std. deviation	Std. error mean
Pair 1	Convenient to Use - Expected	3.49	305	1.136	.065	3.47	588	1.146	0.047
	Convenient to Use - Actual	3.42	305	1.109	.064	3.09	588	1.267	0.052
Pair 2	Able to Connect with faculty members/students- Expected	3.54	305	1.181	.068	3.38	588	1.129	0.047
	Able to Connect with faculty members/students- Actual	3.46	305	1.141	.065	2.89	588	1.185	0.049
Pair 3	Able to Cover Syllabus Timely- Expected	3.54	305	1.141	.065	3.14	588	1.191	0.049
	Able to Cover Syllabus Timely- Actual	3.49	305	1.139	.065	2.70	588	1.238	0.051
Pair 4	Enhancing personal learning- Expected	3.49	305	1.159	.066	3.14	588	1.179	0.049
	Enhancing personal learning- Actual	3.46	305	1.106	.063	2.78	588	1.207	0.050
Pair 5	Enhance creativity- Expected	3.48	305	1.112	.064	3.00	588	1.201	0.050
	Enhance creativity- Actual	3.41	305	1.178	.067	2.60	588	1.197	0.049
Pair 6	Class attendance will increase- Expected	3.15	305	1.185	.068	3.10	588	1.284	0.053
	Motivate students (more students will join the class) - Actual	2.94	305	1.221	.070	2.61	588	1.239	0.051
Pair 7	Introduces to education technology- Expected	3.61	305	1.071	.061	3.50	588	1.111	0.046
	Introduces to education technology- Actual	3.59	305	1.051	.060	3.19	588	1.207	0.050
Pair 8	Sharpened digital skills- Expected	3.71	305	1.078	.062	3.42	588	1.091	0.045
	Sharpened digital skills- Actual	3.70	305	1.026	.059	3.10	588	1.159	0.048
Pair 9	Schedule Flexibility- Expected	3.78	305	1.041	.060	3.35	588	1.131	0.047
	Schedule Flexibility- Actual	3.70	305	1.100	.063	2.96	588	1.186	0.049
Pair 10	Less Disturbance From Classmates- Expected	2.85	305	1.194	.068	3.15	588	1.228	0.051
	Less Disturbance From Classmates- Actual	2.83	305	1.183	.068	2.75	588	1.263	0.052
Pair 11	Able to Cover Practical Subjects Also-Expected	2.83	305	1.234	.071	2.68	588	1.300	0.054
	Able to Cover Practical subjects Also- Actual	2.79	305	1.345	.077	2.36	588	1.245	0.051
Pair 12	Effective time management- Expected	3.38	305	1.147	.066	3.24	588	1.193	0.049
	Effective time management- Actual	3.34	305	1.192	.068	2.80	588	1.184	0.049

Table 9 Paired samples test—individual effect for faculty

		Paired differences				t	df	Sig. (2-tailed)	
		Mean	Std. deviation	Std. error mean 95% confidence					
				Lower	Upper				
Pair 1	Convenient to use—expected Convenient to use—actual	- 0.125	1.050	0.060	-0.243	-0.006	-2.072	304	0.039
Pair 2	Able to connect with Students—expected Able to connect with students—actual	0.089	1.071	0.061	-0.032	0.209	1.444	304	0.005
Pair 3	Able to cover syllabus timely—expected Able to cover Syllabus timely—actual	- 0.075	0.898	0.051	-0.177	0.026	- 1.466	304	0.144
Pair 4	Enhancing personal learning—expected Enhancing personal learning—actual	- 0.131	0.951	0.054	-0.238	-0.024	- 2.409	304	0.017
Pair 5	Enhance creativity—expected Enhance creativity—actual	- 0.043	0.926	0.053	-0.147	0.062	- 0.804	304	0.422
Pair 6	Class attendance will increase—expected Class attendance will increase—actual	0.210	1.193	0.068	0.075	0.344	3.072	304	0.002
Pair 7	Introduces to education Technology—expected Introduces to education—actual	0.013	0.899	0.052	-0.088	0.114	0.255	304	0.799
Pair 8	Sharpened my digital skills—expected Sharpened digital skills—actual	0.007	0.874	0.050	-0.092	0.105	0.131	304	0.896
Pair 9	Schedule flexibility—expected Schedule flexibility—actual	0.082	0.912	0.052	-0.021	0.185	1.569	304	0.118
Pair 10	Less disturbance from students—expected Less disturbance from students—actual	0.023	1.212	0.069	-0.114	0.160	0.331	304	0.023
Pair 11	Able to cover practical subjects also—expected Able to cover practical subjects—actual	- 0.052	1.025	0.059	-0.168	0.063	- 0.894	304	0.012
Pair 12	Effective time management—expected Effective time management—actual	0.046	1.053	0.060	-0.073	0.165	0.761	304	0.042

**Table 10** Paired samples test—individual effect for students

	Paired differences									
	Mean	Std. deviation	Std. error mean	Std. error mean 95% confidence		t	df	Sig. (2-tailed)		
				Lower	Upper					
Pair 1	Convenient to use—expected Convenient to use—actual	0.381	1.165	0.048	0.287	0.475	7.929	587	0.000	
Pair 2	Able to connect with teachers—expected Able to connect with teachers—actual	0.488	1.178	0.049	0.393	0.584	10.045	587	0.000	
Pair 3	Able to cover syllabus timely—expected Able to cover syllabus timely—actual	0.447	1.276	0.053	0.344	0.551	8.502	587	0.000	
Pair 4	Enhancing personal learning—expected Enhancing personal learning—actual	0.357	1.215	0.05	0.259	0.456	7.126	587	0.000	
Pair 5	Enhance creativity—expected Enhance creativity—actual	0.401	1.196	0.049	0.305	0.498	8.139	587	0.000	
Pair 6	Class attendance will increase—expected Class attendance will increase—actual	0.495	1.383	0.057	0.383	0.607	8.676	587	0.000	
Pair 7	Introduces to education technology—expected Introduces to education—actual	0.308	1.029	0.042	0.224	0.391	7.255	587	0.000	
Pair 8	Sharpened my digital skills—expected Sharpened digital skills—actual	0.323	1.03	0.042	0.24	0.407	7.608	587	0.000	
Pair 9	Schedule flexibility—expected Schedule flexibility—actual	0.388	1.138	0.047	0.296	0.48	8.266	587	0.000	
Pair 10	Less disturbance from students—expected Less disturbance from students—actual	0.405	1.221	0.05	0.306	0.504	8.036	587	0.000	
Pair 11	Able to cover practical subjects also—expected Able to cover practical subjects—actual	0.318	1.256	0.052	0.216	0.42	6.142	587	0.000	
Pair 12	Effective time management—expected Effective time management—actual	0.439	1.214	0.05	0.34	0.537	8.766	587	0.000	

**Table 11** Paired samples test—total effect

	Paired differences					t	df	Sig. (2-tailed)
	Mean	Std. deviation	Std. error mean	95% confidence interval of the difference				
				Lower	Upper			
Faculty	0.250055	1.490276	0.028073	-0.005188	0.105297	2.783	304	0.036
Students	0.3872827	0.8126641	0.0335137	0.3214613	0.4531041	11.556	587	0.000

**Data availability** All data generated or analyzed during this study are included in this published article. Any other relevant datasets are available from the corresponding author on reasonable request.

## Declarations

**Conflict of interest** There is no conflict of interest.

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## Education through Aesthetic Imagination



Prof. Sudhakar Venukapalli\*

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*“When we use our imagination properly it is our greatest friend; it goes beyond reason and is the only light that takes us everywhere”*

– Swami Vivekananda

### I. Introduction

The central concern of this paper is to formulate a framework for an aesthetic system of education on the foundations of moral imagination, self-transformation, and ethical responsibility. Education is construed here in terms of redefining desires and building possibilities of constructing self and world differently as objects of aesthetic experience. This paper is a part of a larger effort to formulate the philosophy of education on the foundations of ancient Indian knowledge systems, Indian aesthetics and contemporary intellectual developments in the Western and Indian theory and practice. It is envisioned that this

endeavor would greatly influence our current understanding of education and enable us to create possibilities for establishing a new world order where people can live in harmony and experience the beauty of human values, equality, social justice, and national vision.

Aesthetic imagination construed in this paper is an important mode of inheriting and innovating Indian traditional culture and ethos. Aesthetic imagination is a way of perceiving the world, a world outlook. It is essentially a moral, ethical, emotional, aesthetic and epistemological concert and performance. This endeavor recognizes the significance of experiencing the

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beauty of *the self*, *morality*, *human values*, *national vision* embedded in social action, spiritual pursuit, and intellectual search for truth. Experiencing the beauty of living together, equality, social justice through harmony, dedication, integrity, democratic action and national vision in the institutions of learning cultivate human values and deliver quality education. Nurturing aesthetic imagination among students and teachers would enable us to understand people's life histories and struggles. Further, such quality education develops their cognitive, social, and cultural capabilities, especially observation, imagination, creativity, and outlook on life and values. Therefore, the big challenge in education is how do we sensitize students to experience the beauty of moral values through acquisition of moral knowledge and moral practice.

This paper argues that a strong foundation of education is possible only through ceaseless engagement with the literary traditions and humanities across cultures. Thematically, this work can be situated in the critical dialogic space between different disciplines of knowledge and intellectual and religious traditions. It recognizes how colonial and postcolonial ideas, as well as modernity, have stifled our ability to think creatively

and have failed to comprehend the complexity of Indian knowledge systems and the dynamism of social realities. Before I explore new paradigms of thinking about education, let me explicate my stand on the dominant official systems of education that shaped our perception and consciousness.

## **II. Problems and Issues**

The genesis of science and its celebration as the only authentic, true knowledge is historically coterminous with the emergence and consolidation of modern industrial society. The story of rise of science, more so a specific articulation of it, which can broadly be characterized as positivistic, is a long drawn protracted one. The conception of social science implicit in our academia is a part of this discursive process. The intellectual origin of this discourse can be traced back to the Enlightenment, but it cannot be reduced entirely to it. The modern academia its institutional arrangement, and its disciplinary demarcations and proliferation is thus a reflection of the reified complexity of the modern industrial society. The concepts and categories, the tools of analysis construed and built to ensure the objectivity of the positivist knowledge systems; theoretically render a particular view of society and its evolution and in

practice projects the authenticity of the historical experience of the West both for the model building and emulation in the context of the non-European societies.

Colonization and foreign invasions have damaged India's indigenous economic, socio-cultural, and intellectual foundations and inducted false consciousness among the colonized, making them believe that individual and social development is possible only through European models and ideas of development and progress. Institutions of learning in our country are by and large modelled upon the Western system of education. Swami Vivekananda says,

*It is one of the evils of your Western civilization that you are after intellectual education alone, and take no care of the heart. It only makes men ten times more selfish, and that will be your destruction. (C.W.1412)*

The haulage of the so-called Enlightenment models of rationality, objectivity and the ideas of individualism largely designed and shaped the learning cultures and institutional practices. The well entrenched and long-established Cartesian and positivist mode of thought that has encompassed the academia imprisoned their actors in rigid official structures and disciplinary knowledges.

This is clearly evident in the existing institutional practices and beliefs of the academics. The educational reforms initiated in postcolonial India, instead of dismantling the conventional structures, have in turn strengthened the European models of education and development.

The above-mentioned Western induced knowledge systems transposed and institutionalized in India have failed to explain the nature and complexity of indigenous cultures and social realities. Such abortive knowledge systems conceive disciplines as closed spaces despite the orchestration of 'interdisciplinarity', limiting if not precluding the possibility of interaction across them. As a result of this inbuilt resistance to openness, each discipline seeks to identify its object of enquiry aspectually within the boundary it has drawn for itself artificially, thereby missing the dynamic multi-dimensionality of the reality. As a result, the entire educational system as well as the disciplines of knowledge is in crisis.

The above-said crisis in the disciplines of thought and the system of education, that was rightly recognized by the contemporary discursive developments and intellectual diversions, has to be seen as an integral part of the civilizational

crisis of the Enlightenment paradigm. The anti-positivist and anti-essentialist theoretical developments initiated critiquing the paradigms and models that have originated and developed in the Western intellectual history since the period of Enlightenment (Age of Reason). The Enlightenment rationalist thought and models of nature, man, society, education and development which initially promised to be optimistic departures from the medieval theological past, have in the process seem to have exhausted their emancipatory potential, the reason precisely for which they have become intellectually questionable.

The western ideological domination by drawing an artificial division between mind and work (object and subject) presented education in terms of pure cognitive functions. M.K. Gandhi (1939) says,

*“Our education has got to be revolutionized. The brain must be educated through hand. Those who do not train their hands go through education lacking music in their life... they are not thought to make the right choice... education which does not teach us discriminate between good and bad, to assimilate the one and eschew the other is a misnomer.”*

The abstract individualism that underlies colonial educational discourses separates the body from the mind and awareness from sensory experience. Most importantly these western models of education easily adapted, absorbed and coopted the fundamental principles of neoliberal market values and the standards of globalization. Over-rationalization, compartmentalization, specialization, are a few operating principles of the exiting official view of scientific knowledge and communication. Academia is entrenched in such institutionalized disciplinary models of thought and mainstream culture. Expanding global economic-market forces, growing technological interconnections, virtual worlds, and digital social networking have further strengthened institutional structures over the past two decades and imprisoned students and teachers in one-dimensional discursive practices, isolating them from their own self and others.

The global market private interests encroached into imagination and redefined beauty and aesthetics as per the market standards. Consequently, everything associated with schooling and education is becoming into a skill, technique, digital and non-human. What is important to note here is how the

dominant market forces, reducing education as a tool and commodity for profit, have misused the incredible inventions and beautiful wonders of technology? In this context, Swami Vivekananda's words are appropriate. He says:

*The education that you are getting now has some good points, but it has a tremendous disadvantage which is so great that the good things are all weighed down. In the first place, it is not a man-making education, it is merely and entirely a negative education. A negative education, or any training that is based on negation, is worse than death.*

*We want that education by which character is formed, strength of mind increased, the intellect is expanded, and by which one can stand on one's own feet.*

This paper, which takes inspiration from Swami Vivekananda, attempts to look for meaningful alternatives that understand education as a means of creating men and lives, of fostering human growth, and most importantly, of fostering human development for all people in a just society. It is in this context one needs to understand the significance of imagination and imaginative practice.

### III. Possibilities and Responsibility

Educational processes must inspire students to think and imagine a beautiful society, *Vasudhaiva Kutumbakam* (The World is One Family) where people of all kinds live in harmony and peace. Rabindranath Tagore, in his foreword to Prof. S. Radhakrishnan's book entitled, *The Philosophy of the Upanisads*, says, "The self of mine that limits my truth within myself confines me to a narrow idea of my own personality. When through some great experience I transcend this boundary, I find joy. The negative fact of the vanishing of the fences of self has nothing in itself that is delightful. But my joy proves that the disappearance of self brings me into touch with a great positive truth whose nature is infinitude. My love makes me understand that I gain a great truth when I realise myself in others, and therefore I am glad. This has been thus expressed in the Isopanisad:

*Yas tu sarvani bhutani atmany  
evanupasyati*

*Sarvabhutesu catmanam tato na  
vijugupsate.*

*(He who sees all creatures in himself,  
and himself in all creatures, no longer  
remains concealed)*

His Truth is revealed in him when it comprehends Truth in others. And we know that in such a case we are ready for the utmost self-sacrifice through abundance of love”.

Educational system should drive students and teachers towards envisioning the possibilities of creating just society based on the above message of Rabindranath Tagore. But such processes are not simple and easy. One needs to seriously engage students in reflective thinking and moral imagining. The question here is how do we cultivate aesthetic sensibility and empower students to create such possible worlds. I strongly believe that one can overcome the crisis in education by creatively engaging with the ancient knowledge systems, Sanskrit intellectual traditions and everyday socio-political experiences, especially grassroots movements.

Education is not a pedagogy designed to transmit knowledge, abilities, and skills. *One needs to construe education as formation, shaping and driving students towards an ethos, character, culture, and nation.* It is an active process of thinking, sensing, listening, talking, arguing etc. Literature and traditional stories can aid people in maintaining a feeling of one another as human beings while our technical interconnectivity paradoxically

contribute to our physical and emotional isolation. Emotional response to the other brings aesthetic experience to one’s own self. Underlying the role of emotions in aesthetic imagination Priyadarshi Patnaik (2016) says,

*“Emotions are significant in the context of aesthetic experience (emphasis added) in many distinctive ways. One, most aesthetic objects evoke emotions in us – wonder, awe, admiration, and so on. A purely intellectual response to aesthetic objects is problematic. Two, aesthetic response – which cannot exist without some sense of admiration and wonder for another object – is sympathetic. It bridges the gap between the self and the other, and not through mere cognition. Three, unlike ordinary emotions where we tend to avoid unpleasant emotions and welcome pleasant ones, aesthetic works encompass themes that elicit all kinds of emotions, and yet we welcome and enjoy them. This establishes the significance of emotions in aesthetics.”*

Literary imagination is an emotional aesthetic experience. It opens doors to experience others and creates opportunities for personal transformation. By training the imagination through careful study of

selected literary works encourages the development of an educational system. Thus, it is our job to actively engage in the humanities and literature in the classroom to train the imagination and maintain our own cultural legacy as well as to better comprehend and respect the enormous range of human cultures.

The fundamental premise of this thought process is that by remaining unwaveringly committed to an ethical, aesthetic engagement with literature and the outside world, one might progress towards realizing the democratic possibilities of the scientific, social, cultural, and historical imagination. Most importantly, we need to comprehend the significance of the *pedagogy of responsibility* and the power of educators to create morally engaged, compassionate, and inventive students. Therefore, the goal of educational programmes should be to instill in students the values of educated citizens who create an art of living by creatively reimagining new possibilities for democratic community and empathic understanding. Therefore, it is imperative to investigate the creative encounters of students from various academic fields with classic and contemporary Indian literature, as well

as their perceptions of the beauty of the *multidisciplinary fusion of ideas*.

The epistemological violence committed through Euro-centrism, colonialism and globalization can be countered only through an education that promotes aesthetic sensibility and moral imagination. The liberal attempts to universalize certain notions like knowledge, development, progress, equality, learning, reasoning, culture etc., are the political moves of privileging certain set of ideological practices as natural and necessary. Taking this idea further, we need to initiate a dialogue on the responsibilities of the academy, students and teachers in representing day-to-day life activities and responding to social needs and demands. In order to develop students' imaginations and encourage them to imagine and create beautiful ideas for a new world of justice and equality, it is necessary to examine the Eurocentric and colonial discursive accounts and disciplinary practices in the institutions of learning; engage students in reading ancient Indian texts (Mahabharata, *Bhagavad-Gita*, *Ramayana*, *Natyashashtra* etc.) and modern literary works (like Rabindranath Tagore's novels) and enable them to draw their own ideas from their interpretations; design

'training imagination' and create opportunities for developing aesthetic sensibility and imaginative experience; examine students' interpretations of texts and their aesthetic imagination after reading ancient Indian texts; and workout broad contours of an educational theory of imagination and imaginative pedagogical practice.

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## Bharat in Hindi Cinema: *Iithaasa, Bhava, Abhinaya*

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Hindi cinema shares its history with the history of the nation. Also known as the film industry or the Bollywood, as it is controversially called, in its history of more than a century, it has forged technology, modernity and tradition into an integrated as a post-colonial site of cultural production the themes of nationalist assertion. As a product of the technological revolution of the post-industrial age, the Hindi cinema, on the one hand, has used the techniques of modern and scientific innovation, with rationalism, modernism and historicism implied in its attitude to history and reality, and on the other, has utilized forms of folk and classical traditions, legendary modes of narratives (*itihasa-s*), representing *bhaava-s*, emotions, highly formalized performance (*abhinaya*), and *rasa* (national consciousness) based on an inseparable awareness of lived and perceived reality

and memory. Any consideration of the Hindi cinema, or for that matter any cinema in India, requires us to have a critical look at the conceptual categories to be used: history, cinema, nation, modernity, postmodernity etc.

In her 1926 essay "The Cinema" published in the *Nation and Athenaeum*, Virginia Woolf describes the cinema audience as "the savages of the twentieth century watching the pictures." She argues that it is at the same time a modern and also a primitive art form. It has the potential to transform and alter the reality through emotions, perceptions and sensations, while at the same time being a technological mode rooted in modernity. Ruthlessly critical of the cinematic adaptations of the classic novels such as Lev Tolstoy's *Anna Karenina* (1878), Woolf argues against the passive reliance of film on the novel, of the senses on the word, and argues

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for the film's proper exploitation of its form and technique to present a perceived reality rather than reality. In cinema, to quote Woolf, "we see life as it is when we have no part in it" which makes it "more real, or real with a different reality from that which we perceive in daily life"<sup>1</sup> In the terms *itihasa*, *bhaava*, and *abhinaya*- a similar artistic transformation of reality to attain a *rasa* (consciousness), and a consciousness of the *raashtra*, in the movies based on nationalist themes is elaborated.

The reliance of Hindi cinema on theatre and other traditional art forms enables it to present a distinct approach to history and reality than the modern Western traditions. Both nation and cinema in Bharat do not conform to how these categories are understood, recognized and employed in the West. The first feature film produced by the legendary filmmaker Dadasaheb Phalke titled *Raja Harishchandra* (1913) is prophetic of the form and the politics of Indian cinema and suggests in its widespread reception nation as a cultural consciousness in the intertwined cognitive structure of memory and perception of a revered figure, Raja Harishchandra, from the *itihasa*, thereby problematizing the binary of myth vs. history used by Western historiography.

The film presents the life of the ancient king, a paragon of spiritual courage, moral fortitude and ethical perseverance, Harishchandra, as the motivator of ideal postcolonial governance.

The Indian English novelist, Raja Rao, in his 1996 nonfiction *The Meaning of India* uses three keywords while defining India: "darshana," and "rasa," and "vidhi."<sup>2</sup> These three words give clues to an understanding of India as geo-cultural consciousness of *raashtra* as well as Hindi cinema as a unique aesthetic form. Rao understands India not as 'nation' or even 'desha' (country), but a unified aggregate of social and cultural acts (*vidhi*) inalienably linked with an inward consciousness (*rasa*). In *Rang De Basanti* (2006), FL. Lt. Ajay Rathod (enacted by R. Madhavan) engages in a dinner debate on *vidhi* and *raashtra* with the other characters, who would unwittingly end up becoming postmodern versions of the young Indian revolutionaries and freedom fighters, Bhagat Singh, Raj Guru, Sukhdev, Bismil and Ashfaqullah Khan. He argues that rather than complaining about poverty, corruption, unemployment and other ills affecting the country, individual acts towards the material progress and spiritual realization of the nation are paramount to better collective futures.

The Western discourse of the nation owes its theorisation, as we know, to Benedict Anderson's 1983 book *Imagined Communities: Reflections on the Origin and Spread of Nationalism*. Anderson calls the nation as, "an imagined political community – and imagined as both inherently limited and sovereign...It is *imagined* because the members of even the smallest nation will never know most of their fellow-members, meet them, or even hear of them, yet in the minds of each lives the image of their communion."<sup>3</sup> He further says,

The nation is imagined as *limited* because even the largest of them, encompassing perhaps a billion living human beings, has finite, if elastic, boundaries, beyond which lie other nations. No nation imagines itself coterminous with mankind...It is imagined as *sovereign* because the concept was born in an age in which the Enlightenment and Revolution were destroying the legitimacy of the divinely-ordained, hierarchical dynastic realm... Finally, it is imagined as a *community* because, regardless of the actual inequality and exploitation that may occur in each, the nation is always conceived as a deep horizontal comradeship.<sup>4</sup>

The two keywords 'imagined' and 'limited' form the substratum of Anderson's critique of nationalism. On close analysis, these words do not relate to how the nation is represented in Indian art and cinema and realized in life. The word 'imagined' denotes cognitive flaw, *artha-dosha*. To quote Rao:

India is not a country (*desha*), it is a perspective (*darshana*); it is not a climate but a mood (*rasa*) in the play of the absolute; it is not the Indian who makes India but "India" who makes the Indian, and this India is in all: it is at the centre of awareness wherein one's self dips again and again into the hearth of Agni, as the sacrifice is made. All acts are rites when "the perfect performance of our tasks, whatever they may be, is itself the celebration of the rite."<sup>5</sup>

The three key words here are *darshana*, *rasa* and *vidhi*. As an interpretative framework for understating the Hindi cinema, India is a *darshana*, both from perspective of seeing as well as experiencing and feeling, which ultimately results into a *rasa*, an extraordinary experience of the nation. This act of seeing or experiencing itself depends upon rites (*vidhi*), a sacrifice by the characters, directors and actors in movies such as Mehboob Khan's *Mother India* (1957), S. Ram Sharma's

*Shaheed* (1965) or Aditya Dhar's *Uri: The Surgical Strike* (2019). Using the categories from Bharata's theory of theatre and performance, we might argue that these acts or sacrifices that making the text or content of the movies are the *vibhaava-s*, the seeing by the spectators the *anubhaava-s*, and India itself as the *Rasa*, a form of consciousness in the mind/heart of the spectators.

*Mother India* starring Nargis, Sunil Dutta, Rajendra Kumar and Raaj Kumar, an iconic postcolonial film, was received in India as a strong rebuttal of the colonial and racist denigration of India by the American historian Katherine Mayo in her book of the same title *Mother India* (1927). In the controversial book, Mayo presents colonial stereotypes of what she claims, the ungovernable Indians, especially Hindus, with uncivilized and superstitious social practices, especially against women. Mehboob Khan, who though avoided mentioning Mayo's book in the interviews, presents a moving portrait of a heroic rural woman as Mother India. In her book, *Spectres of Mother India: Global Restructuring of an Empire* (2016), Mrinalini Sinha writes:

The ghost of Mayo's Mother India has arguably never entirely been laid to rest in the national imagination in India.

The hugely popular nationalist film with the same name from the 1950s reveals the dominant contours of the subsequent nationalist retelling of Mayo's contentious perspective on India and on Indian women. Although Mehboob Khan's film *Mother India* (1957) itself makes no direct reference to Mayo's book, the film's reappropriation of the book's title and its use of female sexuality in the film's central character of a strong and chaste Indian woman resonates, as Rosie Thomas suggests, as a nationalist rebuttal of its infamous namesake.

The perception and cognition of the nation as the "mother" implied in the slogan "Vande Mataram" popularised by Bankim Chandra Chatterjee's Bengali novel *Anandamath* (1882) is characteristic of postcolonial cultures. During Ireland's long struggle for Independence, in theatre and its cinematic adaptation, the nation as the mother, Mother Ireland, portrayed in such works as W.B. Yeats' *Cathleen Ni Houlihan* (1902) pervaded the artistic and political culture of the times. In *Shaheed* (1965), a cinematic retelling of the heroism of the most celebrated iconic group of young men in India's Independence Movement- Bhagat Singh (Manoj Kumar), Sukhdev Thapar (Prem Chopra), Shivram Rajguru (Ananda Marathe), Chandra Shekar Azad

(Manmohan)- inspires the whole nation towards the sacrifices to be performed for the nation. The young men in the movie, as well as in history, are inspired by the painting of the Mother India. The painting on the wall shot in the moving angles by the camera during dialogues and songs found a living embodiment in countless heroic men in post-Independence India.

*Mother India* was no less emblematic of the assertions of heroic rural women in the post-colonial era. Naturally, within ten years of Independence, the reception of the movie in the West and India in 1957-1958 was divided and represented the political conflicts emerging out of colonial and anti-colonial perspectives on India. In England and the US, the movie was termed as too long with a chaotic form. *The Monthly Film Bulletin*, a periodical of the British Film Institute called the film a "rag-bag pantomime." Film India, one of the authoritative film magazines of the time called the film "the greatest picture produced in India." The nationalist appeal of the movie has remained unabated till the contemporary times. Women's Feature Service, a woman-centric magazine, in its 2007 edition recalled the film as "one of the

most outstanding films of the post-independence era."

Women's role in securing and sustaining the hard-won Independence of the country has been supreme. *Mother India* begins the tradition of films that celebrate the contributions of women to the nation-building in various fields. Films such as *Mary Com* (2014), *Neerja* (2016), *Gunjan Saxena: the Kargil Girl* bring to the film culture of the country lives and exploits of phenomenal women, who with their extraordinary physical and moral courage, have been saviours of their country and its cultural ambassadors among the nations of the world.

The national consciousness as an affect (*rasa*) of watching these heroes and their lives in performance (*abhinaya*) is realized as vertical consciousness unlike the "horizontal comradeship," in which, Anderson argues, a nation is conceptualized. And cinema is the ideal form for the experience of the nation as the vertical consciousness in the self rather than horizontal comradeship in the mind. The ability of the cinema is fostering nation as a *rasa* experience is based on its unique form that combines the image and the sound, the folk and the classical, the modern and the traditional.

The film scholar Rachel Dwyer in his “Introduction” to the book *Beyond the Boundaries of Bollywood: The Many Forms of Hindi Cinema* comments on the transition from the silent film to the talkies as a dissolution of the evocative powers of visual texts. He argues the coming of the sound has divided the Indian cinema on the basis of language, and quotes Rosie Thomas, another scholar of cinema, to argue that “the coming of the sound creates an opposition between the aural and the visual” and a “movement away from the celebration of visuality and the spectacular power of the modern body, to the power of the voice.” This disjunction between the visual and aural is strange to the Indian ideas of art and aesthetic reception. Art, in India, has been primarily created as *shraavya-drshya* (visual and aural) as defined by Bharata in his *Natyashastra* and this idea permeates the performative and folk traditions of the whole country. Therefore, in films, such as *Naya Daur* (1957, B.R Chopra), a poignant and ambivalent moment in the nation’s history poised between modernity of machines and the traditional human labour, and the concern of unemployment brought in by machines and development promised by it, the contradictions and the opportunities, are

narrated and performed using the four forms of abhinaya (*vacika, angika, saatvika and aaharya*), through folk songs and dance rhythms of the masses, visually and aurally realized in numbers such as “Sathi Sath Barhana.”

The Hindi cinema, in the films based on nationalist themes, uses the narratives from the history or autobiography and turns it into an *itihasa* with an aim to create a *rasa* of the *rastra* through the *abhinayas* of the *bhavas*. These categories from Indian aesthetics- *itihasa, rasa, abhinaya* and *bhava*- present an ingenuity of the aesthetic forms transforming the events and histories into consciousness. Asish Nandy, in his essay, “The Popular Hindi Film: Ideology and First Principles” argues that “overstatement – and melodrama – is a crucial stylization in the Bombay film. No one takes the content of such stylization seriously, except the arty film critic; it is the form of overstatement which is important. The popular film tries to be convincing as a spectacle by exaggeration. It does not even try to be a direct reflection of everyday reality. Like the assertion that there are three hundred and thirty million gods in the Hindu pantheon, the exaggeration is only statistical. In terms of the overall logic of such films it makes perfect senses.”<sup>6</sup>

What Nandi terms as “overstatement” and “exaggeration” of the form is necessitated by the *Itihasa* tradition of the epics and puranas- the fifth Vedas, because for mass consumption the ontological opacity and seriousness of the content has to be redeemed by epistemological structures of sensations and perceptions, as argued by Woolf in her essay. The focus of the cinema is on the mass audience and, therefore, on emotions (*bhavas*) and perceptions (*pratyaksha*). In a movie like *Upkaar* (1967, Manoj Kumar), *Mangal Pandey: the Rising* (Ketan Mehta, 2005), *Rang De Basanti* (2006), the hyper reality of form transforms the actuality of the events as portrayed in the scripts through an interplay of performed dialogues, songs, costumes, dance to evoke the *bhava*-s of the nation based on diverse conditions in the nation’s *itihasa*-s.

The Sanskrit word, *itihasa*, in its etymology and application, suggests an emphasis on the modes of the event- how an event might have occurred rather than on its whatness, its substance, which, in any case cannot be known, according to the Indian philosophers. Here, I would like to use the category of *pratibhigyaan* from Kashmir Shaivism, the theory of recognition, to argue that the postmodern free flowing performative

projection of the contemporary twenty-first century characters, *aaropita*, superimposed upon the lives of the freedom fighters, Bhagat Singh, Chadrashekhhar Azad, Raj Guru and Bismil, who evoked the *bhaava* of *raastra* in the young men and women all across India in 1931, is an example of the continual recognition of the citizens of the country of these heroes of the past, whenever faced with a crisis that affected the nation. The theory of recognition posts every cognition of the past as recognition in the present, a complex interplay of the feelings of the present with the memories of the past.

Contrary to Anderson, developing Rao’s thesis, I argue that Bharat is a consciousness, manifest in visual and aural forms of life, cinema and performance. It is to be realized by what cognitive faculty? By what Bhartrhari the 5<sup>th</sup> century Indian grammarian held to be *pratibhaa*: a flash of meaning, an enlightenment, a direct apperception like that of the Gautama Buddha. We perceive India directly through its sights and sounds. It’s a direct perception, a perception of consciousness qualified by varying colours of Indian lives.

For the audience, the human heart is the locus of experience and consciousness. It is the heart that interacts



with the mental processes when a given event or character from *itihaasa* is reproduced by the cinema. The heart, along with the mind, assumes the form of *citta* (the self). The cinema effect is a different kind of awareness, an awareness that traverses through psycho-physical states of the masses. And it crosses the territorial boundaries of the nation-state, realizing the *raastra* as geo-cultural reality. Anderson argues that the nation is, what he terms, "limited." To quote him,

"The nation is imagined as *limited* because even the largest of them, encompassing perhaps a billion living human beings, has finite, if elastic, boundaries, beyond which lie other nations. No nation imagines itself coterminous with mankind."<sup>7</sup>

The *rasa* or experience of India is comprehensively opposite to this, as an expansive and expanding consciousness that dissolves all the boundaries of the self and the other, of time and space, of caste and community, language and belief systems. And this has happened

true about Indian since the ancient past and across the various communities. In another sense, also the nation in Hindi cinema is not bound by the borders of the nation-state. The significant population of the Diasporas in the various parts of the globe evoke in the watching of the films the consciousness of Bharat as a global nation.

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## Livestock Holdings and its Determinants: A Case Study of Haryana, India



Dr. Devesh Birwal\* & Dr. Deepti Taneja\*\*

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### ABSTRACT

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**Keywords:** Livestock, Animals, Bovine, Haryana.

*In India's rural economy, the livestock sector is very important. It helps to alleviate poverty because it is more fairly distributed among different socio-economic groups than land. The present paper is focused on a primary survey conducted in Badheri village, Karnal District, Haryana, to investigate livestock holdings patterns and the relationship between land and livestock holdings. It also investigates the determinants of the household's number of bovine animal holdings using Poisson regression analysis. Despite the sector's importance in poverty alleviation, we discovered that a large number of economically disadvantaged and socially backward groups face credit constraints when it comes to purchasing livestock such as cattle and buffaloes. Even if they have enough labour, a large percentage of rural households have limited access to land, resources, knowledge, technology, and markets, putting them at risk of missing out on the growing demand for milk and dairy products. Medium and large producers, on the other hand, face labour constraints despite having ample fodder. In light of these constraints, it is worth noting that small ruminants are owned by socially backward (SC) and poor households in the survey village. The paper also addresses the importance of State policies in the growth of this industry.*

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## **I. Introduction**

Declining agricultural sector's growth has been a major concern for the policymakers in India since the late 1990s. With approximately 68 per cent of India's population residing in rural areas and 43 per cent of them depending on agriculture and allied activities, including animal husbandry and fisheries, for their livelihood (FAO, 2021) the concerns of the policymakers are well placed. Agricultural growth has hovered around 2.8 per cent (at 2011-05 prices) over the past 25 years. Concerns with declining growth rates also arise from the fact that rural India does not offer varied employment opportunities, the dependence of rural households is overwhelmingly on agriculture and allied activities, land distribution is lopsided with majority of the rural households owning insignificant land sizes that are increasingly becoming unviable due to rising cost of cultivation, and resultant concentration of poor in rural areas. It is estimated that more than 73 per cent of the country's poor reside in rural areas with a majority engaged in either low-wage activities or cultivation of tiny pieces of land (Kumar et al 2011). About two-thirds of the total landholdings are of size less than or equal to one hectare with an average size of 0.38 ha. Another responsible factor for low growth rates

is the negligence of the livestock sector in general and dairy sector in particular, despite being recognized as a sector with the potential to raise the growth rates of the agriculture sector as well as the potential to increase income of the households.

Diversification of the agricultural sector's production to include livestock is considered as a well-recognised way to enhance agricultural growth and reduce poverty. The livestock sector contributed about 4.2 per cent to the total GVA in 2018-19 and the contribution of livestock in total agriculture and allied activities sector GVA (at constant prices) has increased from 24.32 per cent (2014-15) to 28.63 per cent (2018-19) (GoI, 2021). In India, growth rate of livestock production is faster than the growth rate of crop production. It grew at a CAGR of 8.24 per cent during 2014-15 to 2018-19.

On the other hand, share of public spending on livestock sector out of the total public expenditure on Agriculture sector has declined tremendously from 13.6 per cent in 1992-93 to 4.6 per cent in 2008-09 (BIRTHAL and NEGI, 2012). Further, the share of dairy development in total livestock expenditure fell from 41.5 per cent in the 1990s to 25 per cent towards the late 2000s.

India is the largest producer of milk, which is based not on large scale commercial production but on a large number of small producers with one or two bovines. The concern, however, is that, a large percentage of rural households may have limited access to land, capital, information, technology and markets even if they have sufficient labour. They may not be able to reap much benefits of demand-driven growth, i.e., from an increasing demand for milk and dairy products, because of small-scale and subsistence-level production, lack of access to credit, technology, inputs, information and markets, and their inability to comply with food safety standards that are becoming stringent in the global as well as domestic markets.

In fact, trends in livestock holdings of households across land holding and social groups show inequalities, which can be seen through various indicators like larger herd sizes of livestock are held by large farmers vis-à-vis small farmers and the landless; as also, expensive bovine animals are owned by large farmers and upper caste groups namely 'Others' and 'OBC', whereas small ruminants are owned by the socially backward (SC and ST) and poor households. The livestock holdings of ST households comprise of bullock, male

buffalo, ovine animals and pig holdings, while SC households do not even hold significant numbers of small animals like sheep, goat and pig (Birwal, 2015). Access to land is an important determinant of the livestock holdings of households from different social groups. Since socially backward groups (SC & ST) have smaller landholdings and higher degree of landlessness, they keep small ruminants that can feed on common lands and forest areas.

Given these trends, the objective to this paper is to study the determinants of livestock holdings for rural households and to explore the possibility or existence of some arrangement under which it may be possible for the socially backward households to own livestock. The study is done through a primary survey that was conducted in Badheri village of Haryana. A socio-economic field survey of Badheri village under Karnal district of Haryana was conducted to collect the relevant data in the direction of the objectives spelt out earlier. The state of Haryana has been selected for the present study considering both the importance of dairying for Haryana's economy and fairly large number of small and marginal farmers and landless households in rural Haryana. Haryana ranks among one of the top milk

producers, with opportunities for a large number of rural households to improve their income and employment in the dairy sector.

After selecting the villages, a complete enumeration of the households was conducted. Information was collected pertaining to land holdings, occupation, caste and livestock holdings of the households.

## **II. Case Study of Village Badheri**

The present section is based on primary data collected from village Badheri in June-July 2012, in district Karnal of Haryana. Badheri is located in Indri Block, at a distance of 27 kms. from the district headquarters. Located on the Yamuna Nagar-Karnal National highway, the village is well-connected to the district headquarters. Indri, 2 kilometres from Badheri, is the nearest town from the village and serves as a market for agricultural and livestock inputs.

Badheri is a small village with 133 households and total population of 733 persons. The village is inhabited by households from 10 different sub-castes namely, Kambhoj, Kashyap, Ahir, Dhobi, Julaha, Lohar and Badai, which constitute the Other Backward Castes

(OBCs); Chamar and Valmiki, constituting the Dalits, i.e., Scheduled Castes (SCs); and Pandit that constitute the other castes. About 46 Percent of the households belong to Kambhoj sub-caste, 21 Percent are Dalits, 12 Percent are Kashyap, 8 Percent are Pandits, 6 Percent are Ahir and all other OBC (Badai, Lohar, Julaha and Dhobi) are 7 percent.

### **2.1. Land holdings in the study village**

In this village, OBCs, especially Kambhoj, form the dominant caste because of their land holdings. Pandit households also own land but because of their numerical strength and size of the landholdings, Kambhoj form the dominant caste in the village. Across social groups, land ownership is concentrated in the hands of Kambhoj sub-caste with approx. 93 percent of the cultivable land owned by the households from this sub-caste. Pandits also own some cultivable land but their land holdings are of small sizes. All Dalits (Chamar and Valmiki) and some of the OBCs like Ahir, Badai, Lohar, Dhobi and Julaha households are landless. We also find that though Pandits own 6.69 percent of the land, they operate only 3.77 percent of the cultivated land, leasing out their land to Kambhoj households.

Land distribution in the village is characterized by extraordinarily high degree of concentration. About 45 percent of the households in the village do not own any land while top five percent households own about 45 percent of land. About 23 percent of the households do not operate land, and about 26 percent of the households that do not own land, lease-in land. We also find that households lease-in land to increase the size of their landholdings and thus join the ranks of medium and large farmers in terms of cultivated land. Small and semi-medium farmer households lease-out land. For them, small sizes of land holdings, involving high costs of cultivation, as well as availability of alternative employment opportunities, lead to shift away from cultivation to other non-farm activities including livestock rearing.

## **2.2. Livestock holdings in the study village**

Households in the study village were largely found to hold cow, bullocks and buffaloes (bovines). Along with these animals, which a large number of households were found to hold, there were households which held other livestock like goat, pigs, and horses and poultry birds. Some households exclusively held bovine animals, but a few households were found to hold a combination of bovine animals, goats, pigs and poultry birds. We first discuss bovine animals' holdings of the households, followed by other livestock holdings in the village.

### *2.2.1 Bovine animal holdings and usage in the study village*

Majority of the households in the study village owned and operated small land holdings, with sizes of up to 5 acres. Table 1 and 2 reflect the bovine animal ownership across social groups and across land holding sizes, respectively.

**Table 1: Percentage of households owning bovine animals and their percentage distribution for different social groups in Badheri, 2012**

Caste	Percentage of households owning bovine animals	Percentage distribution of owning bovine animals	Percentage distribution of total HHs	Households owning bovine animals	Total no of households
Dalits	64.3	10.9	21.1	18	28
Chamar	53.8	5.0	9.8	7	13
Valmiki	73.3	5.9	11.3	11	15
OBCs	75.5	76	71.0	71	94
Kambhoj	82.0	63.0	45.9	50	61
Kashyap	81.3	13.9	12.0	13	16
Ahir	75.0	5.6	6.0	6	8
Dhobi	20.0	1.2	3.8	1	5
Other OBCs*	25.0	0.6	3.0	1	4
Other Caste	36.4	5.0	8.3	4	11
All	70	100	100	93	133

Source: Primary survey.

Note: \* 'Other OBCs' includes Lohar, Julaha and Badai

**Table 2: Percentage of households owning bovine animals and their percentage distribution across different land size categories in Badheri, 2012**

Land Size class (acre)	Percentage of households Owned bovine animals	Percentage distribution of hh Owned bovine animals	Percentage distribution of total hh	Households Owned bovine animals	Total no of households
Landless (0.0)	3.3	0.6	22.6	1	30
Landless (with share cropping)	100	26.2	25.6	34	34
Semi Marginal (0.0--1.25)	82.4	14.5	12.8	14	17
Marginal (1.25--2.5)	85.7	13.0	10.5	12	14
Small (2.5--5.0)	70.0	15.7	15.0	14	20
Semi medium (5.0--10.0)	100	16.0	6.8	9	9
Medium (10.0--25.0)	100	7.1	4.5	6	6
Large (>25.0)	100	6.8	2.3	3	3
All sizes	69.9	100.0	100.0	93	133

Source: Primary survey.



As reflected in table 1, across social groups, 64 Percent of Dalit households compared to 75.5 Percent of OBC households owned bovine animals. Variation within social groups existed where 82 Percent of Kambhoj households and only 20 Percent of Dhobi households owned bovine animals. Also, the percentage distribution of bovine animal-holding households among social groups highlights concentration with OBC households, especially from Kambhoj sub-caste.

Table 2 reflects two important points i.e., unlike land, bovine animal holdings were quite widespread among households in the village. 69.9 percent of the total households, and in absolute numbers 93 households out of 133 households, owned bovine animals. Secondly, bovine animal-holdings among landless households were very small (only 3.3 Percent of the landless households own bovine animals), and these households constituted only 0.6

percent of the total bovine animal-holding households. Landless households might be constrained both by capital and fodder availability in owning bovine animals.

Along with land and social groups, we had also checked the ownership of bovine animals' vis-a-vis the size of the household. Ownership of livestock did not show a clear relationship with size of the household, but we found that households with 3 to 4 members had a higher incidence of livestock ownership than those with 1 to 2 members or 5 to 6 members. However, 90 percent of households with more than 6 members own livestock and only 10 percent of households do not own livestock. Therefore, size of the household might be a significant determinant of incidence of livestock ownership, though there were other factors along with availability of household labour that might affect the ownership of bovine animals' stock (Table 3).

**Table 3: Size of households and ownership of bovine animals in Badheri, 2012**

Own bovine animals/Not	Size of households			
	1-2	3-4	5-6	above6
Own bovine animals	4	32	30	27
% Distribution	(57)	(73)	(58)	(90)
Do not own bovine animals	3	12	22	3
% Distribution	(43)	(27)	(42)	(10)
Total	7	44	52	30

Source: Primary Survey



Next, we tabulate the number of buffalo, cattle and bovine animals held (according to their sex, age and use), which is reflected in Table 4.

**Table 4: Number of buffalo, cattle and bovine animals held (according to their sex, age and use) at the time of survey in Badheri, 2012**

Species	Sex	Categories of bovine animals	No of bovine animals at the time of survey	Percent of total bovine animals
	Male	Male Calf	22	6.8
		For Breeding and work only	5	1.5
<b>Buffalo</b>		Total male buffalo	27	8.3
		In-milk	53	16.4
	Female	Dry*	1	0.3
		Not calved Once	36	11.1
		Female calf	36	11.1
		Total female buffalo	126	38.9
	Male	Male Calf	17	5.2
		For Breeding and work only	4	1.2
		Total Male	21	6.4
<b>Crossbred cow</b>		In-milk	70	21.6
	Female	Dry*	0	0.0
		Not calved Once	20	6.2
		Female calf	58	17.9
		Total female	148	45.7
	Male	Male Calf	0	0.0
		For Breeding and work only	0	0.0
		Total Male	0	0.0
<b>Indigenous cow</b>		In-milk	1	0.3
	Female	Dry*	0	0.0
		Not calved Once	0	0.0
		Female calf	1	0.3
		Total female	2	0.6

Source: Primary Survey.

Note: \* Dry implies old animal; not milking anymore.

Out of the 324 bovine animals held at the time of survey, 47.2 Percent were buffaloes. Households in the village appeared to have a preference for cross-bred cows. In fact, there was only one in-milk indigenous cow and a female calf. Of the total bovine animals, 90 buffaloes and 91 cows were milch animals (In-milk, dry and not calved once). Male bovine animals are few in numbers, 27 male buffalo and 21 cross-bred bullocks were held by the households, mainly constituting male calf, but also a few for the purpose of breeding and work. Mechanization of agriculture and improvement in the means of transportation has led to replacement of male bovine animals by tractors and other transport. Second,

insemination of female animals is mostly done through injections (especially in the case of crossbreed cows) and also through male animals held by a few households from the village or from outside of village on payment of cash. Thus, households usually sell male buffalo calf and as there is no salvage value of male cow calf, these are left free in the fields.

2.2.2. Other Livestock and Poultry holdings in Badheri

Table 5 reflects the holding and rearing of other livestock animals, poultry and bees, along with their usage in the study village at the time of survey. As we see, these were very few in absolute numbers, and would be negligible in percentage terms.

**Table 5: Other livestock animals and poultry birds- Ownership and Rearing in Badheri, 2012**

Type of animal	No of household	No of animal held	loss/sale of animal
Pig	2	18	28
Goat	2	7	12
Horse	1	2	0
Poultry	3	15	30
Bee keeping	1	NA	NA

Source: Primary survey.

Having looked at the other livestock maintained by the households in the village, our focus in the rest of the paper would be on bovine animals' holdings

due to their significance in livestock holdings and in income generation of the households.



### **III. Determinants of the number of Bovine Animals held by the Households: A Statistical Analysis**

#### **3.1 Poisson Regression Model**

On the basis of the primary study undertaken, of which some of the prominent findings have been shared above, we have examined the determinants of number of bovine

animals' holdings of the households. Since the number of bovine animals included count value data, we attempted to examine its determinants using Poisson regression. Poisson regression assumes the response variable  $Y$  has a Poisson distribution and assumes the logarithm of its expected value can be modelled by a linear combination of unknown parameters. It is also sometimes referred to as the log linear model.

$$\text{Mathematically, } \log\{E(Y|x)\} = \alpha + \beta x$$

where  $x$  is a vector of independent variables and the model can be estimated using maximum likelihood estimators.

In our present study, a number of household variables are considered that may have a negative or a positive impact on the numbers of livestock maintained by the households. The livestock maintained by the households is also taken separately through three models, namely, total number of bovine, number of adult bovine and number of adult female bovine held by households, each being taken as a dependent variable in each model.

Land operated by the household, social group of the household, size of the household, area of the cattle shed and education level of the members of

the household are considered as independent variables in the regression analysis, i.e.,

The numbers of livestock maintained by the households =  $f$  (land operated by the household, social group of the household, employment of any member of the household in salaried employment or in self-employment other than agriculture, education level of the members of the household, size of the household, area of the cattle shed).

To consider the size of the household, number of adult males, number of adult females and the number of children is taken separately. Similarly, education variable has been considered as highest and lowest education level of adult female and male members in the

household, as through it was felt that the education level of a member of the household may lead to shift away from livestock sector if education level of the member is high. At the same time low education level of a member of the household may lead to involvement in the livestock sector. Closely related with the education variable is the employment of any member of the household in salaried employment or in self-employment other than agriculture.

### **3.2 Poisson Regression Results and Analysis**

Table 6 reports the Poisson regression results of 133 households of Badheri village in Karnal district for three different models. As explained above, these three different models, M-I, M-II and M-III, are with respect to three Dependent variables i.e., number of bovines, number of adult bovine and number of adult female bovine held by households. These models have pseudo  $R^2$  of 0.19, 0.17 and 0.16 respectively.

### **3.3 Poisson Regression Interpretation and Analysis**

The coefficient for number of adult males in the households is positive and significant for all three models. This suggests that household with larger number of adult male members are

keeping more bovine animals as compared to households with smaller number or no adult male members. Among the caste groups, Kambhoj and OBC caste group dummies are significant and positive, with Kambhoj households – the land dominating caste in this village, being significant at 1 percent while OBC dummy being significant at 5 per cent.

In order to understand whether operated land holdings among various caste group categories of farmers could explain the number of bovine animals held, we introduced interaction of operated land with various caste dummies such as SC, Kambhoj, Other OBC and Others in our regression. It is evident from table 6 that the coefficient of interaction of operated land with SC is comparatively very large and highly significant at one per cent for number of bovine and adult female bovine while at 5 per cent for number of adult bovine animals, indicating that, as land operated by SC caste group of farmers increases, the number of bovine animals held by them also increases. Also, while coefficient of interaction of land with Kambhoj and other OBC caste group is positive and significant for number of bovines, it is insignificant for adult bovine and adult female bovine. The coefficient

**Table 6: Determinants of number of bovine animals held by the households: regression analysis, Badheri, 2012**

Dependent Variable: <u>Number of bovine animals</u>									
	Coefficient			Standard Error			P> z		
	<u>M-I</u>	<u>M-II</u>	<u>M-III</u>	<u>M-I</u>	<u>M-II</u>	<u>M-III</u>	<u>M-I</u>	<u>M-II</u>	<u>M-III</u>
<b>Independent Variables</b>									
<i>Social group ref. category= SC</i>									
Kambhoj dummy	1.38	1.29	1.44	0.37	0.47	0.50	0.00	0.00	0.00
OBC dummy	0.99	0.96	1.16	0.37	0.47	0.50	0.01	0.04	0.02
Others dummy	0.22	0.06	0.29	0.60	0.81	0.82	0.72	0.94	0.72
<b>Interaction term between Land and Operated land</b>									
Land*SC	9.51	10.7	12.37	3.55	4.41	4.65	0.01	0.02	0.01
Land*Kambhoj	0.02	0.02	0.02	0.01	0.02	0.02	0.07	0.17	0.25
Land*Other OBC	0.75	0.74	0.68	0.34	0.45	0.46	0.03	0.10	0.14
Land*Others	0.28	0.32	0.25	0.18	0.24	0.24	0.12	0.18	0.30
<b>Dummy variables</b>									
salaried member in hh	0.02	-0.14	-0.14	0.16	0.22	0.22	0.88	0.52	0.52
self-employed other than agri-livestock hh	-0.02	-0.23	-0.17	0.16	0.23	0.23	0.90	0.32	0.48
<b>Other Independent variables</b>									
Lowest male education in hh	-0.02	0.01	0.01	0.03	0.04	0.04	0.53	0.82	0.77
Lowest female education in hh	0.00	0.03	0.02	0.04	0.05	0.06	0.98	0.58	0.77
Highest male education in hh	0.00	-0.05	-0.05	0.04	0.05	0.05	0.96	0.35	0.33
Highest female education in hh	0.00	0.02	0.30	0.03	0.05	0.05	0.99	0.72	0.55
Adult male in hh	0.18	0.30	0.30	0.07	0.09	0.09	0.01	0.00	0.00
Adult female in hh	0.04	0.03	-0.01	0.10	0.13	0.12	0.67	0.78	0.97
No of children in hh	0.04	0.07	0.09	0.04	0.05	0.05	0.24	0.13	0.07
Cattle shed	0.01	0.01	0.01	0.01	0.01	0.01	0.13	0.32	0.36
Constant	-0.88	-1.64	-1.79	0.40	0.50	0.53	0.02	0.00	0.00
<b>No. of Observations</b>	<b>133</b>	<b>133</b>	<b>133</b>						
<b>Pseudo R<sup>2</sup></b>	<b>0.19</b>	<b>0.17</b>	<b>0.16</b>						

Source: Primary survey

Note: M-I = Model I with 'number of bovines held by a household' as the dependent variable

M-II= Model II with 'number of adult bovines held by a household' as the dependent variable

M-III = Model III with 'number of adult female bovines held by a household' as the dependent variable

of interaction between land and Others is not significant for all three models.

Number of children in the households have positive and significant impact on the number adult female bovine animal in the households indicating that the households with a greater number of children keep more adult female bovine animals for milk and milk products' requirements.

Also, the coefficient of highest and lowest female and male education is not significant indicating that education does not have an impact on the number of bovine animals maintained by the household. Occupation variables like presence of salaried employed or presence of self-employed in other than agriculture was also found to not have any impact on number of bovine animals maintained by a household in the present study.

#### **IV. Conclusion and Policy Suggestions**

Ownership of livestock in Badheri was found to be unequal across economic classes and social groups. Although much less unequally distributed than land, disparities in ownership of livestock had a considerable overlap with disparities in ownership of land. It seemed as if disparities in land holdings had magnified themselves into livestock

holding disparities. Landless and small farmers accounted for 86 Percent of households in the village. While households belonging to these classes operated only 27 percent of the total operational land, their share in ownership of bovine animals was 71 percent. Only 5 percent of the households in Badheri operated land above 10 acres. Their operational landholdings accounted for 56 percent of the total operational holding of households in the village, and they owned 14 percent of total bovines in the village.

In terms of control over land, Kambhoj caste was the dominant caste group in the village. They accounted for 46 percent of the households and operated 95 percent of land, while Brahmins accounted for 8.3 percent of the total households and operated 4 percent of land. In contrast, Dalits and other poor OBC castes constituted about 47 percent of the households but operated only 1 percent of land. Although lower than their share in land, Kambhoj households also had a large and disproportionately high share in ownership of animals. They held 63 percent of the total bovine animals. In contrast, Dalits and poor OBC castes, owned only 11 percent of these animals.

In absence of land and income from agriculture, livestock rearing was an important occupation for the poor. However, given limited access to capital and poor access to land (which limited their access to fodder), Dalit and poor OBC households had fewer animals. Dalit households owned about 11 percent of the total bovine animals in the village.

Of the total number of bovines in the village, 47 percent were buffaloes and rest cows. Within cows, 99 percent were crossbred cows and only 1 percent were indigenous cows. Data shows that the size of land holdings was not only related to total herd size of animals maintained by households, but also had a bearing on the type of animals that the households had. Large landowning Kambhoj households maintained larger herds of cross-bred cows, while herds of animals maintained by Kashyap households were dominated by buffaloes.

Detailed Poisson Regression analysis shows that the number of bovine animals owned by a household depended positively on operated land, number of adult females in the household and caste group to which the household belonged. On average, Kambhoj and OBC households owned more animals than

SC households. Similarly, number of female bovine animals depended positively on number of adult female and number of children in the households and was significantly higher for Kambhoj households than for SC households.

Armed with these conclusions, the policy makers can device policies suited to Badheri Village related to land ownership as well as livestock ownerships, that can help reduce the ownership disparities across all social groups of the village. Some suggested measures include procurement policies aimed at purchase of milk and milk products from poor households at some minimum support price. Improved marketing techniques can also be thought of as a support to both rich and poor households to help market their surplus produce. In these manners, with some basic government intervention, lives of people in Badheri village can be improvised upon, based on their present livestock ownership and occupational structure.

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## Driver of Marine Economy in India: An Empirical Investigation of Fishery Sector



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**Keywords:** Marine Economy, Economic Growth, Sustainable, Trade Policies, Exchange rate.

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### ABSTRACT

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*Marine economy for India denotes a vast ocean of economic opportunities playing an equally important role in generating and sustaining livelihoods. With an over 7,500-km-long coastline spread across nine coastal states, four union territories (UTs) - including two island UTs, 12 major, and 200 minor ports, India's Marine economy supports 95% of the country's business through transportation and contributes an estimated 4% to its Gross Domestic Product (GDP). Therefore, all the sectors across Marine economy have the potential to engage a large workforce and have been doing so from the past many decades at least in sectors such as fishing, aquaculture, fish processing, marine tourism, shipping and port activities. Now, engagement in new sectors such as offshore wind, marine biology, biotechnology, and other activities like ship building and ship breaking is also rising extensively. The marine sector plays a vital role in the national economy of India in the multiple ways. It not only contributes in economic growth, creation employment opportunities but also generate foreign exchange. High proportions of these benefits are generated by the sectors and contribute in various ways to resolve food security problems and poverty reduction. Among these, the fisheries sector alone provides livelihood to about 16 million fisher folk and fish farmers at the primary level and almost*

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*twice that number along the value chain. The government envisions this sector as having immense potential to more than double the fisher folk and fish farmers' incomes. This paper highlights the important role of marine sector particular fisheries in economic development of India. In this paper the major focus will be the Economic growth of India with reference to marine economic Sectors namely fisheries. This studies also examines the major determinants of marine economic activities namely fisheries during the period 2009-2021 using the panel data. This paper will also examine how the factors like trade policies, volatility in exchange rate and macroeconomic policies change the direction and composition of marine trade during above said periods.*

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## Introduction

The importance of promoting the “Marine economy” has been recognized since the Rio +20 Conference in 2012, which was mainly prompted by coastal countries. As defined by the World Bank, the “Marine economy” implies “sustainable use of ocean resources for economic growth, improved livelihoods, and jobs while preserving the health of the ocean ecosystem” (World Bank 2017). The components of the Marine economy, as identified by the World Bank (2017), include fisheries, tourism, maritime transport, aquaculture, seabed extractive activities, marine biotechnology and bio prospecting, etc. The concept of the Marine economy is also recognized by the United Nations Sustainable Development Goals in SDG 14, which

sets a target that by 2030 the economic benefits will be increased to small island developing states (SIDS) and least developed countries (LDCs) from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture, and tourism (Spalding 2016). Marine Economy has become a popular branch of study having various paradigms since the beginning of the 21<sup>st</sup> century. It has changed with the change of time and context. It cuts across the traditional ocean industry-shipping, fisheries, and maritime transport. It has emerged in the form of new industries such as offshore aquaculture, sea bed extractive activities, bio prospecting, marine biotechnology, and beyond it. Likewise, Marine Economy relates to “non-economic goods and services” which



generate life-supporting functions for humans as well as incorporates other economic activities such as coastal protection, waste disposal, carbon sequestration, and the existence of biodiversity. Marine Economy opens up new avenues for each country and coastal communities as different circumstances and priorities exist across different locations. However, the core components aim at providing the provision of social and economic benefits for the present and future generation, restoring and protecting the marine ecosystem diversity, functions and values, and reduction of waste through renewable energies and more efficient technologies. Broadly, the core activities of the marine economy seek to address critical areas which are divided into four main categories as follows:

1. Harvesting of living resources
2. Extraction of non-living resources
3. Commerce, tourism, and trade
4. Non-market / indirect contributions to the economic activities and environment. (OECD, 2016; Economist Intelligence Unit, 2015)

To each of these four categories, key economic sectors and industries are providing unique ocean services.

Essentially, all these sectors combined are critical to the broad components of Marine economy with potentials for more impactful contributions in the future. India's Exclusive Economic Zone of over two million square kilometers is rich in living and non-living resources and holds significant recoverable resources of crude oil and of recoverable natural gas. The coastal economy also sustains over 4 million fishermen and other coastal communities. With these vast maritime interests, the Marine Economy in India has a vital relationship with the nation's economic growth. India has a unique maritime position. Its 7517 km long coastline is home to nine coastal states and 1382 islands. The country has 12 major ports and 187 non-major ports, handling about 1400 million tons of cargo every year, as 95% of India's trade by volume transits by sea. Thus, the development of the Marine economy as a driver of economic growth is immensely important for these countries. Most of the existing studies on the Marine economy deal with the conceptualization of the marine economy, with an emphasis on the need for valuation of ocean ecosystem services and the role of ocean governance. This paper contributes to the existing literature by empirically examining determinants of Marine economy activities, namely fisheries and

tourism, in the context of India over last decades from 2009 to 2021. To the best of our knowledge, no previous study has made any such attempt.

In order to identify the driving factors behind the marine economy, we use a panel data model and our analysis encompasses three sets of estimates. The first set considers the overall size of the marine economy, while the second and third sets take into account the production of the fisheries and tourism sectors separately. In order to check the robustness of our results, we use alternative model specifications for the aforementioned sets of estimates and find consistent results with the benchmark models. Our analysis reveals that gross fixed capital formation, the availability of electricity, a higher degree of trade openness, and exports influence marine economy activities favorably. Moreover, the results also indicate that sustainable ocean management policies catalyze Marine economic activities.

The paper is organized into six sections. Section 2 delineates a review of the relevant literature. Section 3 describes the justification for selecting relevant variables for empirical analysis. Section 4 discusses the data and methodology used for the study. Section 5 presents the empirical results, and

finally Section 6 concludes and provides some policy recommendations

## **Literature Review**

As the concept of the marine economy is a recent one, there are quite a few studies (Smith-Godfrey 2016; World Bank 2017; Keen, Schwarz, and Wini-Simeon 2018; Attri 2016) that engage in identifying a working definition and framework for understanding the “marine economy.” Using a qualitative framework and applying cluster analysis, Smith-Godfrey (2016) identified five activities, namely extraction of living resources, extraction of nonliving resources, new resource generation, trade in resources including tourism and recreation, and ocean health, as the components of the marine economy. A similar classification is extended by the World Bank report on understanding the potential of the marine economy (World Bank 2017). Keen, Schwarz, and Wini-Simeon (2018) emphasized the need to digress from an activity-based approach and stressed the need to integrate ecological economic concepts along with the production and allocate efficiency of economic activities linked to oceans. Aparna Roy (2019) explores the current governance framework of marine resource

management in the Indian Ocean, delves into the challenges in marine economy development and recommends ways to advance marine economy governance in order to address pressures and ensure sustainable development in the region. B. Swaminathan, V. D. Tarpara M. G. Dhandhalya (2018) analysed and found that the export growth rates of Indian marine products, in terms of volume, value and per unit price were found to be highly positive the pre-WTO phase (1986-1994), but it slowed down in transition-WTO (1995-2004) and post-WTO (2005-2015) periods. Islam, M. K., Rahaman, M., & Ahmed, Z. (2018) attempted to present the current scenario of the marine economy in Bangladesh. From the analysis, they found that the sea production and aquaculture production is increasing and without having well-trained, skilled and educated human resources in different marine industries, sustainable and dynamic marine economy is not possible for any country. N. Manjunath, H. Lokesha, and B. Jagrati Deshmnya, (2017) has concluded that the increased export growth in marine products is mainly attributed its increasing demand from animal and human consumption, food processing as well as alternative purposes such as cosmetics, fishmeal and fish oil, bio active compounds,

pharmaceuticals, marine protein and food processing aids and bi-products are used for valuable ornamentals. Das, A., Kumar, N. R. and Rani, P. (2016) study also revealed that India's marine products export concentrated mainly to Japan, USA, European Union, South-east Asia and Middle East; which were falling in less desirable or least desirable category which has affected export performance of the country. Ancy, V. P. and Raju, K. V. (2016) in their research paper analysed that diversification of production by introducing new commercial species, adoption of new technologies and introduction of processing units for value added products could add new dimensions to the sector. D. K. Kusuma and H. Basavaraja, (2014) have found that the efficiency of production and price competitiveness are major determinant of exported items. P. Parvathy, and. D. Rajasenan had concluded that the ASEAN India Trade in Goods Agreement (TIGA) though proposes to liberalize trade between India and the ASEAN member nations, fails to deliver greater market access for our marine products in the markets of the ASEAN nations. This can be attributed to factors such as the lower prevailing MFN base rate in the ASEAN nations, tariff reduction commitments reciprocated by

them being lesser than India's offers, inclusion of our prominent items of export in the restrictive lists of most of the ASEAN nations etc. (2012). Rajeev (2009) noted that the fishing policy declared on account of liberalization policy of 1991 is a game-changer for Indian marine sector as it legalized deep sea fishing and joint ventures for large scale industrial houses and multilateral companies.

However, none of the aforementioned studies have tried to conduct an empirical investigation of the drivers of the marine economy, especially in the context of coastal countries, which the present study has attempted to do. Such an empirical investigation of the determinants of the marine economy will help policy makers to identify the major driving forces behind the growth of marine economy activities, particularly tourism and fisheries, in coastal country like India and hence design the major areas for policy interventions.

### **Methodology and Data sources**

The study was based on time series secondary data on exports of marine products from India obtained from various government published sources and website portal of Marine Products

Export Development Authority, Kochi during the last 12 years i.e., from 2009-2021. Further to know the impact of various trade policies and macro impact the study period is divided into three sub periods. The study period was classified into three sub periods 2009-13 (This period is marked with global recession which had an adverse impact on export basically on export of seafood processing industry.

### **Objectives**

- To examine the role Marine sector in Economic Growth of India, especially contribution of marine fish towards Indian Economy and ascertain growth pattern in the exports of fish and dried marine fish products from India.
- To measure the variability in Marine fish products and to compute the index instability.
- To identify the driving factors behind the Marine fish production and examine the macroeconomic factors affecting the major marine activities namely production and export of marine fisheries and tourists visited to India

## **Framework for Selection of Variables and Measurement**

This study considers 9 coastal states and two major Union territory of India which exporting marine fish. The time period 2009-2021 is selected based on the availability of data on an annual basis for all variables used in the study. The analysis is divided into two sets of estimates. First, we attempt to examine the factors determining the size of the marine economy. The size of the marine economy for India is estimated by multiplying the real GDP of these countries by their respective share of the marine economy. This size of the marine economy is taken as the dependent variable in the first estimation set. After considering determinants of the marine economy as a whole, in the next step we examine the growth of Marine economic activities separately and hence we have examined the macroeconomic factors affecting major Marine economic activities, namely tourist arrivals and fisheries production. The second set of estimates considers fisheries production and export (in metric tonnes) as a dependent variable. The third set of estimates in our analysis is to examine the factors affecting tourist arrivals. To measure tourist arrivals, we use countries' number of arrivals (in bound visitors). International inbound tourists

(overnight visitors) are the number of tourists who travel to a country other than that in which they have their usual residence, but outside their usual environment, for a period not exceeding 12 months and whose main purpose in visiting is other than an activity remunerated from within the country visited.

## **Methodology and DATA Sources**

The present study investigates determinants of the size of the marine economy and marine economy activities in India using panel data analysis. We have used a panel data model since panel data blend inter-state differences and dynamics and have several advantages over cross-sectional regression. Panel data provide more degrees of freedom and more sample variability than cross-sectional data and improve the efficiency of econometric estimates.

Algebraically the panel data model can be written as:

- **Compound growth**

$$Y = ab$$

Where, Y = Dependent variable for which growth rate is to be estimated

$$a = \text{constant/intercept } b =$$

Regression coefficient  $t =$  Time variable in year (1, 2, 3... n) The compound growth rate will be obtained using logarithmic from of the equation as below.  $\log Y_t = \log a + t \log b$  Then the per cent compound growth rates (g) will be computed by using the relationship:  $g = (\text{antilog of } \log b - 1) \times 100$  Where, g = Compound growth rate per annum in per cent

- **Cop pock’s instability index: CII** =  $\{[\text{Antilog (Vlog)}] - 1\} \times 100$

Where V log = logarithmic difference of log in time period t and log in time period t – 1.

- In the second set of sestimations, we try to identify the determinant of fisheries production

$Y_t = \beta_1 + \beta_2(X_2) + \beta_3(X_3) + \beta_4(X_4) + \beta_5(X_5) + \beta_6(X_6) + \beta_7(X_7) + \beta_8(X_8) + \beta_9(X_9) + \beta_{10}(X_{10})$  where  $Y_t$ : marine fish production in period t,  $\beta_1$ : Constant,  $\beta_2$ : Fish Exported  $\beta_3$ : GFCF in Ag, forestry and fisheries in (%),  $\beta_4$ : Trade Openness (%),  $\beta_5$ : Access to mobiles per 100percens (ICT). a  $\beta_6$ : Access to electric city in percent,  $\beta_7$ : Expenditure on Fisheries & Aquaculture Improvement (crore) and  $\beta_8$ : crisis

**Table 1: Population dependent on fisheries for livelihood among coastal states in India as Per December 2021 (in percent)**

STATE	Fishing Villages	Fishing Families	Fisher folk Population
Odisha	23.7	13.1	14.9
West Bengal	5.5	8.8	9.4
Andhra Pradesh	16.2	18.7	14.9
Tamil Nadu Including Puducherry	16.7	22	19.8
Karnataka	4.2	3.5	4.1
Kerala	6.5	13.6	15
Goa	1.1	0.3	0.3
Maharashtra	13.3	9.3	9.5
Gujarat	7.2	7.1	8.3
India	100	100	100

Source: Marine Economy Working Group Report, Economic Advisory Council

## Results and Discussion

Table 1 shows the importance marine fish important for Indian economy. The above table shows the no of fisheries population in coastal states of India. From the above table it is concluded that Odisha is in top rank in case of fishing villages whereas Tamil Nadu including Puducherry is top in the rank fisheries folk and in case of families depends in

fishing, it is Andhra Pradesh is rank one among all coastal states of India.

## Empirical Results

This section describes the empirical results of this paper. Table 2 starts by describing the compound growth rate of production of Marine fish over two periods: period I: 2009-14 and period II: 2015-2020.

**Tablea 2: Growth Rates of Marine Fish Production in Coastal States of India (In Percent)**

Coastal States and UT	Marine Fisheries Production	
	Period -I (2009-2014)	Period-II (20015-2020)
Andaman & Nicobar Islands	-24.16	4.35
Goa	16.80	-4.42
Gujarat	1.02	0.14
Kerala	-6.41	13.55
Puducherry	4.50	-5.56
West Bengal	-6.99	-9.44
Tamil Nadu	6.90	15.22
Karnataka	19.02	-2.90
Andhra Pradesh	30.87	3.15
Odisha	-1.06	5.90
Maharashtra	6.56	-0.40
India	51.92	33.06

Source: Author's own calculation by compiling data's from various annual reports MPEDA Govt of India.

It can be observed from Table 2 that most of the coastal states of India exhibited a stronger growth rate in tourist arrivals in period I (2009-2014) than in period II (2015-2020). The reason for dividing the entire time span into two sub periods is to assess the growth rates of key indicators pre and post the crisis. During second sub periods due to covid-

19 there were restrictions on export of fish. However, in terms of growth of fisheries production, many coastal states of India have faced deceleration in period II compared to period-I due covid 19. Due to covid mostly ASEAN (Association of South East Asia) countries impose export restriction on fish basically marine specifically China.

**Table 3: Coppock’s instability index: CII (in percent)**

Coastal States and UT	Marine Fisheries Production	
	Period-I (2009-2014)	Period-II (2015-2020)
Andaman & Nicobar Islands	39.59	49.11
Goa	16.17	49.44
Gujarat	0.58	48.99
Kerala	3.48	51.01
Puducherry	5.38	49.38
West Bengal	7.68	49.37
Tamil Nadu	4.41	49.99
Karnataka	13.45	49.06
Andhra Pradesh	18.65	49.41
Odisha	5.94	49.15
Maharashtra	3.97	49.16
India	22.62	35.70

Source: Author’s own calculation by compiling data’s from various annual reports MPEDA Govt of India.

The above table shows instability of the marine fish production in India in the two sub periods mentioned above.

During the above sub periods in the period of 2015-20 the high instability has found in marine fish production in India.



The important reason of the instability in fish production in second sub periods is due do pandemic periods in which restrictions of exports are implemented.

**Table 4: Trends of Marine Fish Exported (in Percentage)**

Time period	Value of total exported items in crore	Value of total marine products exported in crore	% of total exports
2009-10	845534	10048.53	1.19
2010-11	1142922	12901.47	1.13
2011-12	1465959	16597.23	1.13
2012-13	1634318	18856.26	1.15
2013-14	1905011	30213.26	1.59
2014-15	1896445	33441.61	1.76
2015-16	1716384	30420.83	1.77
2016-17	1849434	37870.9	2.05
2017-18	1956515	45106.89	2.31
2018-19	2307726	46589.37	2.02
2019-20	2219854	47618	2.14
2020-21	2154339	44176	2.05

*Source:* Authors calculation by compiling data from various annual reports of R.B.I and MPEDA, Govt of India

It can be observed from the table that though the share of marine exports to total export is not so much high but still it is increasing gradually basically in pandemic prods i.e from 2019 to 2021. During these periods though overall exports of India has declined but the

marine exports has remained constant. It can be concluded that the marine exports which has ample opportunities for export had been neglected for a long period of time by the central and local government.

**Table 5: Descriptive Statistics of Independent and Dependent factors of Marine Fish Production in India**

	Fish Export	Gross fixed capital formation in ag, forestry and fisheries in percent	Trade openness	CO <sub>2</sub> per capita tonnes	ICT
Mean	1050533	17.72	46.10917	1.7075	74
Median	1017500	17.755	44.935	1.72	74.5
Mode	N/A	16.25	N/A	1.8	87
Standard Deviation	225334.2	1.27	6.493254	0.151725	13.01747
Sample Variance	5.08	1.61	42.16	0.023	169.45
Kurtosis	-0.82647	-0.69786	-1.39064	-0.62	1.71
Skewness	0.145343	0.241492	0.38	-0.54	-1.21
Range	714122.8	3.87	17.92	0.48	44
Minimum	678436.1	16.25	37.87	1.43	43
Maximum	1392559	20.12	55.79	1.91	87

	Access to Electricity	Crisis	Expenditure on Fisheries & Aquaculture Improvement (crore)	Global price of Fish (Million (\$) per metric tonnes)	Marine fish production
Mean	85.5	0.75	23.54	234.04	34.51
Median	85.95	1	23	204.3678	35.69
Mode	N/A	1	23	N/A	N/A
Standard Deviation	9.77	0.45	3.63	49.61927	3.31
Sample Variance	95.5	0.21	13.21	2462.072	10.91
Kurtosis	-0.77	-0.32	0.69	-1.0058	0.89
Skewness	-0.27	-1.32	0.84	0.82	-1.03
Range	31.4	1	12.39	127.34	11.23
Minimum	67.6	0	18	190.74	27.3
Maximum	99	1	30.39	318.09	38.53

Source: Author's own calculation by compiling data's from various annual reports MPEDA Govt of India



The descriptive statistics are presented in the table given above for relating determinants affecting tourist arrivals. The table explains key descriptive statistics like mean, median, mode, standard deviation, sample variance, Skewness, kurtosis, range, minimum and maximum of both dependent and explanatory variables.

The mean size of Fish Exported is 1050533 and the standard deviation seems to be 225334.2. The mean size of the Fish Exported is also positively skewed. The table also presents the descriptive statistics of other explanatory variables used in this study. The figures are self-explanatory in nature.

**Table 6: Determinants of Marine Fisheries Production in India**

Variables	Coefficient	Std. Error	t-Statistic	P-Value
Fish Exported	1.87855	0.000011	0.17	0.88
GFCF in Ag, forestry and fisheries in (%)	-2.22477	0.831969	-2.67	0.12
Trade Openness (%)	0.406246	0.257015	1.58	0.25
CO <sub>2</sub> per capita tonnes	4.546139	10.95699	0.41	0.72
ICT	-0.05578	0.171005	-0.33	0.78
Access to electricity	0.02518	0.229758	0.11	0.92
Crisis	0.960277	2.756379	0.35	0.76
Expenditure on Fisheries & Aquaculture Improvement(crore)	0.032543	0.237532	0.14	0.90
Global price of fish (million\$ per metric tonnes)	-0.03483	0.035288	-0.99	0.43
Intercept	54.0531			
Overall R <sup>2</sup>	0.964639			

Source: Authors' own calculation by compiling data from various Annual reports of ministry of fisheries and MPEDA, Govt of India.

As can be observed from the table above, since none of the factors mentioned above exhibits a p-value less than or equal to the usual significance level of 0.005, the null hypothesis which assumes that there exists no correlation between the dependent variables and the independent variables cannot be rejected

and hence the factors mentioned are not statistically significant to our regression model.

### **Conclusion and Policy Implications**

The Marine economy and its sustainability have emerged as one of

the key research issues in recent decades and has become a buzzword among policy makers in this field. Although a reasonable number of studies have made attempts to assess the marine economy from different perspectives, to the best of our knowledge no study has empirically examined the factors that drive the size of the marine economy. Thus, the present study made an attempt to identify the factors that determine the marine economy activities by considering coastal states of India. The role of ocean governance is often described as an important factor behind Marine economy activity. We have tried to capture the impact of ocean governance policies like **Marine Economy Working Group Strategy for the Seas** marine states of India introducing a policy dummy in our analysis, which exhibited a positive impact on the size of the Marine economy. Further, we have explored factors determining the output of major sector of marine economy, fisheries. Our findings reveal the importance of more investment in the fisheries and agricultural sector, better access to electricity, and better export opportunities as the major determinants of fisheries output. The findings further revealed that world income, relative price, depreciation in the nominal exchange rate between domestic

currency and the US dollar, along with policy and financial crisis dummies positively affect the size of the fishery sector. Thus, the size of the Marine economy has positively responded to these sustainable ocean management policies. Hence, our findings support the need for, and effectiveness of, the implementation of sustainable ocean governance policies in India, which can further strengthen the growth of these marine states

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## Agrarian - Institutional Reforms in Rajasthan in the Post-Independence Period



Anish Gupta\* & Mousumi Biswas\*\*

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### ABSTRACT

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*In Post-independent India, Rajasthan underwent a hoard of policies on land reform. These were successful in giving a means of sustenance to the poor and landless labourers. However, despite the abundance of land, the policies were not entirely successful because of many allegations which point to the partiality of the Rajasthan government towards Jagirdars, who appropriated enormous areas in the name of Khudkashtland within two years when the policy was announced but not implemented.*

**Keywords:** Jagirdari, Tribal, Khudkasht, Biswedari, Ceiling.

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### Introduction

Due to the lack of modern industrialisation, the land had been the most crucial source of revenue for the ruling class and the major source of livelihood for the majority of the population, which comprised of mainly cultivators. The meaning and the definitions of ownership of land have varied from time to time and the land revenue system also underwent considerable changes. Realizing the importance of land reform, the state

government of Rajasthan, soon after independence, formed a committee under the chairmanship of Venkatachari Ji, a senior bureaucrat in the Rajasthan cadre. The committee was named as Rajasthan Bharat Jagir Enquiry Committee, and its objectives were to inquire into the nature and practices of the tenancy system and *Jagirdari* system in Rajasthan and Madhya Bharat. Soon after the report of the Venkatachari committee (1950) was made public, Rajasthan Land Reforms and Resumption of Jagir Act-1952 and

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Rajasthan tenancy act-1955 were passed. The act had the following provisions (Rajasthan Tenancy Act 1955):

- Fixation of rent at 1/6 of the gross produce
- Fixity of tenure for tenants and sub-tenants and a limited right of resumption to the landholder, subject to the condition that the tenant is left with a minimum area yielding a net income of Rs.1,200 (varying between 15.6 and 125 acres) where the right of resumption expired about 8 years back
- Transfer of ownership rights in respect of non-resumable area to tenants and sub-tenants
- Ceilings on land holdings at 30 standard acres, prior to which it varied from 22 to 336 acres generally.

The Government of Rajasthan examined the state of the implementation of the Rajasthan Tenancy Act in 1964. The committee in its report observed that approximately 1.3 lakh tenants and sub-tenants were made owners in respect of 6.7 lakh acres of the land. The committee observed that most of the sharecroppers and sub-tenants were not recorded. As far as the ceiling is concerned, its

provisions of it could be enforced only in December 1963, and that was also initially implemented only on the persons holding 150 ordinary acres of land and above (Land Reforms Implementation Committee of the National Development Council, Planning Commission Government of India).

Another act was also passed in 1959 which was Rajasthan *Zamindari and Biswedari* Abolition Act 1959. The act abolished *zamindari/ biswedari* from Rajasthan and *zamindars/ biswedars* were compensated according to this act. The compensation for the *zamindars/ biswedars* was in the form of *khudkasht* land, temple land and land for personal and public purposes. Apart from the tenancy reform and land ceiling, the government of Rajasthan also undertook the task of agricultural colonization in the Bikaner state (the district of Ganganagar was by then the part of Bikaner state). These were the areas where irrigation through canals was expected to take place. The figures related to colonies, settled during the period 1947-63 are as follows:

Table 1 below represents the data given by the colonization commissioner of Bikaner is not free from ambiguity. For example, it has a lot of overlapping and ambiguous categories. One can find

separate categories for harijans and tribal, but it has another joint category of harijanand tribal. In a similar manner, it has another category of unspecified landless people, but it doesn't indicate whether it includes the harijans and tribal in it also. It is certain that the land sold in an auction and directly allotted to ex-Jagirdars(combined figure for which is around 30.55), is far higher than the land allotted to the categories of harijans, tribals and unspecified landless, whose

combined figures are just 19.33 per cent of the total (Farmer, 1974). The *Jagirdars* and *zamindars* of Rajasthan were not much affected by the land reforms acts passed by the government of Rajasthan. The only setback for them was that they were not able to arbitrarily exploit *rai-yatis* or tenants by taking beggars, forced labour, meting out inhuman punishments for non-compliance and other suchkinds of exploitations. But other issues like land ceiling and fixation of rent were not much successful.

**Table 1: Colonies settled in Rajasthan, 1947-63**

S.No.	Beneficiaries	Number of colonists	Per cent of Total
1	Number of schemes	C	
2	Unspecified landless	4304	19.24
3	Harijans	-	
4	Tribals	20	0.09
5	Harijans and tribals	-	
6	Old temporary cultivation lessees	11056	49.41
7	Ex-servicemen	91	0.41
8	Educated unemployed	-	
9	Political sufferers	4	0.02
10	Refugees	-	
11	Immigrants from afar (not refugees)	-	-
12	Ex-Jagirdars	1841	8.23
13	Compensation	-	
14	Other locals	-	
15	Land by auction	4995	22.32
16	Other	64	0.29
17	Total	22375	100.00
18	Estimated number of colonists	22375	100.00

Source: B.H. Farmer (1974) Agricultural colonization in India since independence (collected from colonizer commissioner of Bikaner)





The generous attitude of the government towards jagirdars can be reflected in the recommendations of Venkatachari committee (1950) which recommended the abolition of *jagirdari* but at the same time also recommended huge compensation and financial assistance to the *Jagirdars*. The *Jagirdars* were given many types of concessions like compensation in monetary terms, resumption of *khudkasht* land, grants and loans for rehabilitation and other facilities.

The size of *khudkasht* land was larger in Rajasthan due to the lack of irrigation facilities. The *Jagirdars* took advantage of this act by selecting the best-irrigated land for *kudkasht*, of gigantic size. Around 318860, *zamindari* and *biswedari* estates were abolished in Ajmer, Alwar, Bharatpur, Bhilwara, Ganganagar, Jaipur, Kota, Sikar and Udaipur after the imposition of *Zamindari and Biswedari Abolition Act-1959*. However, about 80 per cent of the land was allotted for *khudkasht* land to *zamindar* themselves (Singh, 1964). As far as tenancy reform was concerned, most of the cases of tenancy were not registered and in the unregistered cases, the witnesses could not afford to speak in favour of tenants. Ultimately security of tenure could not be provided to the

tenants. The intention of the government can be understood by the fact that the Rajasthan Resumption of Jagirs act was passed in 1952 and became operative only in 1954, giving ample time to *Jagirdars* to save their property. In these two years, *jagirdars* mostly transferred their land to some of their loyalists and to benami persons (people who did not exist or had left the village).

The failure and success of the land reform can be noticed in the Gini Coefficient calculated after independence. Sharma (1994), calculated the Gini coefficient for Rajasthan and found that the value of the Gini coefficient initially fell from 0.69 in 1953-54 to 0.65 in 1961-62 and to 0.60 in 1971-72. But after 1971-72 it started increasing afterwards. It rose to 0.62 in 1982. The values calculated by him indicate two important things. One, is that there wasn't much fall in the value of the Gini coefficient even in the period when land reforms were at their peak. Two, that the value of the Gini Coefficient again started increasing after 1971-72, which was reflected in the value calculated for 1982. Rawal (2008), calculated the Gini coefficient for Rajasthan and found that for the year 2002-03, it was 0.68, which shows a huge jump from its previous level in 1982.

It is an indication that the momentum of land reform steamed out within two decades of independence, and inequality again started increasing.

According to Rawal (2008), if an arbitrary ceiling of 20 acres is assumed, Rajasthan has approximately 5.9 million acres of land above the suggested ceiling. This amount of land is the highest among all the major states of India, which clearly makes a case for fresh land reform. There has been a lot of critical evaluation of the land reform policies in Rajasthan. According to Jodha (1970), most policies in the post-independence period focused mainly on land tenure and allied problems.

The study moreover accuses the government of Rajasthan of ignoring other parts of land reform i.e., aspects of land policy, relating to the utilization, conservation and development needs of the land, which were equally important. According to him in some regions of Rajasthan, these aspects of land were of far greater importance for raising productivity than the tenurial reforms. In the third five-year plan, the government of Rajasthan spent only 0.26 per cent of its total planned expenditure on the conservation measures in the arid districts of Rajasthan.

## Conclusions

Rajasthan has been the abode of diverse groups of the population belonging to different cultures, backgrounds, occupations, and religions. Despite geographical abundance and availability of natural resources, the land inequality used to be very high at the time of independence. The land reforms initiated in the post-independence period not only provided the freedom to the tillers from the clutches of zamindars but also resulted in the redistribution of land which provided livelihood to many landless and poor households in the rural Rajasthan. Despite remarkable progress on many fronts land reforms failed to achieve their objective due to institutional impediments.

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## Health Care System During the Colonial Era



Somi Sain\*

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### ABSTRACT

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**Keywords:** Health care, Sanitation, Colonial India and Medicines.

*During the colonial era, Indian health and sanitation were completely neglected and Indian life rarely mattered to the British. Regardless of the benefits or drawbacks of the British Raj, it is undeniable that they had a significant impact on all aspects of peoples' lives, particularly in the region where they ruled for the longest period of time. The fact that they developed a number of procedures with the intention of protecting Europeans in general and British residents in particular. However, when such a system failed, they blamed Indians and Indian climatology. As a clear illustration of the British regime's shortcomings, the fields of education and health might be used. British rule in India was solely intended to take advantage of its resources for the benefit of British citizens. The British administration's health policy ran completely counter to Indian people's sociocultural tradition and expertise. They completely undercut the Indian medical practices that have existed up until now. The British simply dismissed indigenous medical techniques as an archaic and backward phenomenon because the concepts of supremacy and hegemony were so pervasive in their minds. They started a variety of medical and health procedures over time, simply importing them from England and Europe without considering their long-term viability.*

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India's healthcare system has a long history, dating back to ancient times. The Indus valley civilization sites like Mohenjo-Daro and Harappa excavations provide evidence that health has played a significant role ever since. Planned cities with drainage, brick-built homes and public baths, and cleanliness practices by the ancient inhabitants are striking examples of health consciousness. The healthcare system advanced significantly following the *Vedic* period in India. *Ayurveda* and *Siddha*, two medical systems that helped establish the idea of health as a whole, emerged during the *Vedic* period. The teachings of *Buddhism* and *Jainism* had a significant impact on healthcare during the Post Vedic era.

Medical education has begun to be offered in historic universities like Kashi, Nalanda and Takshashila as a result of the realization of the necessity and significance of raising public awareness of health-related concerns. The household remedy is also included in India's traditional practices (Chittabrata and Dutta, 2005). *Ayurveda* and *Siddha* are distinguished by practitioners who have received institutional training and by highly developed theories to support their practices, the household remedy tradition may be referred to as *Lok*

*Parampara*; which is an oral tradition that has persisted throughout the ages. Home remedies and treatments for common ailments are included, as well as *Nattu Vaidhyams* learned through oral traditions, *Pathyam* and *Apathyam* or foods to be preferred or avoided by those suffering from specific diseases or conditions such as pregnancy, lactating mothers, etc. Yoga and other physio-cultural practices of a preventive nature, as well as unique practices like bone setting. India has created its own unique history of health systems. In a much broader sense, the *Ayurvedic* tradition has long predominated in the North whereas the *Siddha* tradition developed from the South. Temples were likely the first institutions to focus on medical care. Medical care was provided to students at educational institutions, temple employees, the needy, worshippers, and others by hospitals and dispensaries located inside most temples. Such hospitals, often referred to as *atulasalas* or *aturasalas*, were built in specific locations with royal support and community donations. The monarchs of that time gave opulent donations for the upkeep of these hospitals. However, due to unforeseen costs incurred while providing free medical help during periods of natural calamities and

epidemics, some hospitals experienced financial hardship (Mukherjee)

### **Healthcare system in Medieval India**

With the arrival of Arabs in India, *Unani* medicine also arrived with them. *Madrassas*, hospitals, and medical libraries all opened as a result of the ruling class's policies. There were many *tibbi madrassas* opened. Indian sources had a significant early influence on *Unani* pharmacology. As India was abundant in plant and mineral resources, *unani* doctors increasingly expanded their expertise and utilised Indian medications by referencing *Ayurvedic* texts and conducting their own studies. The Delhi Sultans and the Mughal emperors supported intellectuals with public funds and even hired some of them as official servants and court doctors (Griswold).

The ruling class in medieval India also supported the *Ayurvedic* system in addition to the *Unani* system. *Ayurvedic* and *Unani Hakeems* were both employed in the hospitals. In addition to caring for the royal family, court physicians also recorded their own observations and experiments during their free time. After amassing a significant collection, they delivered them to their clients in the form of written compendiums. As a result,

many books were written by both Indian and *Unani* practitioners. They also conducted tests using the medical resources that were accessible to them locally. In their books, they continued to study these herbs and substances, their therapeutic properties, applications, routes of administration, and creation of compound medications.

### **Healthcare system in Pre-colonial India**

Organized medical services conveyance had firmly established three characteristics throughout the pre-colonial period, which corresponds to the pre-industrialist age. Starting out, it had been seen as a societal duty, making state and humanitarian mediation primarily necessary. In addition, the services provided by these offices were provided without charge to anyone who approached or benefited from them. But access was restricted by station, class, and occupation. Thirdly, because the majority of those offices were located in cities, they were very common among urban residents.

### **Healthcare system in Colonial India:**

In 1664, the English East India Company built its first hospital at Fort St. George in Madras, specifically for the treatment of their diseased soldiers.

Hospitals in Bombay and Calcutta adopted this strategy as a result of similar factors (Arnold, 1985). The Bengal Medical Service, the forerunner of the Indian Medical Service was established on January 1st, 1764 (Bhattacharya, Harrison, Worboys, 2005). Most of the IMS's customers were members of the military. Hospitals and pharmacies were predominately either state-owned or financed during the colonial era.

Regarding this facet of healthcare services, the private sector had a relatively small impact. Because of the striking consistency in the pattern of growth of healthcare services from the colonial period into free India, the historical overview provided above is essential to understanding the development of healthcare services in India in the pre-independence period. A turning point in India's development of health policies and health planning occurred on October 18th, 1943 (Forbes). It was a noteworthy historical occasion. The Health Survey and Development Committee was established by the Government of India (Central Government of British India Provinces) under the leadership of Sir Joseph Bhore (Mukhopadhyaya). The Cantonment Act and the Contagious Sickness Act were two pieces of law that the British government initially passed to control

the spread of disease. As a preventive step, the government also developed a sanitization policy, but with the development of modern medicine, the British government made an effort to institutionalize the public health system, which included erecting hospitals and pharmacies. Laws to control the many aspects of health care were passed, and a proper department of health was established. Some of these clinics had reproductive health specialists. There is a demand for female doctors and nurses at these clinics, so medical education for women and nursing training has been expanded.

During the second part of the eighteenth century, the British East India Company solidified its position as a territorial state, and as such, as ruler of a subject population, it was required to enact regulations impacting Indians' socioeconomic and political lives. In the realm of health, British policy was initially limited to British residents and the military and was not influenced by philanthropy. The demands and expediencies of the empire shaped British medical policy, which remained obedient to them. The primary concern of the rulers was how to provide the military and civilian population of their own race with the best sanitary, hygienic, and





medical facilities. It wasn't intended to function as a component of the welfare system. Meeting the needs of the populace and the military was the health strategy's main objective. It was mostly extended to towns to safeguard Europeans employed in mining, plantations, industries, and administrative hubs (Bhargavi). The colonial state was however compelled to develop and implement a health policy, which included the construction of hospitals, clinics, and research centers to address health challenges, as a result of the push of official and indigenous reforms in the nineteenth century. Scholars are unanimous in their assessment that the British government's endeavor to establish a public health organization failed miserably.

It has also been claimed that rural healthcare infrastructure was poor, and the colonial state failed to create a proper executive health service for all ranks. During colonial rule, India's health policy evolved gradually, but at a glacial pace. The state progressively acknowledged its duty to public health, and the concept of public health activities was formed, starting with preventative health measures. These are four watershed moments in the country's public health administration history:

In 1859, a Royal Commission was appointed to investigate the army's health in India;

In 1904, following the plague outbreak in 1896, the Plague Commission issued its report.

The Government of India Act of 1919, and 1935, of which introduced reforms.

With the enactment of the Self-Government Act in 1920, a proper Public Health Ministry was established (Nair). The District Boards and Union Boards were now in charge of dealing with Epidemics and providing funds for rural health. But they were unable to handle the issue because of a shortage of supplies and medical professionals. The rural district dispensaries were ill-equipped to deal with the health challenges. Many towns and local boards were unable to obtain enough money to fund necessary sanitary upgrades. Despite the fact that corrective actions reduced mortality due to epidemic disease in the twentieth century, there was no significant success in the preventive and eradication campaign. Small-scale interventions were implemented in terms of anti-epidemic policy and public health developments. When compared to public health in Western countries, India lags far behind in terms of public health

services. Initially, the colonial authority was primarily concerned with the health and cleanliness of company executives and British citizens. They first passed legislation to combat infectious diseases by prevention and sanitization (Sarkar and Sarkar).

The strategy had evolved by the end of the nineteenth century, leading to the creation of healthcare facilities. As a result, the number of hospitals and pharmacies began to grow. Private and government initiatives have resulted in the establishment of dedicated hospitals for women and children. Medical colleges for women were founded and their numbers increased in order to furnish these hospitals with female doctors and nurses (Annual Report of the Public Health Commission, 1933-40). The needs of the Indian populace were not met by these health services. None the less, they were critical in the establishment of India's public health services following independence. To understand the pathetic reproductive health condition of Indian women during colonial rule, the research will be based on the factors responsible for the pathetic health care of women and how their condition was affected by the health care policies of the British. The nineteenth-century reformers were earnest in their

efforts to improve women's living conditions, but not as a matter of right. The right to health for women has become more important in the nationalist agenda as a result of the rise of nationalist movements founded on the modern principles of democracy and equality. Further more, the rise of the feminist movement in the West and its rising impact on international organizations and conventions cleared the path for policymakers in India to recognize women's equal rights to physical and mental health (Indian Journal of community medicine). During this time, the State had considerable financial control over emergency clinics and dispensaries. Individual territorial conflicts made up a relatively tiny portion of the overall well-being or health plan. The individual well-being division did, nevertheless, function in a decent way alongside individual experts.

There was no specific health strategy for the general subjects when the colonial administration was established. To protect the soldiers' and the British population's health in India, the British government initially enacted various preventive measures and legislation (National Human Development Report, 2001). Due to several causes such as poverty, socio-religious ills, and a lack

of health consciousness, the general health situation during colonial control was dismal. Women's access to maternity healthcare was constrained at the end of the nineteenth century by the idea of responsible parenting, which aspired to empower women to become strong mothers, which was essential for a strong nation. The colonial state's health policy changed during the nineteenth century. Instead of prevention and sanitization, they implemented a modern health system based on modern medicine, which Indians initially viewed with distrust and reluctantly accepted. Western drugs were also beneficial to the women, but only in small doses. With the exception of a few upper-caste women and elites, patriarchal rules kept them confined to their homes and less exposed to global changes. Women were hesitantly permitted to visit hospitals and dispensaries, and their World was confined to the inner sanctum of the home, where the ancient system was nevertheless revered and adhered to. In the seventeenth century, debates over the impact of child marriage on women's health were also hotly debated. Both Indian reformers and British officials spent a lot of time discussing the effects of child marriage on women's health and infant mortality. By using laws and

medical aid, child marriage's negative effects on women's health have been somewhat reduced. Widows were also denied access to basic amenities and primary health care due to their social isolation. Particularly on issues of reproductive health and delivery deaths and also bring into the discourse the role of voluntary associations in taking health problems in Indian society. This was a challenge for the colonial administration in India, which intervened in the area of women's health to develop an acceptance of the western medical practice and establishment (Sarkar and Sarkar).

### **Conclusion**

The British army stationed in India was the primary target audience for the early health services that were introduced in India in the middle of the 18th century. Only in 1921 did the true growth of health services start. The majority of the healthcare facilities were provided by missionaries because there were so few other medical facilities in the area. On the foundations set by those missionary women, who were not professionals, working in India, the majority of medical institutions were constructed. All over India, including Punjab, Delhi, and the United Provinces,

there were numerous Mission hospitals. The Indian government gave the provincial governments (now-state governments) the authority to provide the people with healthcare and public health services. There were established separate departments for medicine and public health (National Health Policy, 1983). The health services began to genuinely change in response to the needs of the country's healthcare system only after independence. The Bhore Committee (1943), Mudaliar Committee (1965), Chadha Committee (1963), Mukerji Committee (1966), Kartar Singh Committee (1972), and Shrivastava Committee (1975) Reports are among the reports that served as the foundation for the country's healthcare organization standards. The Independent Indian Planning Commission recognized the significance of health as a contributor to national development and formed a distinct division within the Planning Commission to develop the health initiatives that would be incorporated into the country's Five-Year Plans. A universal human right, the right to good health, has been acknowledged. The State is therefore liable for the health of its people. National governments all across the World are attempting to

expand and improve their healthcare options.

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## **Weekly Market in Delhi: A Review**



**Mukesh Kumar Meena\* & Kapil Dev Yadav\*\***

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### **Introduction**

The economic activities in various markets represent the pattern of the economy. The interaction of demand and supply is possible through markets. Delhi is a mega-city with a population of over 10 million, and the population is proliferating. It is one of the fastest-growing cities in the country. Delhi has had an unheard-of growth in prosperity over the past ten years among Indian states. It is one of the wealthiest states in the nation, ranking third in per capita income behind Sikkim and Goa (Economic Survey of Delhi 2021–22). Due to the rapid pace of urbanization, Delhi has changed from a rural majority to an urban one. It is the centre of various economic activities. The National Sample Survey Organization estimates that migrants make up 42 per cent of Delhi's population (NSSO, 2010). Delhi is home to the second-highest number of billionaires and millionaires of any city in India, (HDI).

Delhi has better infrastructure like electricity availability, an extensive network of roads, and rapid mass transit in the form of the metro than its neighbouring states of Uttar Pradesh and Haryana. Along with economic growth, the emphasis of the government has been on the promotion of inclusive and sustainable industrialisation and employment, the creation of industrial infrastructure, the establishment of industrial clusters with opportunities for employment creation in knowledge-based industries, business services, electronics, high-tech industries, biotechnology industries, R&D activities, health services, etc. The major drivers of economic growth in Delhi are industry and trade. The state has a largely service-led economy. The contribution of the primary sector has come down and the assistance of the tertiary sector increased.

Delhi and its surroundings are interdependent through improved

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connectivity, communications, housing availability, and choices for economic development. These cities and towns have profited particularly in transportation, allowing neighbouring cities and towns to carve out their niche while simultaneously sharing the weight of infrastructure. The migrant population and the floaters from the neighbouring cities and towns are primarily served by economic, social, and employment services. The rapid growth of the million or more cities nearby Delhi has emerged as knots in the spatial framework of Delhi, giving seamless urbanisation and knotted city growth to the region (Manisha Jain, Hannes Taubenböck, Sridharan Namperumal, 2011). Such astounding growth and development of Delhi in terms of infrastructure equips the state with work opportunities for various strata of labour force with different capabilities. The large urban population, connectivity with neighbour states, availability of basic infrastructure creates a diversified demand for informal market traders and producers in Delhi.

### **Review Literature of Weekly Market**

Mohan, D, Sekhani R. (2017). "Governing Dynamics of Informal Markets: A case study of local market Delhi", Centre for new economic studies. This report explains the supply-chain

Dynamics of consumer baskets available in these markets. It conceptually covers the physical process from obtaining the materials through all process steps until the customer has searched for the finished product. All process steps until the finished product seasons and consumers. This includes the Procurement of goods, distribution of goods, Inventory management & final scales.

This report tries to understand to what extent bargaining power acts as an additional information variable in the price determination of a given basket of goods. To understand the factor that shapes the extent of bargaining in this market are the Number of market players for a product basket in a call and the Geospatial positioning of the shops in the market. The report uses a mixed method approach, which involves more focus on qualitative research techniques. This study used economic anthropology and ethnography to study the informal urban macrostructures in Delhi through documented observational trends from an interview with merchants/vendors.

The report studied the Sources and /procurement of goods, how do they procure, assemble raw materials, and men's force, of their products by the questionnaire. The Questionnaire

covered the method of payment and Pricing.

The report explains that in Delhi, like other third world countries, due to the massive urbanization, urban areas are becoming crowded with constantly shifting heard of street vendors, Rickshaw drivers, and beggars, who all give their services without getting the benefit of a “real Job”.

Sales, Lolo. (2018), in his paper, said that in Mumbai, the number of street vendors is more than 300000. Their central conflict is public space, workplace, living place and economic resources. There are several restrictions on space movement as recreation. Much public space represents an informal spatial rent created by corrupt practices, particularly for the municipal authorities to levy a tax on illegal street businesses. These kinds of actor exercises have informal control over street space. Mumbai is a global city, so real estate pressure in urban contexts where everyday occupation seems increasingly undesirable. In Mumbai demolitions, discrimination and violence suffered by the poor population, slum dwellers homeless street vendors as consequences of Neo-liberalisation of urban. India adopted a federal law protecting the right of street vendors to recognise the

legitimacy and legality of their activities. In the practice of public space in Mumbai Street vendors are obliged to make unofficial and illegal payments called Hafta. This small-scale corruption is irregular and variant between individuals’ periods and vending locations. Informal street vendors are Unorganized; the group/Union and hawkers association were long Ignored by the union movement, which was more interested in labourers.

The methodology of this article is based on 175 Interviews with street vendors, trade unions, vendor organisations, residents’ associations, shopkeepers in the formal sector; local Authorities, political parties, municipal officials, developers and police officers in Mumbai, in most Indian cities there are already blockages and irregularities in the implementation of the law. According to the geographical situation of the fieldwork zones in their Inner city or peripheral location, the transport network is good in the inner city as a peripheral location. The transport network between commercial and residential areas is facing pressure. This geographical approach to informal trading via public space is a suitable topic to examine the relationship between vulnerable populations and state politics



and the Idea of citizenship in terms of concrete practice. At the same time, issues have been considered from a spatial perspective through the study of slums. The tactics and strategies of hawkers in training are to occupancy of public spaces. In Informal trading activity, the hawkers' variation to maintain trading pitches is highly dependent on a hierarchy in the occupancy as the street allocated space; the other stakeholder can force to move. Many authors emphasise the need for poor social and economic capital to access the Informal business sector towards new day-to-day relations with the state emergence to the collective organisation, and further use of the law is very important.

Ray, C.N. (2017). In the informal sector, one of the most significant activities is the weekly market/hafta Bazar/vending weekly market in Surat. Before time it considers an illegal activity by central bodies. Surat is the 4<sup>th</sup> largest city in Gujarat and the fastest-growing city. Large populations have become prime locations for informal activities like vending; in Surat 73% of space is used by vendors. This study has mainly covered sociological and economic space issues lacking in surat urban migration is Increased is liberal kars. So vending

activities are more favorable for this city because vending service for the public without having a permanent built-up structure with a temporary static structure or mobile stall, push cart and They move from one place to another place, they put their wares on push carts on cycles.

Sarkar Aditi, Barik, Pritibh, Dattagupta Rana (2014). Resurrection and being of a Haat: Case study of rural markets of the eastern plateau region. The study it is observed that health of rural market eventually decay. So, it is necessary to review the or regain the previous shape. The rural market has different characteristics from one area to another, but according to the agricultural view, every rural market block does not have much diversity. In this paper in 1<sup>st</sup> step is to define the area. Then well, draft methodology once all site was finalised, before the field visit, then field survey was conducted in two phases, one phase in 2009 and the other in 2014. All necessary attribute information is included in the survey of the haat bazaar. The interview was conducted based on this scheduled questionnaire when haat were visited.

The administration of the haat bazaar has stilled a continuation of the British legacy. In this process, a block

has been considered an administrative boundary. Topographical map sheet in a survey of India. The computer converts than into digital format. Computer wing GPS, with help of a GPS trading system, locations of weekly market shape easily find out. Once the entire geo-database was prepared, an extensive analysis was executed, and it is easy to obtain information assembled. Every rural market has a similar trend, but in some places, The rural market is large schalehaat about 30 years back. The reason is inferior connectivity and decreasing communication over time, the market did not survive.

Consistency of haatBazaris observed in money transfers. Haat bazaar attracts limited customers because of the lack of proper location, communication facilities, and infrastructure. It was observed that a haat bazaar lost its glary when it faced so many obstacles in selling and buying. The study concludes that the Haatbazaarthe basic need of agriculture producers and their daily customers. They both give and take economic and social services because vegetables and fruits are perishable, so everyday buy and sell relation are maintained between seller and customer. Hence, the haatbazaar is a primary need for buyers and sellers in this manner.

## Concept of Weekly Market

Marketing is a base of economic development. It involves various stages of production, consumption and investment. The market can be classified based on multiple parameters like the period, place, quantity level, goods, class etc. Based on the period, the market can be classified into regular, seasonal and occasional. A weekly Market is a common place for buyers and sellers. The weekly markets are a small form of the traditional local markets; the weekly market is widespread in both urban and rural areas. Here people purchase goods and services for their daily use. The economic activity in the weekly market is known by several names, Thebajari, Rehaagari, Haftabajari, Hawking etc.

Haftabazaar has been a place where farmers and local people come together to exchange ideas, and economic, and political relations that reflects in the Socio-cultural phenomenal live festival and other religious activities. A rural market is a place where farmers and local people come together. In many rural areas, political activities also decide at this place. Because in rural are, farmers are much interested in local politics. Along with this, exchange/Transactions of agriculture goods wholesale market and retail all type facility exists in rural

market in this manner rural market is the grassroots of the rural economy. The rural market has a different name in different places like Haat (West Bengal, Bihar, Jharkhand), Santnail (Tamil Nadu), Haat is after mobile and flexible as they shift from one location to another. Haat bazar are held once in a week, haft. The payment as weekly basis. It is called hafta. India's rural market is general, but the tribal market is particular; in the rural agriculture economy, has Bazar are periodic.

These informal market sources of their livelihood in Delhi. Street vending is a source of livelihood and employment opportunities for the low-skilled lower-income class of India's urban population. In India, around 10 million street vendors are there, almost 2% of the population of a metropolis. In Delhi, there are 3 lakh street vendors and around 25000 (SEWA) self-employed women associated with SEWA (self-employed women association). The Vendor of Mega city has low-skilled, low-income; they work in the informal sector; according to the National Policy on vender and weekly market in India, the vendors are categorized under three categories: first: the vendor who carries out regularly vending with a specific location. Second: those vendors, who are not regularly

vending in a particular location, and sell their goods in the weekly market during holidays and festivals Third: The Mobile Street vendor.

### **Reason to Increase the Weekly Markets**

The urban areas are the centre of business, trading, production, institutional and other civil activities. The workers are coming in search of a livelihood from the rural areas. Rural to urban migration leads to an increasingly urban population, massive this huge population for their livelihood automatically indulges in informal sector. Therefore, these workers are not in a situation to bargaining their wage and many workers provide their labour at a cheap rate. This factor is most prominent in workers poor livelihood condition. A part of these worker is becoming part of the street vendors. Samal. Kishor C. (1990). One side the weekly market creates opportunities of employment and other side the weekly market provides the goods and services in neighbourhood at reasonable price. These market place provide traditional items like daily uses goods and services in various areas and solve the problem of traffic conjection, transportation and scarcity of commercial area for daily use items.

## Operation of the Weekly Markets

The report asked about the Legality and Regulatory aspect of these markets. They have a soft relationship shared with the state. Vendors tend to assemble in certain public places. Find natural market as a result, these markets are viewed as an encroachment upon public spaces The street vending activity is believed to operate as an extra-frame work, which is not in Compliance with state laws. MCD pradhon regulates and governs them. The pradhons of respective weekly markets play a very prominent role in keeping the market going peacefully and without trestles.

Generally, it organized in evening or second half of the day. The weekly market activity saves time both customer and traders, the customer purchase most of the goods at a particular place. The trader sells the goods in extra time. Most of the time market function 4 to 5 hours the middle hours are peak hours. The traders prepare the shop before 2-3 hours from the peak hours. The people walk and enjoy shopping in the weekly market. The trader and customers come from both local areas and outside, sometimes covered area is large and small it variant time to time. The traders use their commercial vehicle, auto, rickshaw, Wheel-cart, and other public transport

to carry their items and customers use public and private transportation and walk without transportation.

## Structure of Weekly Markets

There are different types of shops in weekly markets in various clusters. It is provided from green products to durable factory products. The people from village backgrounds or agriculture producers and the vendors who purchase the agriculture items from Mandy, both sell their products here in the weekly market. The proceed food like chips, nankeen, biscuits and other bakery products, peecals, seeds, juice, cold drinks and other transform items are in another cluster, The other cluster belongs to ladies' cosmetic items, artificial jams and jewellery, suits, Kurti, sari, plastic items, Towels, handkerchiefs, jins & shirts and other factory manufacture products. Some vendors are like handicraft of woods, cloth, lather and items. They arrange their items on temporary stature, Rehari-Patti, Rickshaw-tela, Auto vehicles to sell the goods.

## Efficiency of the Weekly Market Vendors

The weekly market is also important for small traders, who have very less resources and capital for business. The

people who are unable to enter in formal sector due to low skill, low qualification. they have less capital to start the business they are struggling for their daily requirement. Some people voluntary choose hankering and tehbajari as small entrepreneur. Another side the number of customers is high but they a large part of them belongs to lower middle class and lower strata of income. there individual purchasing power is not too high. They want the goods and services at lower prices, most of the goods of daily use are available for costumer at reasonable prices in weekly markets.

### **Stakeholders in Weekly Market & Right of the Vendors**

The local Bodies, law & order agencies, Residence welfare Associations, vendors association and non-government organisation operate the weekly market. These all are directly and indirectly stakeholders in weekly market activity. The weekly market connects to, small traders, pity and small local traders and vendors to the lower middle-class, middle-class locality costumers. These haftabajar, tehbajar and radipatti seller are carrying goods through rickshaw, small vehicles, hand push tela and other public transport sources. There were several judgements of Supreme Court

on their matters, the policy regarding street vending start to shape after a Bombay high court judgement, which determine the rights, licence system, demarking the hawking and non-Hawking zone for vendors. In 2004 made a policy to facilitate and manage street vendors. This started to formulate the Town vendors committees (TVCs). It was amended in 2009, but it took shape in 2014 The street vendors (livelihood right protection and management) Act 2014. In 2019, the scheme formulated to implement the act 2014,

### **The Gazette of India (2022), The Delhi Municipal Corporation (Amendment ACT 2022)**

It shall come into force on such date as the Central Govt. may, by notification in the official Gazette appoint. This act may be called the Delhi municipal corporation (Amendment) act. 2022. In this act principal act for section 514 A, the following section shall be submitted, namely. 514 A - According to the act, the central government may, if necessary, appoint a person to be called special officer. 514 AA on and from the commencement of the Delhi municipal corporation (Amendment) act 2022 (a) North Delhi municipal corporation, The East Delhi municipal corporation, the

south Delhi municipal corporation shall be subsumed with and become part of the municipal corporation of Delhi All properties movable and immovable of or becoming to the erstwhile corporation shall vest in the municipal corporation of Delhi along with this all Rights and liabilities of the erstwhile corporation shall be transferred and be the Right and liabilities of the municipal corporation of Delhi.

All pending proceedings including any disciplining arbitration appeal or other legal proceedings of whatever nature by or against the erstwhile corporation, shall be continued against the municipal corporation Delhi. If any difficulty arises in giving to the provision of this act the central Govt maybe order published in the official Gazette. Every order shall be made under this section shall be laid as soon as may be after it is made before each house of parliament

### **Constitution as Municipal Corporation**

Upon the complication of each census after the establishment of the corporation, the number of seats shall be based on the population of Delhi as Delhi as the number of seats shall be based on the population of Delhi ascertained at that census and shall be determined by the central Govt by

notification in the official Gazette and the Number as seats to be reserved for a member of the scheduled cast as nearly as may be bear. The same Ratio the total No. of seats as the population of scheduled castes bears the total population of Delhi. The Total No of seats of councillors and the number of seats reserved for the member of the scheduled.

### **New development of municipal corporation act of permission of weekly market activity**

The Municipal Corporation issue the licence for Tehbajari and vendor. in most places thenumber of licences is less them the actual vendors. The licence officer is unable to face the pressure of the workload to the Vendors/Tehbajari. Each weekly market is more than the issued licences.

Delhi is adopting the policy of one zone one road, one week; therefore, the Municipal Corporation is deciding to permit private agencies to give licences to organise the weekly markets and the private agency will collect a charge of Rs. 10 to 15 from each vendor per week. This study tries to understand the effect of administrative decisions on solving the problems of self-employed workers.

## Conclusion

Weekly markets in Delhi still are very relevant. It is a place of economic activities that provide a market for buyers and sellers. The government has to put more effort into people working in the weekly markets of Delhi. There is also a need to improve the efficiency of the weekly market with the help of municipal corporation of Delhi. A timely makeover of weekly market is required to improve the market. The government shall project these markets as one of the most important tourist destinations across the world.

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## Gond Tribe in Markatola Village of Chhattisgarh: An Analysis of Socio-Economic Conditions



Anand Sugandhe,\* Vinod Sen\*\* & Kishan Lal\*\*\*

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### Introduction

The scheduled tribes (STs) are classified as a community of indigenous (*Adivasi*) or tribal people under the Constitution of India. The STs in India are socially, politically, and economically backward groups more than others (Jain, 1981; Barman, 2009; Ambagudia, 2019). Their habitat is located primarily in forest areas. Some are not even part of the modern development process; they call Primitive Tribal Groups (PTGs). They are geographically isolated and do not come in touch with mainstream culture. According to the 2011 Census, 705 ethnic groups were notified as STs in India. Their population is 104.54 million, constituting 8.6% of the country's total population; it was recorded as 84.32 million (8.2 per cent 2001). Nearly 90 per cent live in rural areas and 10 per cent in areas. The decadal growth of the STs

population from 2001 to 2011 was around 24 per cent higher than the total population growth of 17.69 per cent. According to the 2011 census, STs are inhabited in 30 Indian states except for Punjab, Haryana, Delhi, and two union territories, Chandigarh and Pondicherry. In contrast, the highest concentration of STs population in terms of number is residing in Madhya Pradesh (15.32 million), Maharashtra (10.51 million), Orissa (9.60 million), Rajasthan (9.24 million), Gujarat (8.92 million), Jharkhand (8.64 million) and Chhattisgarh (7.82 million).

STs or tribes of India have faced exclusion and marginalisation in the past many years. Looking at those problems and their unique needs, the constitution of India provides various legislative safeguards to protect their social and economic rights. STs are progressing in

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India, but their progress is slower than the other social groups except for SCs (Bhagat, 2013). Radhakrishna and Rao (2013) stated that tribal labour is inferior as their housing conditions are pathetic, rampant illiteracy, and labour unionisation is absent. These are some significant reasons which led to poor Socio-Economic conditions of tribal labour (Radhakrishna and Rao, 2013).

### **Objective and Methodology of the Study**

The study's main objective is to explore the situation of the Gond Tribe in Chhattisgarh with a case study of Markatola village. The tribe is dominant among other tribes in terms of number, but it is the poorest social group in the village. It is essential to find out the causes of poverty among Gond tribe. It is based on secondary data as well as on primary data. The secondary data is mainly collected from the Census of India 2011 and various government reports.

The primary data is collected through the field survey method, wherein 50 households of Gond tribe were interviewed using the purposive (snowball) sampling method. Markatola village is chosen for the field survey. The villages are located in remote and very backward areas of the state of

Chhattisgarh, and here Gond tribe is the poorest social group among the rest communities. The Population of STs is 72.9 per cent (1059) out of the total 1453 population in Markatola village.

### **Tribal Population in Chhattisgarh**

Chhattisgarh is the home of several tribal groups. Gonds of Bastar are prominent among them. Bhunjia, Bisonhom, Baiga, Muria, Halba, Bhatra, Parja, Dhurvaa, Dhanwar, Koi, Korwa, Kawar, Bhoiyana, Binjwar, Savra, Mary, Kamar, Munda, and Abhujmaria are other tribes in the region. As per the Census, 2011 ST population in Chhattisgarh is 7,822,902, 30.6 per cent of the total population. The literacy rate among STs 59.1 per cent in the state, is lower than the total literacy rate (70.3 per cent). Less than half (48.8 per cent) of the tribal females are literate. Poverty among the STs in the state is higher during 2011-12, 52.6 per cent in rural and 35.2 per cent in urban areas (Ministry of Tribal Affairs, 2017).

### **The Situation of Tribes in Chhattisgarh: Analysing Housing Conditions**

The census publishes data about housing, drinking water, lighting sources, latrine facility and drainage, and fuel for cooking to know the socio-

economic situations of the households in the country. Housing conditions

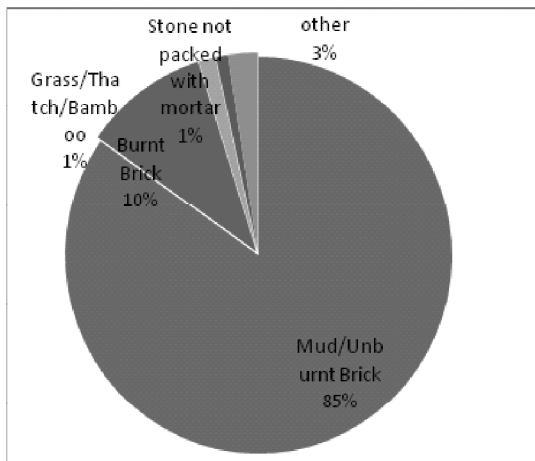
describe the status of the households in society.

**Table 1: Conditions of houses living by Tribes in Chhattisgarh (in per cent)**

Conditions	Good	Liveable	Dilapidated
ST Chhattisgarh	43	54	3

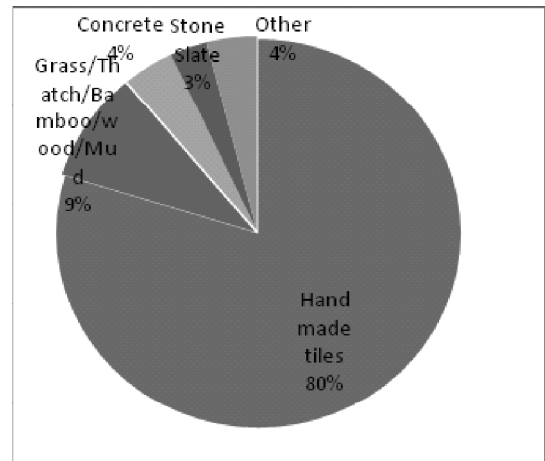
Source: Census of India 2011.

Table 1 highlights the conditions of houses where STs are living in Chhattisgarh. 54 per cent of houses belonging to STs are liveable. According to the census, these houses are required minor repairs (Government of India, 2011). The material used for roofs and walls through more light on the conditions of houses (see figures 1 and 2).



**Figure 1: Used Material for Wall**

Source: Census of India 2011.



**Figure 2: Used Material for Roof**

Source: Census of India 2011.

As per figures 1 and 2, the walls of 85 per cent of houses were built of mud or unburnt bricks. Moreover, the roofs of 80 per cent of houses were constructed of handmade tiles, which are considered kutcha houses. 9 per cent of houses of STs built shelters using grass/thatch/bamboo/wood/mud. Contrary, the concrete material used in the walls is negligible at 0.2 per cent, but in 4 per cent of houses, it is used in roofs. The

conditions of tribal houses show their poor status in society. As per the Census 2011, more than 70 per cent (33.2 per cent 1 room + 37 per cent 2 rooms) of houses have 1 room and 2 rooms in the houses. The size of 66.6 per cent of households is more than 4 persons to 9+ persons (37.6 per cent 4-5 persons, 25.8 per cent 6-8 persons, 3.2 per cent 9+ persons).

### Drinking Water and Sanitation

The supply of safe water is the backbone of a healthy economy. Waterborne diseases have a tremendous economic burden. In India, less than 50 per cent of the population has the accessibility to safe drinking water (UNICEF, 2017). Improved water supply and sanitation and better management of water resources help boost the country's economic growth (WHO, 2022). However, in the case of STs, only 27 per cent have no access to safe drinking water (Scroll Staff, 2018). Most tribes reside in forests, so their water sources are not contaminated by fluoride and arsenic chemicals.

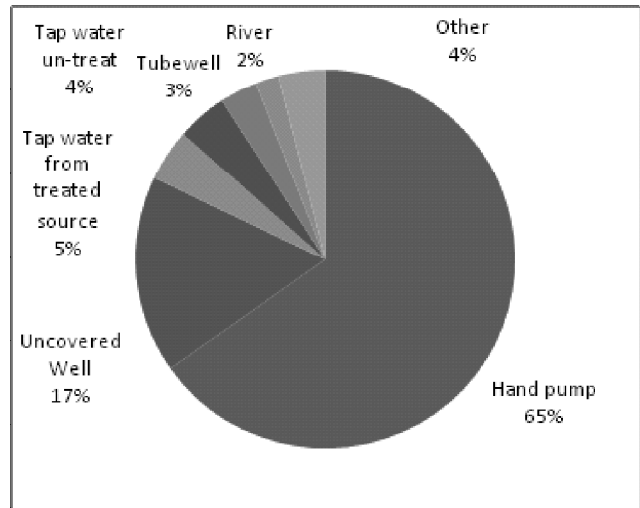


Figure 4: Source of Drinking water.

Source: Census of India 2011.

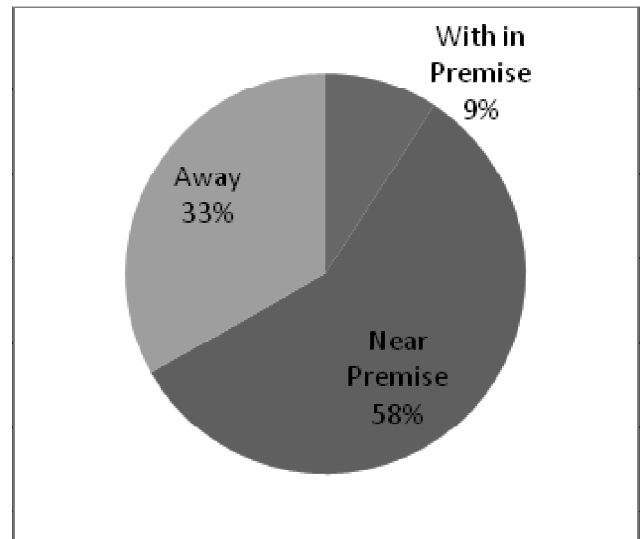


Figure 5: Location of water source

Source: Census of India 2011.

Figures 4 and 5 explain the sources of drinking water and their locations. 65 per cent of tribes in Chhattisgarh use a hand pump to fulfil the water requirement. At the same time, the other 17 per cent are accessing water from uncovered well. On the other hand, 5

per cent of households can access tap water from the treated source. These water resources are situated within the premise (9 per cent) and near their premises (58 per cent), as shown in figure 5. Still, nearly one-third tribal population is fetching water away from their houses.

**Table 2: Availability of Latrine, Bathing, and Drainage Facilities in ST households**

	Latrine facility (%)	Bathing facility	Drainage
<b>Yes</b>	14.8	7.4	12.1(Open Drainage)
<b>No</b>	85.2	92.6	87.9

Source: Census of India 2011.

Table 2 highlights the sanitation situation among tribes of Chhattisgarh. Only 14.8 per cent of households have a latrine facility at home; this may be much less in reality (NACDAOR, 2022). On the other hand, a large number of households that are 85.2 per cent, do not have toilets at home. These people openly defecate in the fields, forests, near rivers, or other open spaces. Significantly fewer households (7.4 per cent) have bathing facilities separately in the home. Otherwise, 92.6 per cent of households are not accessing bathing facilities. The drainage facility is unavailable in their areas as 87.9 per cent are not utilising it. These poor sanitation facilities significantly risk their community's

health and lead to malnutrition in children.

### **The Status of Fuel and Sources of Lighting**

Clean and modern fuel for cooking is essential for safeguarding good health for women and children and enhancing the well-being of people in the most minor developed counties; a large section of the rural population in the least developed countries use firewood, and dung cake and residue for cooking which is harmful to the environment and human health (Rahut et al., 2019). The household's economic status and cooking fuel prices are major determining factors in choosing a particular cooking fuel,

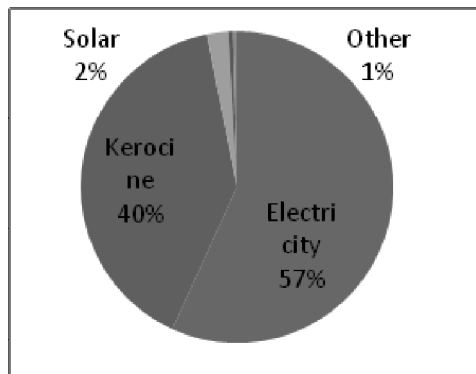
firewood, LPG, kerosene, and electricity (Rao and Reddy, 2007). Marginalized social groups such as STs and SCs from the central part have the lowest

probability of using LPG gas and continue to use firewood even adopted LPG. The households from these groups are more marginalised, poorer, and less educated (Khanwilkar et al., 2021).

**Table 3: Fuel for cooking**

Type of Fuel	Per centage
Fire-wood	94
LPG/PNG and Bio-gas	2.9 and 0.1
Cow dung Cake/Crop residue, Charcoal	2.5
Kerosene and Electricity	0.3

Source: Census of India 2011.



**Figure 6: Sources of lighting for tribes in Chhattisgarh**

Source: Census of India 2011.

Table no 3 highlighted preferences for cooking fuel by tribes in Chhattisgarh. There is 94 per cent of tribal households prefer firewood for cooking. Furthermore, 2.5 per cent of households use dung cake and crop residue. Jointly firewood and dung cake/crop residue share 96.5 per cent of total cooking fuel

preference. It is harmful to the domestic environment and the health family of family members, increasing the burden of medical expenditure for these poor people. Contrarily, shares of LPG/PNG (2.9 per cent), Biogas (0.1 per cent), and kerosene and electricity (0.3 per cent) are significantly less, which underlines

the poor economic status of tribal households in the state.

Figure 6 explains the situation of electricity supply to the *Adivasi paras* that 40 per cent of households use kerosene for lighting. It means that these households are suffering from a lack of electricity connections. Using kerosene for lighting and cooking increases pollution in the home and, consequently, negatively impacts health (Lam, et al, 2016).

### **Gonad Tribe in Chhattisgarh**

The Gond tribe population is majorly found in the central part of India, that is in Madhya Pradesh, Maharashtra, and Chhattisgarh. Their main strongholds were Satpura Plateau; they are known as Hill People, Koi, or Koitur. The Gond tribe has also spread to several other Indian states, such as Andhra Pradesh, Jharkhand, Bihar, Gujarat, Karnataka, Odisha, Uttar Pradesh, Uttarakhand, and West Bengal (Deogaonkar, 2007) (Pallavi, 2014). The main occupation of Gond is agriculture. Some are landowners, some are landless labourers, and some use herding cattle for livelihood (Lilhore, 2016). The Gond tribe in Madhya Pradesh suffers from exploitation and discrimination. They are often compelled to live on less productive land in isolated and remote areas. The pressure on their

land is increasing with the rise in the number of landless labourers and poverty. Gond's literacy and education level are low, reducing their economic opportunities. The Gonds in Bastar are more deprived in terms of income and malnutrition issues in children of different age groups (Rao, D. Hanumanta and Mallikharjuna Rao, 2017).

Gond is the old and large group among tribals in Chhattisgarh. As per the 2011 Census, the entire population of the Gond tribe was 4,298,404. Mainly the Gond peoples are concentrated in the Bastar region of South Chhattisgarh. The Gond tribe is divided into three significant communities: Mariya, Muriya, and Dorla. Raj-Gond community is the most developed among the Gonds. The Muriya Gonds have a unique social system known as 'Ghotul' (Youth Dormitory), an entertainment arrangement for the youth. They speak the Gondi language, which is a member of the Dravidian linguistic family. However, the Hindi languages and culture's significant influence on everyday life has been noticed in Gonds. The livelihood of Gond peoples is primarily dependent on local resources, including indigenous agricultural practices and forest-based economic earnings. (Dharmendra, 2017). Gonds in Chhattisgarh collect forest produce,

hunting, fishing, forging metal goods in cottage industries, and other primary sector activities.

**Markatola: Profile of the Study Area**

Markatola is a village in Dondi tehsil of Balod district of Chhattisgarh state of India. Balod is located in the heart of Chhattisgarh. The total area of the district is 352700 Hectares. The district is rich in forest, water, and mineral resources. The minerals contribute 78 per cent share of the district revenue. The

district is recognised for its production of paddy, grams, sugarcanes, and wheat Balod produces many possibilities in agro-industries. The Tarantula dam and the Kharkhara and Gondli dams are the primary sources of irrigation in this district (Government of Chhattisgarh, 2022). Markatola is surrounded by Dalli-Rajhara tehsil towards the north, Bhanupratappur towards the south, and Charama Tehsil towards the east. Dali-Rajhara, Balod, Kanker, and Dhamtari are the nearby cities of Markatola.

**Table 4: Census of Markatola Village**

Sr.	Census Parameter	Census 2011	Field Survey 2019
1	Total number of houses	310	50 (Gond)
2	Total population	1453	268
3	Female population %	51.7% (751)	52.6 (141)
4	Total literacy rate %	64.8% (942)	82 %
5	Female literacy rate	57% (428)	63.1 (89)
6	Scheduled tribe population	72.9% (1059)	----
7	Scheduled caste population	1.3% (19)	----
8	Working population %	57.2%	59%

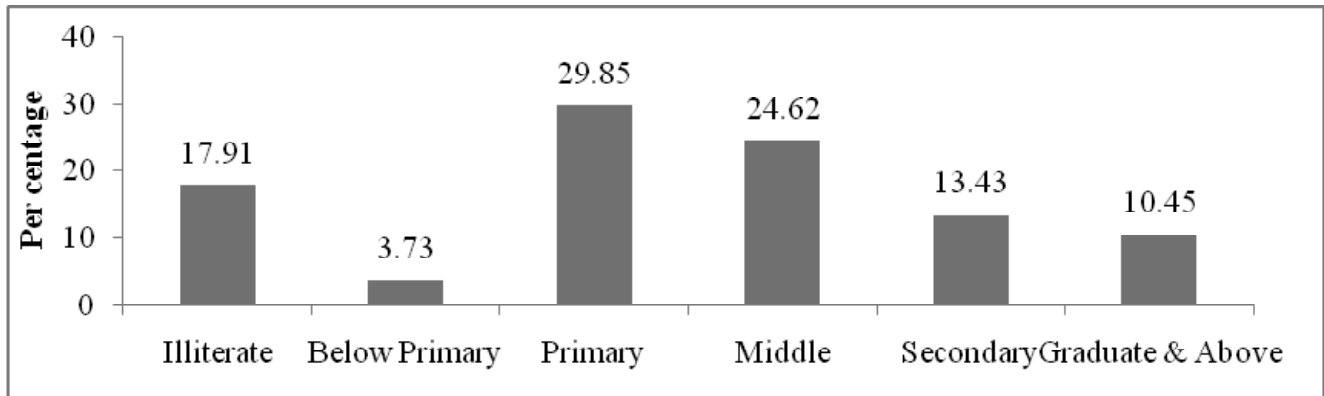
Source: Census of India 2011.

**i) Educational Status of Gonds from Markatola**

Education is a potent tool for human resource development in any society or individual. The scheduled tribes in India are an educationally disadvantaged group whose level of education is much lower than the mainstream population

(Ramchandran and Deepan, 2017; Brahmanandam and Bosu Babu, 2016). Many educational issues in tribal areas lead to low quality of education (Bindhani, 2021). Sometimes, it shows high literature with no quality education, specifically employment-oriented.





**Figure 7: Level of Education among Gond of Markatola**

Source: Field Survey, 2019.

Figure 7 shows the level of education among the Gond tribe of Markatola village, where nearly 82 per cent of surveyed population is literate and 18 per cent illiterate. Gond's literacy rate is higher than the village's literacy rate of 64.8 per cent (see table 4). Among the total population, 33.58 per cent are educated up to the primary level; and 24.62 per cent are up to the middle. In the case of secondary and graduation is recorded 13.43 per cent and 10.45 per cent, respectively. Less percentage share in higher education and technical education reduces the reducing employability of these people and consequently the poor status of the households.

### ii) Major Sources of Income in the Village

The study identified some primary livelihood income sources for the Gonds in Markatola village that are i) farming, ii) employment in MGNREGA, iii) minor forest produce, and iv) animal husbandry. Farming is mainly dependent on monsoon rain. Farmers yield Kharif crops once a year; only a few with irrigation facilities yield twice yearly. The average annual household income is less than Rs. 48,000/-. Moreover, the per capita income is recorded at Rs. 8925/- a year.



**Table 5: Land holdings among the Gond in Markatola**

Sr.	Size of Land Holdings	No Households	Per centage
1	Marginal(less than 1 Hect.)	20	40%
2	Small (1 to 2 Hect.)	20	40%
3	Semi Medium (2 to 4 Hect.)	8	16%
4	Medium (4-10 Hect.)	2	4%
5	<b>Total</b>	<b>50</b>	<b>100%</b>

Source: Field Survey, 2019.

Generally, land size determines households' economic and social status in a rural economy. Marginal and small-size landholdings have several constraints to using modern technology in production, including high dependence on monsoon rain for watering, consequently high cost, and lower yields. The marginal and small landholdings possessed 80 per cent share (in which each shared 40 per cent). In comparison, 16 per cent of households have landholding under semi medium category. Only 4 per cent of households

have landholding between 4-10 hectares (see table 5).

**iii) Poverty status among Gond of Markatola**

The below poverty line (BPL) card is distributed to those under the below poverty line and decided by the government that they are generally poor people. On the other hand, the APL card is distributed to those above the poverty line. They are mainly rich or have better living standards than the poor.

**Table 6: Status of Poverty among Gonds of Markatola**

Poverty Status	No. of Households	Per cent
BPL	36	72
APL	14	28
<b>Total</b>	<b>50</b>	<b>100</b>

Source: Field survey, 2019.

Table 6 shows the poverty status in Gond, which is recorded that 72 per cent

of households are poor, while only 28 per cent of households are in a better



situation. The mass poverty is because of the marginal and small landholdings, which compels them to use primitive agriculture practices in farming. Low education, low income, and a highly dependent population add to poor conditions. The remoteness of habitat, poor implementation of tribal welfare policies, and corruption are responsible for miseries in their life (Sah, 2008).

### Conclusion

After seven decades of planned development in tribal areas of India, it is observed that the development initiatives are not percolated down to all tribal communities in an equitable manner (Dalpati, 2018). Various socio-economic indicators highlight their low level of living standards in not only in India but also in the tribal-dominant state of Chhattisgarh. The deprivation of STs is visible in terms of low level of education, inadequate housing conditions, inaccessibility to safe drinking water, and traditional cooking fuel etc. This material deprivation of STs makes it challenging to access elite positions, consequently lowering the living standard (Deshpande, 2013). Mass poverty is the primary feature of this community in the state, as shown by the case study of the Gond tribe from the

village Markatola. Marginal and small landholdings cultivated through primitive practices lead low level of agriculture production. On the other hand, a high level of disguised unemployment and unemployment worsens their economic and social situations. The remote geographical residence is making their progress difficult. Moreover, lack of skill development regarding business and employment is because of less access to quality education and their casual attitude towards modern education.

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## The Dying Tongues of India: Need for Protection



Sarah Imran\*

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### ABSTRACT

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**Keywords:** Indigenous Languages, Linguistic Minorities, Protection of Minorities, Identity, Constitutional Safeguards.

*India, a land of diverse cultural, ethnic, religious and linguistic groups is faced with the gigantic responsibility of balancing the incidental multiplicity of interests. The Constitution makers, fully conscious of the double-edged sword that diversity is, ensured that groups constituting the minority of the population are not denied of their basic rights. One such minority group, characterized on the basis of their linguistic identity has also been accorded constitutional safeguards under the Indian Constitution as well as international laws. Despite of statutory guarantees, the reality projects a grim picture. Many indigenous languages have already not been able to survive the tests of time, with a lot many being vulnerable and on the verge of extinction. Languages are an integral part of an individual's or group's identity, without which any discourse on the protection of minorities is incomplete. This article, therefore, explores the existing domestic and international legal framework for the protection of indigenous linguistic minorities and the way forward to nurture and protect them.*

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## Introduction

India, being a vast country with an immense population, is marked with tremendous diversity in terms of culture, language, religion and ethnicity. This implies that the population is inevitably divided into diverse groups representing multiplicity of interests. While diversity is an asset, it can also create spaces where there is a constant tussle between heterogeneous groups. In an attempt to mitigate such conflicts, at the hour of gaining independence from the colonial rule, the political and legal structure took account of the same. The Constituent assembly formed to design a collective vision for the future of the nation was fairly diverse in its composition making it a platform to accommodate the plurality of ideas<sup>1</sup>. The makers of the Indian Constitution thus were cognizant of the unique nature of its population and also the inherent danger of divisive forces at work threatening the unity and integrity of the nation. Therefore, they made attempts to reject majoritarian principles, making equality a defining feature of the Constitution. To promote this equality, the constitution has explicit provisions that safeguard the rights of those groups who form the minority segment of the population. It recognizes the need of the minorities to

preserve their language, religion and culture. Similarly, International law has also been evolving to provide for a framework that guarantees the protection of minority interests by advocating for their civil, political, cultural, religious and linguistic rights. Minority protection, thus, operates on the hypothesis that religious, cultural, and linguistic affiliations are essential features of the very notion of a civic, just society.<sup>2</sup> These rights do not privilege persons belonging to minorities but act to ensure equal respect for their dignity, in particular their identity. Since language forms an integral part of a person's identity hence linguistic minorities become central to the discourse around the protection of minorities. This is especially so in India which is a land of linguistic diversity, reflected in the famous Indian proverb *Kos kos par badlepaani, chaar kos par baani*, which means that the spoken language changes every few kilometres just like the taste of water. The People's Linguistic Survey of India records that there are as many as 780 languages and 66 different scripts<sup>3</sup>. While the Constitution recognizes 22 of them as official languages, the other languages continue to thrive through the common man of the country. However, it is unfortunate that over the years many indigenous

languages have failed to survive. The Census data which keeps count of only those languages spoken by more than 10000 people illustrate around 108 languages out of that list since 1971<sup>4</sup>. A 2018 report of UNESCO states that around 42 languages are on their journey to extinction<sup>5</sup>. Given the rich knowledge system and cultural heritage associated with each such indigenous linguistic group, it is imperative to protect and preserve them<sup>6</sup>. This article explores the available protections in the domestic and international legal framework for minority languages and the way forward to protect and nurture indigenous minority languages.

### **Determination of Linguistic Minorities**

Before delving into the question of linguistic minorities, it has to be noted at the outset that there is no internationally agreed definition of minorities. International legal documents of great importance like the United Nations Charter and the Universal Declaration of Human Rights have made no explicit reference to minorities. The only legally binding text of a universal nature which has a specific reference to minorities is Article 27 of the 1966 International Covenant on Civil and Political Rights.<sup>7</sup> Article 27 of the ICCPR<sup>8</sup> reads:

In those States in which ethnic, religious or linguistic minorities exist, persons belonging to such minorities shall not be denied the right, in community with the other members of their group, to enjoy their own culture, to profess and practice their own religion, or to use their own language.

But the article doesn't give a clear definition of minority. Therefore, attempts of arriving at a universally acceptable definition continued.

The most widely acknowledged definition is the one formulated by Francesco Capotorti<sup>9</sup>, a Special Rapporteur of the United Nations Sub-Commission on Prevention of Discrimination and Protection of Minorities in his study on the rights of persons belonging to Ethnic, Religious and Linguistic in 1977. He defined minorities as,

a minority group as a group numerically inferior to the rest of the population of a state, in a non-dominant position, whose members, being nationals of the state, possess ethnic, religious, or linguistic characteristics differing from those of the rest of the population and show, if only

implicitly, and maintain a sense of solidarity, directed toward preserving their culture, traditions, religion, or language.

Similar to the lack of a precise legal definition of the term minority internationally, Indian constitution also has not defined the term 'minority', rather it only recognizes two categories of minorities 1) Religious minority 2) Linguistic minority. In absence of a specific definition in the constitution, the courts played a great role in determining the concept of a linguistic minority.<sup>10</sup> In re The Kerala Education Bill<sup>11</sup>, 1957, the court held that minority must be determined by reference to the entire state and any group, linguistic or religious which is numerically less than 50 per cent of the entire state population may be considered as a minority for purposes of constitutional guarantees in relation to that state. This test has been approved and reiterated by the court in D.A.V. College, Jullundur v. State of Punjab<sup>12</sup>. Further in TA Pai Foundation and Others vs State of Karnataka<sup>13</sup>, the court held that determination of a linguistic minority would be in the context of states and not on the overall country as a whole.

Therefore, the expression "linguistic minority" refers to a linguistic group that

is in a numerical minority in the State/ UT, not necessarily in the country as a whole. Such an interpretation is reflective of the views of B.R. Ambedkar, who "intends to give protection in the matter of culture, language and script not only to a minority technically but also to a minority in the wider sense of the term."<sup>14</sup>

### **International Legal obligations towards Linguistic Minorities**

The history of international law relating to linguistic minorities began evolving with the end of the First World War. The Paris Conference of 1919-20 recognized protection of the right of all minorities including linguistic minorities. This led to the formation of minority treaties and declarations which were inclusive of both the negative right of non-discrimination and the positive right to promotion of minority languages. But such machinery couldn't survive as a result of the political divisions of the time.<sup>15</sup>

In the next phase, it was conceived that a human rights regime, in general, would be sufficient for the protection of everybody and specific rights of minorities were unnecessary.<sup>16</sup> This led to a broad formulation of provisions of non-discrimination on the basis of



language in most of the international legal texts like the UN Charter, Universal Declaration of Human Rights or the International Covenant on the Economic, Social and Cultural Rights.<sup>17</sup> They do not impose any obligation upon the state to recognize or protect linguistic rights. Therefore, in view of the limitations of negative protection of language rights, Article 27 was drafted to ensure a more robust mechanism to guarantee minority rights. Taking forward the same, the UN Declaration on the Rights of Persons Belonging to National or Ethnic, Religious and Linguistic Minorities came into being. The preamble of this declaration states:

That the promotion and protection of the rights of persons belonging to national or ethnic, religious and linguistic minorities contribute to the political and social stability of the States in which they live.<sup>18</sup>

Article 1 of the declaration entrusts on the state the obligation to take appropriate legislative and other measures to protect and promote the existence of national, ethnic, cultural, religious and linguistic identity of minorities. Article 2 explicitly recognizes the right of national, ethnic, religious and linguistic minorities to enjoy their own

culture, profess and practice their own religion and use their own language in private and public freely without any interference or discrimination. Article 4(2) imposes a positive duty on the state to create favorable conditions to express and develop their culture, language, religion, traditions and customs. On a similar note, Article 4(2) requires the states to take appropriate measures so that persons belonging to minorities have adequate opportunity to learn their mother tongue. Therefore, the declaration prompts the state to actively promote the enjoyment of rights.

### **Domestic Legal Obligations**

Legal safeguards for linguistic minorities to protect and promote their language become imperative in the face of India's huge linguistic heterogeneity. The constitution makers were well aware of this and the same gets reflected from the constituent assembly debates. One view was to provide for a strong regime for the rights of linguistic minorities, while the other viewed those rights to be subjected to the greater interests of the society.<sup>19</sup> The final result was that the rights were accorded the status of fundamental rights via Article 29 and Article 30.

Article 29 grants the linguistic minorities the right to conserve their language, script and culture.<sup>20</sup> Article 30 confers upon them the right to establish and administer educational institutions of their choice.<sup>21</sup> Articles 29 and 30 create mutually supportive rights for minorities and minority institutions.

Another constitutional safeguard is Article 350A<sup>22</sup> which provides for facilities for instruction through mother tongue at the primary stage of education. Article 350B<sup>23</sup> lays down the foundation for the institution of the Commissioner for Linguistic Minorities in India (CLM). According to Article 350B, it is the responsibility of the CLM to investigate all matters relevant to the constitutional safeguards for linguistic minorities and report to the President.

Additionally, The Protection of Human Rights Act 1993 provides that the National Human Rights Commission (NHRC) has duty to keep track of the implementation of the international covenants on human rights in India. Since the International Covenant on Civil and Political Rights guarantees the rights of minorities under its article 27, the NHRC has the mandate to monitor the implementation of that Article within the territory/jurisdiction of India.<sup>24</sup> Apart from these provisions, a

National Commission for Religious and Linguistic Minorities has also been set up in 2004 to recommend measures for the welfare of such minorities.

### **The Case of Indigenous Languages**

As discussed above, there are plenty of constitutional and international law safeguards provided to protect the rights and interests of linguistic minorities. Nonetheless, there is a gap between the texts and reality, driving many minority languages to become endangered. It is noteworthy that the linguistic minorities at the brink of extinction mostly belong to the indigenous tribal groups and communities in India. While colonialism and globalization paved the way for literacy and education, the vulnerable tribal groups depict extremely low literacy rates as pointed out by a Report of the High-Level Committee on Socio-economic, Health and Educational Status of Tribal Communities in India<sup>25</sup>. Apart from inadequate educational infrastructure and teachers, one of the primary reasons behind low literacy rates is the absence of teaching in the tribal language. With a shift towards English medium of instruction, not only are the children unequipped to understand their curriculum but also the indigenous communities are losing their own

language. Therefore, the Draft National Policy<sup>26</sup> on Tribal Groups provides promotion of the primary level of education in the mother tongue. Furthermore, the New Economic Policy<sup>27</sup> approved in 2020- emphasizes on multilingualism in education for preservation and promotion of India's cultural wealth. It draws attention on school education as a key instrument in not only promoting linguistic diversity but also as a tool in the hands of linguistic minorities to foster their language. Hence state should take measures for the inclusion of indigenous language and traditional knowledges as part of school education to safeguard its future among the linguistic group. This would ensure that equality in law is supplemented with equality in fact.<sup>28</sup> In ensuring protection of minority rights, positive measures of protection are required to be enforced both against the state and the non-state actors. Mere abstention from discriminatory acts is not enough and the state must undertake positive measures to protect the identity and the rights of the indigenous linguistic minority.

## **Conclusion**

The limited protection available to the linguistic minorities at the

international as well as the regional level can be broadly divided into three categories- 1) Norms which prohibit discrimination on the basis of language 2) Norms which provide individuals to use their languages in specific situations. 3) Norms promoting linguistic rights of persons belonging to minorities.<sup>29</sup> However unless the states undertake positive steps, minority languages will survive to struggle. The use of group's own language in private and public, in education and culture, assists not only in the preservation of their history and culture, and in strengthening a sense of belongingness but also builds social and political stability of the state.<sup>30</sup> It can indeed be said that how far the minorities feel secure and are not subject to any discrimination or suppression is the index of the level of civilization and catholicity of a nation.<sup>31</sup> Moreover, the development of human beings and their collectivities is largely dependent on their means of expression and communication. Therefore, it can be said that the exercise of the right to development is inextricably linked to the enjoyment of language making language rights as human rights.<sup>32</sup> In conclusion, the death of a language implies the disappearance of a unique way of looking at the world, hence all possible measures should be taken to not let that happen.

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## Effect of Liberalization, Privatization, and Globalization on Indian Economy and Society



Anamika Pundir\* & Satyendra Kumar Patel\*\*

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### ABSTRACT

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**Keywords:**

Globalization,  
Privatization,  
liberalization, Indian  
society, Economy, local  
Global village.

*Liberalization, Privatization and Globalization these are coin term which is inter connected each other. Privatization indicates to individual area to let free him in economic field while liberalization indicates to state to have no interfere in economic field when privatization or liberalization come in any country the globalization boosts automatically. In India these terms are introduced in 1991. India open all markets for global world so Indian economy can grow but the effect of liberalization, privatization and globalization seem in two way as positive in industrial area, many multinational companies start to invest in India so employment increase, it can be seen in education, health, in society change conditions of family also take change but negative effects also can be seen in society as family format change, the mostly effect can be seen agriculture area because government has shrunk it's hand to help farmers the condition because very critical. They commit suicide because the agriculture proves the way of harm. This paper is analysis the impact of liberalization privatization and globalization on Indian, culture, women, family, youth, education and also discuss the point of industrial growth and economic growth and also the basic point of Indian economy and Society both is agriculture which is called the backbone of Indian economy.*

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## **Introduction**

Liberalization is government's retreat for economic or industrial area and annihilate all those restriction which is shows as obstacle in country growth, and the other hand privatization is the process to open Economy for private sector so that the multinational companies can invest in other country and it shows benefit to both countries after liberalization and privatization the economy open to trade and the local become vocal it means globalization it connect the world one place to another place. The main goal of LPG is to increase development rate of economy, to the accommodation of the past gains and to develop competitive capacity of production unites the globalization is the mutual dependency this is the perfect statement of David Held (31 January, 2021 Business Sandesh) The price is not controlled by government so anyone can sell their product anywhere it is the image of a small village which is connect word one corner to another corner. After, India did not open its market for foreign investment and imposed much restrictions but when the foreign currency reserve goes down there is a major reason Gulf War is start so the price of oil reached very high. And another reason was trade balance also

disturb India import high but export was on low point (Mofid Kamran...) So, India went to world bank for monetary support to maintain growth of India but world bank puts many conditions for help so it the condition are to abolish the payment problem India should devaluate the rupee value about 18 % to 19% and second is Disinvestment, Indian government should free the public sector for private companies so LPG process became easy to be implement. The third was to invite foreign direct investment (FDI) as in sector of insurance about 26% and sector of defense 26% also. Fourth is NRI scheme is also provided for foreign investors. (Legal Service India.com Ayush Yadav) So in 1991 India government was compel to impose LPG for Indian economy and market. NEP was introducing the aim of this policy to liberalize open public sector to private sector and state be market. Everything has positive or negative aspects so globalization have also these bothon Indian economy, The object this remarkable study are to show the positive or negative effects on Indian economy and society and also analysis the main reason of the negative change on Indian society the main object for this research paper is assemble the reason and effect to see the problem as link each other Indian society is a complex society

which has combination with the economy also agriculture is the backbone society and economy both so this paper has contribute to link this society problem from the agriculture problem and the economic problem and also analysis the reason as globalization coma privatization and liberalization. And research methodology used to analysis the aforementioned very deeply throughout based on secondary data as journal, newspaper, books of remarkable writers, articles, and magazines also and the analysis based on explanation and description with comparative research methodology.

### **Effect of LPG on Indian Economy**

India is a third world economy so the effects of globalization liberalization and privatization seems positive as well as negative. The concentration on the good effect is that first that Indian economy open to all so the product available in very low prices because the competition increases so the quality of product is also became best. So, the local products have the latest market in the form of world. Many multinational companies have invested in India so employment also increases very large scale now India is the fifth largest economy in the world with 3 trillion

dollars but the Effect on industries this all development not escape the negative effects so the negative effects can also be seen on the Indian economy as the market open it's true but the product of Indian industry is not so good in quality as the other which is coming from outside and the coast of them also very high. India has reforms in rules and regulations as the license system is not compulsory except for 9 companies, to abolish the restriction on foreign exchange. The government of India also annihilate Monopoly and Restricted Trade (MRTP) act (1969). So, the growth rate increases because pre-1991 years the growth can be seen as 4% but after these reforms due to LPG, the growth rate became boost 5.5% except 2002-03. (31January 2021, Business Sandesh). When Technology foots come in India this replace the labor so many individuals lost their jobs. These negative effects can be seen in mostly in pharmaceutical industries, cement factory Chemical sector.(Legal service India.com)

### **Effect can be seen on Agriculture**

Agriculture is the mother of any economy because it has contained large scale employment, high system to feed population and it is not industry it is the way of life. Liberalization,



Privatization and Globalization is proved better in many areas so agriculture sector also not left behind by this. Indian farmers accessibility to world market, the grain and agricultural products can export to the other countries, agriculture area became equipped with new technology and machine so the work load on agriculture became low and the crop can be saved by many pesticides which is easily available in markets, the hybrid seeds also reached in the agriculture so the productivity as long increase by these reasons. But it can be seen only in theoretical way. In reality these benefits have not reached to Indian farmers. 85% farmers in India are small landholders.(Down to Earth 2 February 2021) They have no much capital to purchase high technological instruments. After, multinational companies established dominance over seed industry, pesticide and fertilizer industry. Hybrid seeds are not only costly but also need more pesticides and fertilizers. (Amar Ujala 24 December 2012) So input cost of crops is very high and when farmers sell their crops in market on very low prices because due to agreement with WTO and world bank India has to reduce import tax there by price of high subsidies agricultural products of foreign are very low in Indian market. Indian agricultural products with high

input costs are more costly than foreigner agricultural products. So Indian farmers do not find rightful price. Only 6% farmers get minimum support price in APMC. Other side 94% farmers are regulated by market and they have to sell their products in market at a low price.(The wirehindi.com 19 February 2019) When farmers do not get their income, they have to borrow money from banks or money lender for taking care of their family and sowing next season. And when farmers are unable to pay their loan, finding themselves helpless they commit suicide. According to National crime record bureau after liberalization from 1995 to 2015 more than 3 lacks farmers committed suicide.(Frontline 5 August 2015) In conclusion, we can say that after LPG in India suicide rate of farmers has increased that show actual crisis in the agriculture sector of India. So, we can say that LPG has affected badly to Indian agriculture sector.

### **LPG Effect on Indian Society**

After LPG India also became a part of global village. Globalization has affected on many aspects of Indian society. It is very fast process so social and cultural values are transforming around globally. New culture and trends are being accepted by Indian society that

is western-oriented, so now Indian society is shifting from traditional to modernity. People also become more rational than traditional time. Rigidity of caste practices became loose. Violence on lower caste and women in society is being global issue. But we know that every process effects both positive and negative. Although LPG has given an opportunity to women for job. But now women have to face discrimination at both places in-house and working place. So, we will discuss it's both impact on Indian society.

### **Effect on Indian Family**

Traditional Indian society was joint family. Family persons contributed equally for livelihood. They working hard together and helped to every member offamily. Due to impact of globalization, Indian family is transforming from joint family to nuclear family. In the time of globalization, family size is small, money centric now. Generally, people of two generations live together. In the process of globalization, western culture is accepted by Indian people now. Global culture is affecting to local culture. We can see that traditional dress up has been changed. Most Indians wear shirt pant. Marriage is also affected by this process. In past time, rule of marriage was very strict.

There was less space for inter-caste marriage but now practice of inter-caste and inter-religion marriage is increased. Impact of globalization on Indian youth also can be seen but youth of urban can be seen more affected than rural youth. From eating habits to clothing style of youth has been changed. (Indian journal of society and Politics, 2017)

### **Language**

Globalization has affected to Indian languages. It has enriched languages technically. But other side it has affected on local languages. We can see the effect of foreign language on the native languages. We can see people use mix languages for communication generally. In the market, literature in foreign languages also can be seen. The India the language which have no existence pure form of effects the literature of that language or the upcoming generation have no sense about the purity of any language. It can be present mixed version of language so that it shows how we can destroy historical development by unconsciousness. (BBC HINDI, 12 September 2012)

### **Women**

Globalization has given benefits to more educated, rich and able person. The

people who are still in the condition of subaltern, they are still in bad condition. It has increased the exploitation of subaltern. Women are facing more problems. Although due to liberalization multinational companies have come to India. Women are working in these multinational companies. But they are facing discrimination also. Women work as a cheap labor than man. (mint 18 September 2017) For selling their products MNCs are using women as an object. So, objectification and commercialization of women are bad impact of globalization. Maximum women work in unorganized sector where in lack of rules and regulations they face exploitation also. So, in this process, women labor has to deprive of justiciable salary and rights. Consumerism has affected very badly to women. It has increased violence and sexual exploitation.

After these bad impacts, there are some positive effects also of globalization. Employment on a large scale is being generated so that women could participate in social and economic development. After getting job, women have been more independent and self-sufficient. Other side due to fast communication network, violence on women is spreading globally so that

government take action very fast. (The Indian wire 7 August 2020)

### **Children**

After liberalization, the concentration of property has increased rapidly. According to Oxfam report, in India 63 capitalists have property more than yearly budget. (Financial express 20 January 2020) So LPG process is increasing inequality and it affects to children because approx. 37 crore of Indian population is poor. (The Economic Times) Their children are incapable to get proper education, health services in lack of money. So, the development of children stops and it affects to national development. Other side, the family, who are capable to provide education and health services to their children but parents have been money minded now they do not heed to their children. They are cared by servants so basic responsibility of parents to provide ethical value to their children is decreasing now. Information revolution has provided internet to maximum houses in rural and urban areas. In the era of globalization, involvement of children in social media has increased. Internet also provide violent and adult contents and children can access easily these contents.

Therefore, in children violent tendency against women has increased. Now children spent maximum time on internet for playing games, videos. So mental problems are also increasing rapidly. They become victim of cybercrime also. So, it is very harmful for society. (Scroll. 16 March 2020)

### **Education**

Now people have more accessibility to gain knowledge. Information and knowledge through Internet are coming to home. Globalization increase the capacity of students for using, calculating and applying of knowledge. Through satellite and global positioning system, knowledge is spreading across the world. Globalization has encouraged exploration, experimentation to advance the possibilities of information technology and communication for more effective learning. But the other side there are also many students in India who have no Internet accessibility. Students are facing crisis of instruments like smartphone, laptop. According to the survey of NCERT approx. 27 % students have no smartphone. So, we can say that without good quality of smartphone, perfect battery, memory space and unbreakable high internet connection. (BBC NEWS, 23 August 2020) Without

basic instruments, dream of online education cannot be completed.

### **Conclusion**

To sum up this remarkable topic the effects of liberalization, privatization and globalization on Indian economy and society it can be seen as LPG has the positive impact as well as negative. But it is true if any decision taken by government to be compelling or at the bitter conditions it cannot be fruitful or negative effects can be seen mostly but it is also true by passing of time every civilization needs change so the country as India cannot be escape by this change only based on bad effect so the way forward to India is to have a basic structure about LPG. As it can maintain the labor migration from village to cities and it cannot depend on other countries over cross the limit as depends on China 77.7% trade it can be dangerous to India and other hand it also can be improve the backbone of Indian agriculture because it is the livelihood for Indian people and it has large employment. Our government should have imposed anti-dumping duties as it needs and never have so much pressure of international institutions as IMF or world Bank because it effects on Indian state sovereignty. Government should have a plan for skill

development in industrial and agriculture sector also. In India, it is also a problem for children upbringing or old citizens. It is not good for Indian future. Globalization is informing the language. The importance of native languages is decreasing now. The government should organize many programs or awards distribution on the basis of language. So Indian government should have to make a perfect structure for all developments.

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## Gender Gap in India: Trends and Analysis



Ritu\* & Shaveta Kohli\*\*

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### ABSTRACT

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**Keywords:** Gender Gap, Tertiary Education, Labor Force Participation, SDGs.

Gender Gap is the most rooted problem across the world which led to the origin of one of the major goals under Millennium Development Goals and Sustainable Development Goals by the United Nations. The present paper is the comparative study and systematic review of Global Gender Gap Reports since 2006 to 2022 in the Indian context with the objective of analyzing the trend of Gender Gap Index based on 4 major indicators viz. economic participation and opportunity, educational attainment, health and survival and political environment over the years. Overall, the report has shown improvement till 2020 but after this, the gender gap has shown an increasing trend, particularly it is because of the lockdown during COVID-19 pandemic. The gender gap score has increased from 0.601 in 2006 to 0.668 in 2020 and after this, it has reduced to 0.629 in 2022. Considering the impact of the COVID-19 Pandemic, the sub-index score of females in Enrolment to Tertiary Education and participation of females as Professional and Technical workers has risen over the years from 9% in 2006 to 31.29% in 2022 and from 21% in 2006 to 32.87% in the year 2022 respectively. Although the Labor Force Participation Index has shown a fall over

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*the years from 34% in 2006 to 19.23% in 2022. The study concluded that out of all the indicators health life expectancy has been the best indicator and participation of women in the parliament is the worst.*

## **Introduction**

Human resource plays a significant role in the growth of the economy by contributing to productivity. But due to presence of Gender Inequality, the human resource specifically females receive unequal access to opportunities in all aspects be it – socio-culture, technical, economic or political and it leads to un-utilized or under-utilization of human resources and acts as a hindrance in achieving higher growth and development of the economy. Although, International organizations like – UNDP, UN, UNICEF, World Bank and other organizations are working towards closing the Gender Inequality not only in developing or under developed nations but closing Gender Inequality all over the world but despite the efforts from these organizations, Gender Inequality is still one of the leading problems in today's world. India ranks 135 among a total of 146 countries in the Global Gender Gap Index 2022.

Continuous efforts are made by international organizations for the

betterment of females all over the world as United Nations highlighted Gender Equality and Empowerment of Women in “Millennium Development Goals” and “2030 Sustainable Agenda” and working to close the gender gap is a great opportunity for the empowerment of women at a global level. This upliftment and recognition have led to the rise of a number of global efforts to combat gender inequality. In 2001, the World Economic Forum created its Women Leaders Programme to support the advancement of women to positions of leadership and to promote consideration of the issues affecting women's lives. The Forum has begun explicitly to incorporate aspects of gender equality in its measures of competitiveness, recognizing that the advancement of women is an important strategic issue with a potential impact on the growth of nations. Later, it started with the publication of Global Gender Gap Report since the year 2006 till date, stating that despite the fact that women represent half of the world's population, they don't have access to same level of Economic Participation and Opportunity, Educational Attainment, Health and Survival and Political Empowerment. There has been increased recognition that gender-based discrimination prevents societies as a whole, women and men,

from reaching their full potential (WEF, 2006). The secondary data source has been used for the trend analysis and the data is taken from Global Gender Gap Report published by World Economic

Forum in context of India from the period 2006 to 2022. The score of 1 shows perfect equality and score of 0 shows perfect inequality. Table 1 shows the variables that has been taken for the analysis of the study.

**Table 1: Gender Gap Report Indicators**

Criteria	Economic Participation and Opportunity	Educational Attainment	Health and Survival	Political Empowerment
Sub-Indexes	*Labour Force Participation *Estimated Earned Income (PPP US \$)	*Literacy Rate *Enrolment in Tertiary Education	*Sex Ratio at Birth *Healthy Life Expectancy	*Women in Parliament *Women in Ministerial Positions

Source: Global Gender Gap Report, 2022

Because of the limited data availability, under the dimension of Economic participation and opportunity, only two variables have been selected and in the case of educational attainment out of 4 variables only two has been selected and in case of political empowerment, two variables have been selected for the purpose of the study. Thus, all sub-indexes used in Global Gender Gap Report are not included due to the non-availability of data for all the years from 2006 to 2022.

**Objectives of the Study**

- To study the trend of Gender Gap Index based on four major indicators from the period 2006 to 2022.

- To identify the best and worst performing indicators.

**Status of Gender Gap Index of India**

Since the year 2006, India’s Gender gap has shown fluctuations over the years. It can be observed that the score of Gender Gap Report published by World Economic Forum for the year 2006 stood at 0.601 and in 2007 it declined to 0.594 and post 2007 the overall Gender Gap Index showed a continuous rise in the score by reaching at 0.655 for the year 2013. In the year 2014, it declined to 0.646 due to rising wage inequality and declining estimated earned income of females. But during the years 2015 and 2016, it has registered the highest score





of 0.683. But, over the years with an improvement seen in all the four indicators particularly in educational attainment, the gender gap index has shown an improvement. But in 2017,

because of an enhancement in economic participation and political empowerment of women, India has witnessed an improvement in gender gap index.

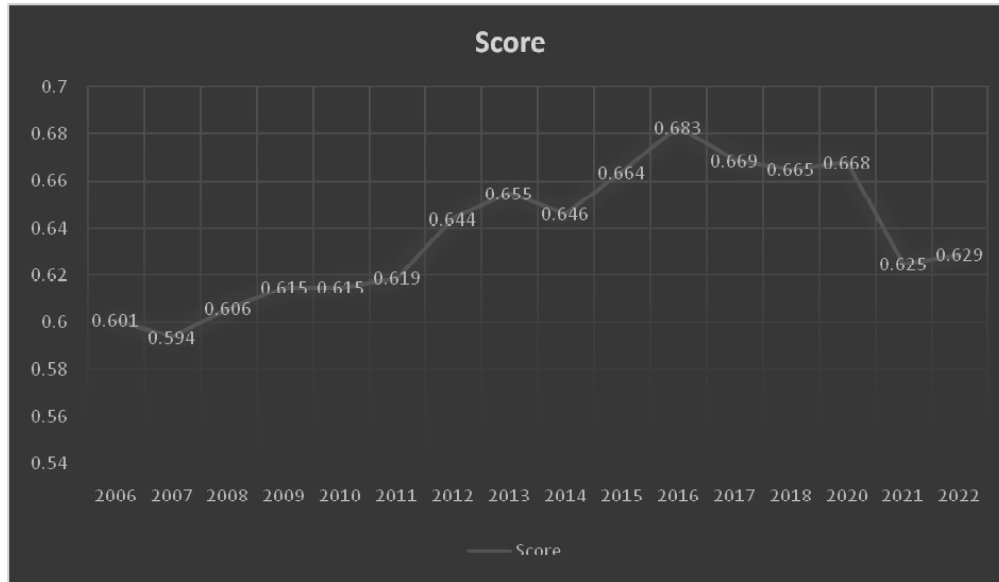


Figure 1: Gender Gap Index for the year 2006 to 2022

Source: Global Gender Gap Report, Various Issues

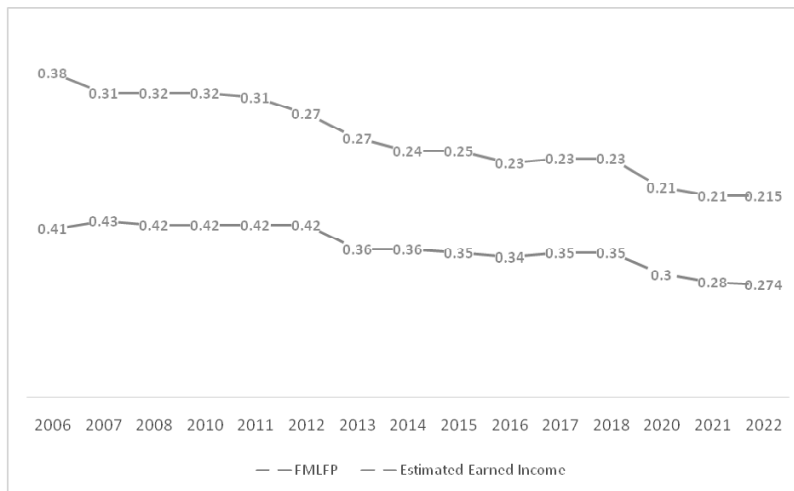
Major fall observed in the year 2021 with the score of 0.625 taking the score of Gender Gap to almost 10 years' back with India's rank standing as lowest as 140 out of 156 nations. The rationale for the largest fall observed is during the period of COVID-19 Pandemic and the year of 2022 has seen an increase of 0.004 points in the Gender Gap Report.

### Gender Gap Index: Sub Indexes

- (a) **Economic Participation and Opportunity**-This category attempts to provide an overview based on the ratio of female to male in Labour Force Participation and in Estimated Earned Income (PPP US \$). It can be observed from the data that sub-indexes of Economic

Participation and Opportunity in India has remained below average since 2006 and registered a continuous fall in both the sub-indexes registering 0.274 in Female Labour Force

Participation and 0.215 in Estimated Earned Income in 2022 which is almost 1/4<sup>th</sup> and below of males Labour Force Participation and males Estimated Earned Income respectively.



**Figure 2: Economic Participation and Opportunity**

Source: Gender Gap Index Report, Various Issues

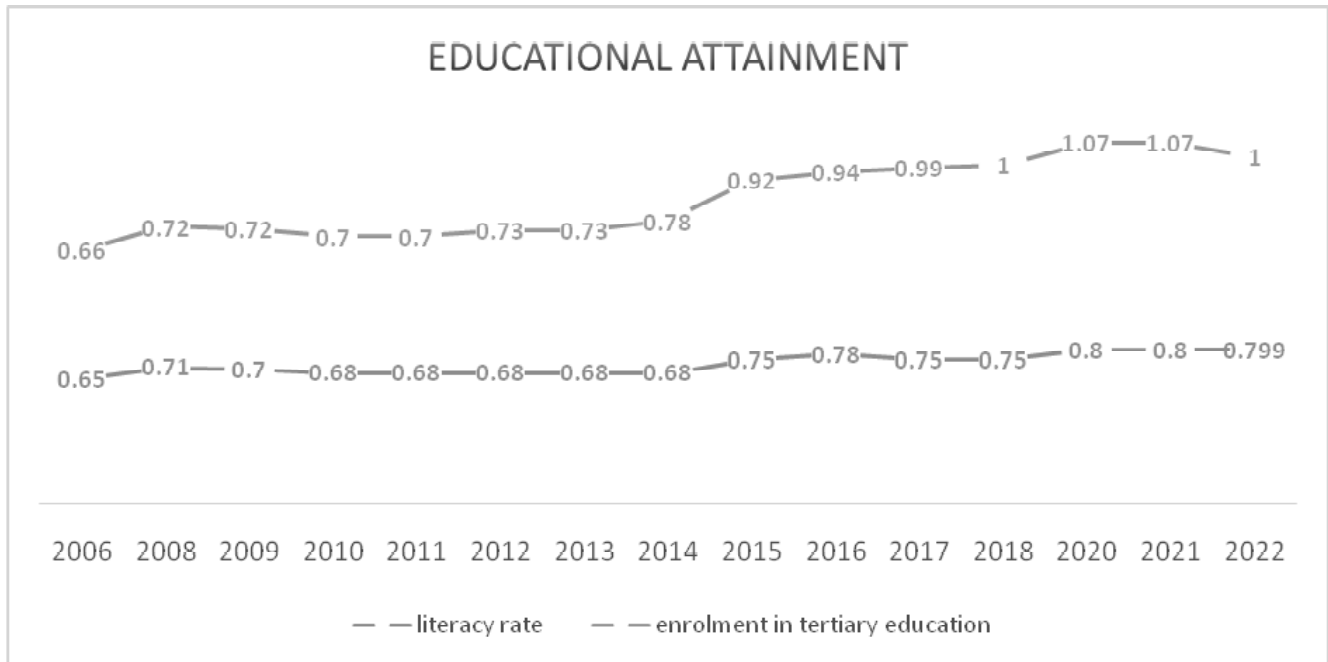
**(b) Educational Attainment**–In this category, the gap between women and men’s access to education is captured through ratios of women to men in literacy rate and in tertiary education from the year 2006 to 2022. Initially it can be depicted from the graph that Gender gap in education sector was huge in India as boys were given more

preference for schooling and girls given preference for doing household work.

**(i) Literacy Rate**– In India, literacy rate has not reached to equality but over the years’ improvement has been seen in the literacy rate of both males as well as females. In the year 2006, it was 0.65 and further it increased to 0.799 in 2022.

**(ii) Enrolment in Tertiary Education**  
 -this indicator has crossed the line of equality which is 1, for the year 2020 and 2021 with the score of 1.07. In 2006, the

enrolment in tertiary education of females over males was 0.66 and the score published in Report indicating that status of females has improved in India.

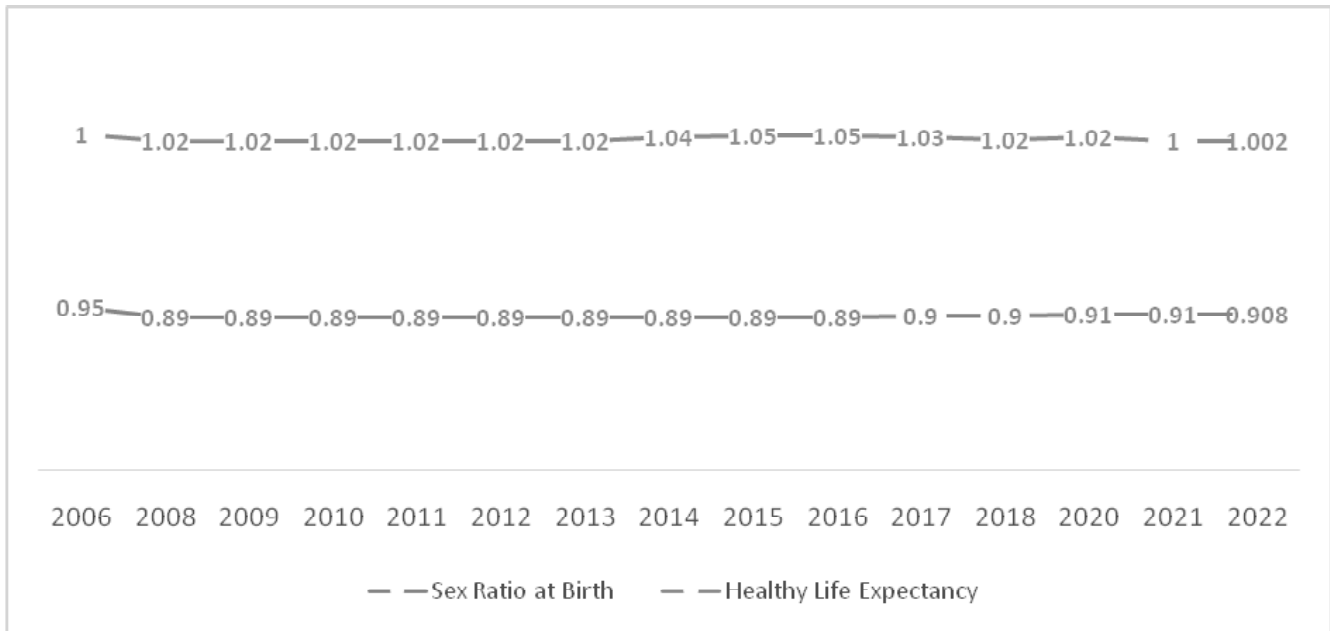


**Figure 3: Educational Attainment**

Source: Gender Gap Index Report, Various Issues

The literacy levels and enrolment in tertiary education has shown an improvement over the years. Moreover, India ranked first in enrolment in primary education but still India has to go a long way where there will be no inequality at higher levels too.

**(c) Health and Survival**-This category attempts to provide an overview of the differences between women’s and men’s health on the basis of Sex ratio at birth and healthy life expectancy for the year 2006 till 2022.



**Figure 3: Health and Survival**

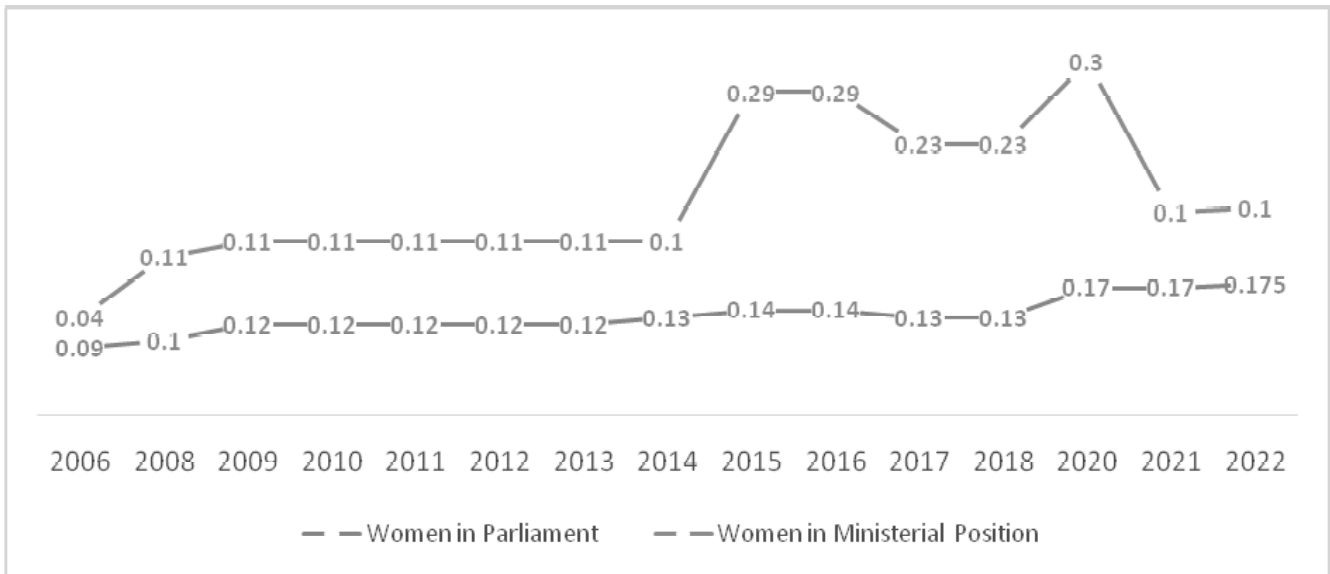
Source: Gender Gap Index Report, Various Issues

(i) **Sex Ratio at Birth** -In spite of such advancement, still today, the girl child or women is discriminated in most of Indian families. The baby boy’s birth is celebrated with boundless enthusiasm and ceremony, but at the same time the girl childbirth is received with consternation. The data in the report shows a slightly skewed sex ratio as the birth of a girl child is not greeted in many parts of India. “Gender-rooted discernment to girls doesn’t merely avert them from being born, it may also precipitous the

demise of those who are born.” **Christophe Guilmoto**. This is also evident from the 2011 child sex ratio which recorded the lowest ever been as only 914 girls for 1000 boys (Census,2011).  
(ii) **Healthy Life Expectancy** - the data indicates that life expectancy of females is higher than males in India and is favourable towards females. Therefore, the years of a female’s life must be utilised for productive purpose so that human resource wastage can be minimised as women have a better healthy life expectancy.

**(d) Political Empowerment-** This category mainly measures the gap between men and women in political decision-making at the highest levels on

the criteria of the ratio of women to men inparliamentary positions and the ratio of women to men in minister-level positions.



**Figure 4: Political Empowerment**

Source: Gender Gap Index Report, Various Issues

The trend indicates that women’s representation in political sphere requires special consideration and cannot be left to the forces that presently dominate our parties and government as the data for both women in parliamentary as well as women in ministerial position is much unfavourable to women. Empowerment of women can positively influence the lives of every individual in the economy be it women, men or children. Political parties cannot remain indifferent towards women as they constitute half

of the population of the country, therefore, special measures must be taken to enhance women’s political participation to help them influencing decision making at all levels of the society.

**Estimation and Data Analysis**

For taking the best and worst indicators the mean value of all the sub-indexes has been calculated from the ratios available for the time period 2006 to 2022 for each sub-index.

Sub - Indexes	Mean Value
Labour Force Participation	0.3656
Estimated Earned Income (PPP US\$)	0.2663
Literacy Rate	0.7259
Enrolment in Tertiary Education	0.8486
Sex Ratio at Birth	0.8992
Healthy Life Expectancy	1.0221
Women in Parliament	0.1316
Women in Ministerial Position	0.1560

Source: Gender Gap Index Report, Various Issues

The Mean value of 1 shows Perfect Equality and Mean Value of 0 shows Perfect Inequality. Data reveals that even after the steps taken by the government at national level, there lies a huge gap in the participation of females over males. As a value close to 0 shows more Gender Inequality and still there is a huge scope for improvement for females in India so that holistic growth and development can be achieved. Women constituting almost half of the population must be identified as an important resource in the economy to achieve the '2030 Sustainable Agenda' and close the Gender Gap.

The best performing indicator in the table is 'Healthy Life Expectancy' as its values crosses the line of perfect equality and the worst performing indicator is representation of Women in Parliament and it requires huge efforts to improve

the status of females in India. Empowerment of females in participation at all levels of governance must be encouraged so that decision making can be influenced from the perspective of females as well. Also, an inverse relationship has been observed between enrolment of females in tertiary education and Labour Force Participation. Data reveals that labour force participation declines with rising literacy rate of females. On the opposite, according to Human Capital Theory, there is a causal link between investment in education and development. Numerous studies shows that higher education improves the skills and knowledge base, through teaching and research, and this leads to economic development (Bloom et al. 2014; Oketch et al. 2014; Teixeira & Queirós 2016). Empirically, Cin et al. show that despite deeply-rooted gender

inequalities across all sectors in Turkey, higher education expansion has contributed to the equalisation of labour market outcomes by gender. Educated girls are the weapons who yield positive impact on the Indian society through their contribution at home and professional fields. They are the reason of improved economy in the country as well as society and will act as most effective way for ending poverty in developing nations. Some benefits include: Reducing the number of babies women have; lowering infant and child mortality rates; lower maternal mortality rates; (Kumar, J. & Sangeeta-2013), protecting against HIV/AIDS infection (Latha, P.S.-2014); Increased number of women with jobs and higher earnings etc. Girl's education helps to eliminate illiteracy; develop self-esteem and self-confidence (Nanda, P; Das, P; Singh, A. & Negi, R. - 2013). Therefore, empowerment of females along with their participation in all sectors and at all levels will increase the human resource capital in India and it will increase the prospectus of achieving the Sustainable Development Goals.

## **Conclusion**

Gender Equality has always been a deep-rooted issue since ages and even today India has closed only 62.5% in

2021 of Gender Gap as per the report of 2021 which further increased to 62.9% in 2022. Report of 2021 has registered the highest fall from 66.8% in the report published in 2020 to 62.5 % in 2021 because of COVID-19 pandemic situation. Lockdown and social distancing measures in the economy had a large impact on the employment, including work from home, reduction in working hours, closure of start-ups leading to unemployment, rising household responsibility and rise in the time spent on unpaid care work and many more problems in the economy which created immediate negative effects for women and as a result overall gender gap index has fallen. The major indicator contributing to this fall is the decline in the participation rate of women in parliament from 30% in 2020 to 10% in 2021. Of all, the enrolment of females in tertiary education has increased and this must be used as a weapon for the growth and development of the economy. The Indian Education Commission 1964-66, rightly emphasized that, "For full development of our human resources, the improvement of homes and for moulding the character of children during the most impressionable years of their infancy, the education of girls is of greater importance than that of boys". However, the change in the attitude of

the public towards girls' education would go a long way in improving the situation. Therefore, steps to close Gender Gap at an individual level must be taken up so that women are empowered in India and it will lead to better utilisation of human resources and will increase the prospectus of achieving the Sustainable Development Goals for the growth and development of economy and as a result the gender gap in the upcoming report can be closed.

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## Forced Migration and Rehabilitation: A Case Study of Refugees from East Pakistan in the 1950s



Punit Kumar\*

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### Abstract

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*In 1947, British India was geographically partitioned into three parts – India, West Pakistan and East Pakistan. The resultant mass exodus, and the refugee crisis arising from it form a matter of intensive scholarly debate and discussions. At the time of Independence, due to the significant number of migrations in the West and its major impact on the politics of Delhi, the academic study of the refugee crisis of the western part of India was given primacy, and consequently, scholars did not conscientiously work upon the crisis in the East. Only in the past two decades have scholars tried to study the refugee crisis that originated in East Pakistan.*

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This paper focuses on the refugees who came to the Indian territory from East Pakistan after Independence and examines the situations which forced them to migrate from East Pakistan in patches. It locates the failure of the West Bengal Government and the Government of India in introducing

policies which could have provided relief to the refugees. This paper will showcase that the State Government of West Bengal was not ready to give shelter to these refugees, and consequently, they were deliberately rehabilitated in other states.

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Delving further into the subject matter, this paper focuses on the rehabilitation attempts made in the state of Bihar and tries to investigate into some of the reasons behind the failure of this enterprise. In pursuance of this aim, the paper will also examine the hardships of the refugees who were relocated to other states, mostly Bihar, Orissa and Chhattisgarh.

A vast volume of researches has been done around the forced migration resulting due to the partition of British India, their rehabilitation, and the state's attitude and behaviour. Usually, every standard book on the Independence of India, more often than not, has a chapter on Partition and migration. According to Sucheta Mahajan, partition was the price Congress agreed to pay to maintain communal amity in what remained as India after the division, but the leaders of Congress failed to foresee the visible results of the partition that stretched for much longer than was perceived.<sup>1</sup>

Even though some historians like Joya Chatterjee Papiya Ghosh and others, took interest in the refugees who continued to come and go during 1950s and 1960s. The works which have been published in the last decade or so mainly focused on the refugees who were rehabilitated in West Bengal.

However, recent researches suggest that they were dispersed all over India for Rehabilitation. Udit Sen in her recent work has looked at those who were sent to Andaman and Nicobar Islands. Throughout her book, Sen sets out to challenge the prevalent official discourse of victimhood, by emphasizing refugees' differentiation along lines of gender, caste, and class. She provides a stimulating analysis of the ways in which refugees engaged with statist projects in the squatter colonies of Calcutta and in the Andaman Islands.

Article 1 of the Refugee Convention defines a refugee as a person who is outside his/her country of nationality or habitual residence; has a well-founded fear of persecution because of his/her race, religion, nationality, membership in a particular social group or political opinion; and is unable or unwilling to avail himself/herself of the protection of that country, or to return there, for fear of persecution.<sup>2</sup>

History writing on refugees is a comparatively recent task. The first attempt was made after the second world war when the refugee crisis was at its peak. During 1980s, one of the most important developments was the emergence of refugee and forced migration studies as a distinct field of

study and policy analysis (see Malkki 1995), and the establishment of new research and teaching centers and policy institutes dedicated to refugee crisis.

As stated above, it is only in the past two decades that historians such as Joya Chatterjee, Udit Sen, and most recently Sekhar Bandyopadhyay, have looked into this issue. Unlike the western part, which saw a sudden burst of violence, just before and after Independence, East had its periods of instability in patches. Hence, the refugee crisis in East continued far longer – till the 50s and the 60s, and unlike the West, this flow was mostly ‘one way’.

### **The Flow of Refugees from East Pakistan**

After Independence, until the 1950s, migrations in the east of the subcontinent were limited in number, although it never slowed down. During this time the administrative machinery was too ill equipped to compile the records of the numbers of persons crossing the border. Moreover, until October 15, 1952 travel between India and West Pakistan was regulated by a “permit” system resulting into partial recording of the migration<sup>3</sup>.

The first census of the displaced population from East Pakistan was taken up in 1949 which gave a vague number

of 1.3 million refugees staying in East Pakistan.<sup>4</sup> Although, the constant influx of new migrants and a very open boundary make these numbers contestable. In 1950 the influx of Hindu refugees from eastern Pakistan to west Bengal averaged nearly 2000 per day. Simultaneously, the emigration of Muslims to East Bengal came down to 1000 per day during the same period.<sup>5</sup> At that time the boundary between India and East Pakistan was open, and so, people sometimes used to go back to their native place without informing the authorities. In 1950, about 3.64 million Hindus were reported to have immigrated to the Eastern border states of India, but the Nehru- Liaquat Pact of 1950 stimulated some return migration to East Pakistan. The Indian Ministry of Rehabilitation placed the figure for return migrants at 1.77 million, showing a net influx of 1.87 million during the year.<sup>6</sup> Whatever may be the ambiguities in the counting of persons crossing the border into India, sources suggest that right from the beginning there was a sheer difference between the number of people who came to India and those who left.

Twenty-four lakh Hindus migrated to West Bengal from East Pakistan between January 1, 1950 and January 31, 1951. Dr. BC Roy, the then chief

minister of Bengal, gave the figure of 35 lacs of Hindus who came to West Bengal until April 1951. In the reverse 11 lakh Muslims left West Bengal for East Pakistan since the communal disturbances from February to the end of January 1951, seven and a half lacs Muslims returned to West Bengal.<sup>7</sup>

The influx of refugees shows a steady increase over the years. In 1953, seventy-six thousand crossed the borders, increasing to 118,000 in 1954, and

239,000 in 1955.<sup>8</sup> These figures strengthen the argument that the influx kept on increasing in the 1950s irrespective of government efforts to restrict it. The worst hit place was Calcutta where railway stations were already congested and more people were expected to come. Around this time in East Pakistan, the provincial government was introducing statutory rationing in as many as 16 towns which too expedited the exodus.<sup>9</sup>

**Table 1: Summary of Data on the influx of population in India from Pakistan<sup>10</sup>**

A. Displaced person in India according to 1951 census (millions)	
From east Pakistan	2.549
Data from Annual reports of the Indian ministry of rehabilitation in	
1. estimated post census influx from east Pakistan, [in millions]	
1952-53 report	0.541
1953-54 report	0.655
1954-55 report	0.825
2. Total number of displaced persons by March 1958, in million (1958-59 report, p.5)	
East Pakistan	4.117
West Pakistan	4.740
3. Estimate of influx from East Pakistan according to the 1959-60 Report of the Indian ministry of Rehabilitation.	
Period	
During 1950	1.582 million
1951 to 1954	0.587 million
1955 to 1958	0.570 million

As we can see from the data above, the number of displaced persons from East Pakistan is not much less than that of the East until 1958-59. The influx of refugees from West Pakistan had relatively stopped after 1950, but the converse happened in the East where the numbers kept growing and growing, it was stretched over such a long period of time, that not much fuss was made of it unlike in the West, where the Rehabilitation was organised and the government made all the efforts to rehabilitate them properly. The cumulative figure for the post-census influx at the end of 1953-54 exceeded at the end of 1952-53 by about 0.11 million.

However, it is not clear whether these figures exclude return migrants. Even if we consider return migrants the number was very small. As a result of communal and economic tension migrants preferred India to be safer. Some of those who went back had to face atrocities and they again came running back. One example of a family who went back to East Pakistan can be cited. Within a week their house was attacked, the father, an old man and a retired police inspector, was killed, and the mother and the son were stabbed. However, both of them escaped

death miraculously. Both came back to Calcutta. The young man tried to describe in his own way how his father was killed. He also mentioned another story where there was an attack on girls in another village, "I do not know whether I should say this, it is shameful to say this, the breast of one of the girls was cut off and she was taken to Barisal Hospital, she died there, I was at the hospital."<sup>11</sup> Shyama Prasad Mukherjee claimed that an investigation done by his workers on Muslims going to East Bengal (4500 investigations) suggests that 60 per cent of them were planning to come back.<sup>12</sup> For example, Roy describes how Muslims from India who had crossed over to Pakistan and Hindus from Pakistan who had crossed over to India temporarily – due to fear of violence, or even for medical treatment or to attend the marriage of a relative on the other side – were treated as "evacuees" whose property could be requisitioned by the state, and they often found themselves homeless when they tried to return.<sup>13</sup>

From the above arguments, it is quite clear that refugees kept coming from East Pakistan. Dr Rajendra Prasad, then president of India, on 14 August 1955, expressed concern about the rise in the tempo of migration during that year. He said, "the problem of a refugee from

WestPakistan had been solved to a great extent, the Government of India had yet to find a permanent solution for the problem of resettling refugees from East Pakistan".<sup>14</sup> He even agreed with the point that the continued influx of people from East Bengal was the primary reason for the lack of success in their rehabilitation. The President also showed concern about the rise in the tempo of migration, as he said, "nearly 45,000 people cross the border into India every month and one cannot be sure how many more would come."<sup>15</sup> By 1956 there was a fear among authorities in Bengal that, if not all, a bulk of nine million members of the minority community in east Bengal was ultimately going to migrate to India as a victim of circumstances.<sup>16</sup> Pakistan's stress on an Islamic constitution, as well as deteriorating economic conditions in the country, strengthened those fears. Minority communities other than Hindus too were applying for migration certificates. Looking at the inflow during 1957, the practice of giving migration certificates to everyone was revoked and now such certificates were issued after a thorough investigation.<sup>17</sup>

### **Reasons behind Migration**

Mr. Anil Kumar Chandra, Deputy foreign minister, toured East Pakistan

in April 1955 and reported his experience that economic factors and the feeling of uncertainty among Hindu minorities about their future because of the treatment they were getting there, was the major reason behind their migration.<sup>18</sup> The President of East Pakistan Awami League, Maulana Abdul Hamid Khan Bhashani, spoke in a public meeting that Hindus were migrating to India "Because of economic distress they were forced to move to India, Muslims were also facing the same economic distress but they can't go anywhere".<sup>19</sup> But the outflow of these migrants towards roads to Calcutta cannot be justified merely on the back of economic reasons, as Joya Chatterji argues in her book that The extreme poverty and the unhygienic conditions in which the refugees lived is unimaginable. Still, they were not ready to go back to their homes.

In India, they were looked upon as outsiders consuming the resources of natives. Even the government, in the beginning, was not ready to look after these migrants. Efforts were made towards not letting them in or sending them to various places in India. This policy only changed after 1960, when their population grew to such an extent as to influence political formations. We can

analyse the approach of the government from the statement of Union rehabilitation minister Mr. Mehar Chandra Khanna, who said that the government could not take indefinite responsibility of these migrants and they will only look into cases of migrants who came before December 31, 1950.<sup>20</sup> The government had the idea of these migrants pouring in from East Pakistan and also the reason behind it, as the statement by prime minister in Rajya Sabha where he claims that in course of last 9 or 10 months no major incident has taken place in east Pakistan but the condition is deteriorating there, and a new type of migrants are coming over.<sup>21</sup> This worsening conditions can be understood from observing the letters of leaders who previously felt confident about Pakistan. The only Hindu minister in the cabinet of Pakistan, Jogendra Nath Mandal, resigned on 8 October 1950 as a mark of protest against the treatment of Hindus in Pakistan, particularly in East Pakistan. He with utter disappointment says and I court

“After an anxious and prolonged struggle, I have come to the conclusion that Pakistan is no place for Hindus to live and their future is darkened in the ominous shadows of conversion or liquidation... When I am convinced that

my continuance in office in the Pakistan central cabinet is not of any help to Hindus, I should not with a clean conscience should create a false impression in the mind of Hindus of Pakistan and people abroad that Hindus can live there with Honour and with a sense of security in respect to their life property and Religion.<sup>22</sup>

### **Rehabilitation**

Under the scheme of relief assistance, Displaced Persons admitted to Camps were provided with accommodation in basha-type hutments or tenements of semi-permanent nature. Basha is Bengali term for temporary house. During their stay in the Camps, these refugees were given relief assistance in the shape of cash doles, food at subsidised rates, items of clothing, blankets, medical and educational faculties. Efforts were also made to provide the able-bodied male members with work to supplement their income during their stay in the camps. The case of the Andaman and Nicobar Islands has been examined in detail by Uditi Sen in her recently published book, where she explains the government's failure in its efforts to make Andaman and Nicobar a great refuge for refugees in Bengal and relieve pressure from important places in Calcutta. She also



explains in great detail the hardships migrants who were sent to these Islands faced and how their life was harsher in this newfound land.<sup>23</sup>

However, policies kept on being made to handle these forced migrants. Bengal Rehabilitation Organization chaired by Dr Radha Kamal Mukherjee drew a plan of Rehabilitation. The main objective of refugee rehabilitation was the planned utilisation, development and redistribution of manpower to restore the displaced communities' economic and social life and reconstruct the economic life of West Bengal. Refugee rehabilitation was to be scientifically planned and implemented.

Refugee employment exchanges and work centres were demanded by the board aimed at securing jobs, providing facilities for vocational training for the refugees and providing immediate family assistance. Serious efforts were suggested to be made to train refugees for semi-skilled and skilled works in jute mills and several large-scale establishments. The urban class of refugees, comprising of professionals, artisans and small traders, were to be settled down in towns, and loans were to be provided to them to purchase tools to start their work again. The maximum amount to be given as a loan was fixed

by the centre at rupees 3000 in case of professionals, 5000 in case of traders and Rs 500 in other cases. Cooperative farming was to be introduced for the agriculturist class to protect them from Zamindars and *Jotedars* and raise cultivation. Here also, we can see the plans for dispersing refugees to urban centres and satellite towns and integrating these into existing village structures. This plan was aimed at countering the economic imbalance between industry and agriculture and between city and village. A huge contrast could be easily seen between the deserted villages and the overcrowded towns.<sup>24</sup>

Dispersing refugees in urban centres and satellite towns and integrating them with the city centres was to solve the dual purpose of relieving Calcutta and providing opportunities in the countryside. As the entire hinterland of Calcutta was agriculturally "depressed", factories, workshops and small-scale industries were concentrated in Calcutta, resulting in congestion, squalor, disease and mortality.<sup>25</sup> The severe economic pressure in West Bengal was evident from the high figure of the density of its population – 750 people per square mile. It in no way looks high as compared to today's time but it was three times higher than the average

national density. There was a danger of collapse of the economy in people's mind, resulting in fear for these refugees and a sense of alienation from them.

**Table 2: Rehabilitation of Displaced Persons and Repatriates<sup>26</sup>**

(Rs. in lakhs)

Type of Rehabilitation Assistance	D. Ps. from West Pakistan (1948-1966)	D. Ps. from East Pakistan (Old Migrants)			Total
		In West Bengal		In other States	
		1948-61	1961-66	1948-66	
1	2	3	4	5	6
<b>A. Economic Rehabilitation Schemes</b>					
1. Agriculture ..	917	767.59	54.03	473.97	1,295.59
2. Industries & Training ..	842	877.53	30.34	253.22	1,160.91
3. Loans for Business, Small Trade and Profession ..	3,247	1,171.65	—	—	1,171.65
Sub-Total ..	5,006	2,816.59	84.37	727.19	3,628.15
<b>B. Non-Economic Rehabilitation Schemes</b>					
1. Housing & Development ..	6,510	4,177.44	666.48	987.55	5,831.47
2. Educational & Medical Facilities ..	1,432	1,911.33	676.92	100.00	2,688.25
Sub-Total: ..	7,942	6,088.77	1,343.40	1,087.55	8,519.72
Grand-Total:	12,948	8,905.36	1,427.77	1,814.74	12,147.87

The above graph suggests the expenditure done on various rehabilitation schemes over the period. As one can clearly see the largest amount of expenditure for economic activity was done on providing loans, followed by agriculture and Industries. These loans were mostly provided to people who had left their businesses and earnings in East Pakistan to restart their firms. It was thought these loans would have a dual impact. On the one hand, supporting the refugee and also helping the economy of Bengal which had already been facing chronic middle-class

unemployment for a long time. Investments were also made in housing and providing basic requirements for these refugees. This graph also gives us an idea of investments made in other states. As compared to Bengal the amount was very less. And among them, as Uditi Sen has pointed out, major investment was in the Andaman and Nicobar Island region as it was a flagship scheme of the GOI. Although the expectation of the government was to generate a similar response from other states too, the efforts were limited.

### **West Bengal Government's Hesitance**

C.C Biswas, the minister of law and minority affairs, in a statement in parliament on 28 March 1956, said that the most important cause of migration was the increasing incidence of crimes against the person and property of Hindus, particularly heinous crimes against the Hindu women like abduction and rape. The shrinking scope of both government and private jobs was a concern; he also mentioned the policy of purposeful discrimination against the minorities, the requisition of Hindu houses and property particularly in the towns of East Bengal and propaganda carried on by the Muslims that Pakistan was created for Muslims, was some of the causes of migration.<sup>27</sup> His statement showed that the government basically had all the ideas about what was going on. Still the approach from the beginning was just emancipation, no major policy decision can be seen in this regard. The only way the government was trying to tackle this issue was Rehabilitation. And as per the study of this paper, it was also hesitant.

There was a view among political observers during 1955 that there had been a sustained and systematic campaign by the Hindu agents from abroad urging the minorities to leave

East Pakistan, claims were also made about money being given to scheduled castes for migrating to India.<sup>28</sup> Even if we believe these claims to be true, the data I have found do not go along with this argument. The very low growth rate of Hindus in the 1950s suggests substantial migration.

By 1956 government had given up on the minorities; Mr. Cc Biswas confessed on march 28, 1956, that solution was not in the hands of the government of India:<sup>29</sup> *"We have done all we could do, we offered a suggestion to Pakistan, we have told Pakistan what it should do, but its reply was that they had done what could have been done and there is nothing more to be done"*, he told in the Lok Sabha.<sup>30</sup> However Leaders from West Bengal, irrespective of which party they belonged to, kept repeating that government should take measures to stop this inflow of migrants.<sup>31</sup>

Statements were not limited to Indian side, ministers of Pakistan throughout this period kept claiming that the migration of Hindus was reducing, but these proved to be a face-saving statement in most places.<sup>32</sup>

### **Settlement of Refugees in other Places**

It was back in mid-1952 when the government was planning to disperse

the migrants coming over from East Pakistan to all over India, Mr. Nehru himself telegraphed the government of Bihar and Orissa to prepare for receiving 15,000 East Bengal refugees. A.P Jain, who was then the Union Rehabilitation Minister, was taking to these states. At this time government was not even considering migration certificates, which later on became mandatory. A.P Jain reportedly said, "Our gates are always open to receive these unfortunates, and in any case never wanted a passport system or any restrictions on travel between the two Bengals."<sup>33</sup>

Plans to expedite the Rehabilitation of refugees from Eastern Pakistan were discussed in Calcutta. The most important of this conference was meeting rehabilitation ministers of West Bengal, Assam, Bihar, Orissa, Uttar Pradesh, Tripura and Manipur, chaired by Mr. A.P Jain, Union Minister of Rehabilitation. A fresh influx started in the middle of 1954 and reached its peak in August when 9000 people crossed over to India with migration certificates. These were the ones recorded but a lot who crossed over were illegal migrant.<sup>34</sup>

### Condition in Camps

In Shyama prasad Mukherjee's letter to Bidhan Chandra Roy on 22 august

1950, he drew attention to the fact that the refugees were not going to stop as the Pakistan government had the policy to squeeze out Hindus from the territories. He goes on to warn the chief minister that a strong agitation would erupt if just and legitimate claims of migrants would be ignored.<sup>35</sup> He further requested national leaders to form policies to grant citizenship to migrants who came after the 25th of July, 1949. He requested Sardar Patel to get the census done in such a way that these migrants get counted, as the only hope of these migrants to get citizenship was to get registered with the government of India.<sup>36</sup> About the issue of citizenship, it was denied to the people who came after the 25th of July, due to the assertion by the then chief minister of Bengal, B. C. Roy. This shows how reluctant the government of Bengal was on the matter of accepting these refugees. It always hoped these migrants would go back to East Pakistan. The Prime minister made a statement that 90 per cent of people who came from 14th July 1950 to 10th august 1950 had no intention to go back. And the 10 per cent who wanted to go back was because of the extremely poor condition of refugee camps and they wanted to make a second trial. The conditions of these migrants in camps were such they lived on hand to mouth

basis. Many of them did not previously know what poverty and want were, but now they were homeless and helpless. Their physical and mental suffering was great.

All India Refugee Association, held on 29th and 30th July 1950, criticised the way the refugee problem was being handled by the government. Income tax notices were being issued to refugees for the recovery of dues levied by Pakistani government.

Almost all political leaders of Bengal and people working with these refugees were sure that the Hindu refugees from East Bengal would not go back. But GOI was always making plans thinking they would leave when situation gets better in East Pakistan. This created a sense of dissatisfaction and confusion among the refugees who had no place to go, also government was not ready to give them permanent citizenship and was ready to send them back at the slightest opportunity to do so. Systematic efforts were being made on the government level to squeeze out the refugees and drive them into Pakistan. Some of them were stopping the cash doles outside the camps, ration card was not supplied to residents living in the houses evacuated by one who migrated to Pakistan, and available land was not distributed. These

were few among many such measures.<sup>37</sup> These rehabilitation centres were compact, crowded, filthy, and unordered. These poorly managed areas were haven for communicable diseases such as malaria and typhoid. It was such a huge problem that the Rehabilitation Board recommended that the government seek the assistance of the Food And Agriculture Organization and World Health Organization for malaria control.<sup>38</sup>

### **Bihar**

In Bihar, Bengali refugees were first set up in a camp near the Paschim Hazari area. They were then relocated to 46 refugee colonies spread across West Champaran. Bihar has 115 refugee colonies, out of which West Champaran had 115, Purnia thirty-eight and East Champaran thirteen.<sup>39</sup> This was not a one-day process, this is the result of the collaborative effort of state and some individuals looking for better life conditions. To make the stay of these migrants better in Bihar special facilities were given to Bengali-speaking people in Bihar. According to Shri Krishna Sinha, Chief Minister of Bihar, in 1955, Bengali speaking formed 4.3 per cent population in Bihar; out of 11 colleges in Bihar, Bengali was taught in 10. There was one

high school for every 8,420 and one primary for 999 Bengali-speaking people in Bihar.<sup>40</sup> In spite of all this the Bengali refugees favoured living in the filthy stations of Calcutta over in refugee camps in Bihar. Refugees rehabilitated in Bihar deserted those rehabilitation centres and returned to West Bengal. Sometimes they staged protests for their rights on the streets of Calcutta.<sup>41</sup> These refugees came from Bihar, Orissa, and some from Nainital. They complained of bad living conditions, poor soil and an unsatisfactory supply of water. They were ready to live at Railway Stations in Calcutta instead of camps in other states.<sup>42</sup> This trend of deserting the camps continued for a long period as we find reports of desertions even in 1957, in Bettiah, North Bihar from a camp established in 1955. In this case, the ministry of Rehabilitation found the facilities given in these camps to be satisfactory.<sup>43</sup> As per government claims three crops paddy, wheat and sugarcane, were raised on the land. Each agricultural family was given four acres of land, a cart, a pair of bullocks, and a cow. Loans were advanced to them to build a house.<sup>44</sup> But to what extent these plans were implemented is a matter of debate, as of the 29,000 people who were sent to Bettiah only a very

small number remained there, most of them left for various places in Bengal. There were various reasons for their departure- along with being in a new place they were not assimilated into the caste system of their new home. They tried forming associations at these camps and demonstrating protests for their rights. Mass mobilization rumour-mongering were common around these camps. One such was that if the refugees went to Calcutta on the eve of the election, they would receive the benefits of rehabilitation in east Bengal expediting their departure.

In West Bengal, these refugees would live on railway stations or on illegally captured lands but sometimes they had to face the actions of the police too.<sup>45</sup> The government policy of not letting these refugees settle in west Bengal was continued as the government wanted to persuade these deserters to go back to their camps. Compared to west Bengal, "uncultivated land excluding current fallow" 28 lacks acres Bihar had 64.5 acres. In the uplands of Bihar and Chota Nagpur and riverine lands of Assam, contiguous to Bengal agriculture and industrial colonies of cooperatives pattern, vocational schools work centres and colleges and schools were to be established as planned by the committee.

## Conclusion

Nearly 70 years have passed yet many of the Hindu refugees from East Pakistan settled in Bihar are yet to be granted land and have no source of Income. These people are still fighting for their identity and status. As SekharBandopadhyay(2022) has discussed extensively, these poor refugee castes are a major concern. And in such a caste-conscious state as Bihar, they are still fighting for their caste certificate.

Vijay Swaroop's recent article on the life of these settled refugees in Bihar provides vivid descriptions about the grim lives of these refugees-<sup>46</sup>

*"Seventy-eight-year-old Anil Havildar is disconsolate. He points to his field, which had once won him the badge of a successful farmer from the Bihar government. He had grown a record 492 quintals of rice in one acre, in 1977. But for this man, who resettled at Biranchitola number 3 colony, one among 46 other East Pakistani Hindu refugee colonies in west Champaram – life is not the same. A flooded Manihari River left piles of sand on his farm and destroyed his fields and his pride. Havildar, who made his way here in 1956, is a broken man after losing four acres of land which are either filled with sand or have been*

*eroded by the river. "Nobody from the government has come here. I am virtually landless," he says.*

Finally, I would like to conclude with the argument that the idea of Nehruvian Development encouraged the dispersion of Refugees to various centres all over India but was not able to take care of the basic needs of these refugees. In the beginning, they were seen as the building blocks of the nation, but they were left on their own for a few years to survive. Some of them migrated back to Calcutta, whereas some managed to survive.

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## प्रवासी कविता में अभिव्यक्त भावों का विश्लेषण

रमन कुमार\*



### सारांश

**बीज शब्द:** सारगंभीरता,  
दृष्टिकोण, दिवंगत,  
डायस्पोरा, गिरमिटिया,  
लयबद्ध, मुक्तावस्था,  
ज्ञानदशा, मुक्तसाधना,  
उच्छलन, एग्रीमेंट, अत्यधिक,  
अग्रसर, अलंकार धर्मिता,  
बहुसंख्या।

शोध सार रूभारत के वे लोग जो अपना जीवन यापन करने के लिए और अच्छी नौकरी की चाहत में विदेशों की ओर चल दिए थे, किंतु वहां पहुंचने पर न तो अच्छा काम मिल सका और न ही सम्मान। विदेशी जमीन पहुंचने पर इनके साथ तरह-तरह के अमानवीय व्यवहार किए गए। इन्हें शारीरिक व मानसिक रूप से प्रताड़ित किया गया। इस तरह के कठोर संघर्षों के बीच उन्होंने वहां जो कुछ भोगा, उसे उन्होंने अपनी लेखनी के माध्यम से बयां करने का प्रयास किया। इस प्रयास ने उन्हें लेखक की श्रेणी में लाकर खड़ा कर दिया। अब कई दशकों से जो भारतीय विदेशों में रह रहे हैं। वे वहां रहते हुए अपने देश की सभ्यता संस्कृति धर्म रीति-रिवाजों को भूल ना सके। यदा-कदा उन्हें यह सब कुछ याद आ ही जाता है। वे न तो भारत की मिट्टी को भूल सके और न ही भारतीय जनमानस के हृदय की स्वाभाविक चेतना को। यह सब कुछ हमें उनकी लेखनी में दिखाई भी देता है। प्रवासी साहित्य के अंतर्गत कहानी उपन्यास संस्मरण समीक्षा आलोचना इत्यादि विधाएं लिखी गई हैं, कविता विधा भी उनमें से एक हैं। माना जाता है कि कविता अपनी बात को कहने का सरल, सूक्ष्म एवं सटीक माध्यम है। प्रवासी साहित्य कविता लेखन में कवियों एवं कवयित्रियों का समान-सा अधिकार रहा है। किंतु इस शोध-आलेख में प्रवासी कवयित्रियों को ही उल्लेखित किया गया है।

प्रवासी हिंदी साहित्य ने भारतीय हिंदी साहित्य को एक विस्तृत आयाम प्रदान किया है। आज भारत के अधिकांश विश्वविद्यालयों में प्रवासी साहित्य पर शोध कार्य किए जा

रहे हैं। भारत के कुछ विश्वविद्यालयों में तो प्रवासी साहित्य को और अधिक जानने-समझने के लिए अलग से ही विभाग बना दिए गए हैं। इन सबके बावजूद एक सत्य यह भी है

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कि प्रवासी साहित्य को, इसकी प्रवृत्तियों को और इसके लेखन के उद्देश्य को बहुत कम लोग जानते हैं।

प्रवासी साहित्य के अर्थ और उसकी सारगंभीरता को लेकर साहित्यिक विचारकों में मतभेद है। इसका मूल कारण है साहित्यिक विद्वानों ने इसको अपने-अपने स्तर पर बांधने का प्रयास किया है। इसे लेकर सभी के भिन्न-भिन्न मत हैं। लेकिन अभी तक ऐसी कोई परिभाषा नज़र नहीं आती, जिसमें सम्पूर्ण प्रवासी साहित्य व्यवस्थित रूप में बंधा हुआ प्रतीत हो। उदाहरणतः— प्रवासी साहित्य के संदर्भ में ऑक्सफोर्ड डिक्शनरी में लिखा है— “। चतेवदीव स्मंअमे भे ब्नदजतल ज्व स्पअम प्द ।दवजीमत.”<sup>1</sup> डॉ. रेखा गौतम लिखती है— “प्रवासी लेखक का संवेदन संस्कार के रूप में अपने नए परिवेश को ग्रहण करता है। परिवेश बदल जाने से प्रवासी के जीवन में विशेषताएँ और जटिलताएँ आती हैं। जिस कारण उसके नए संस्कार, नया दृष्टिकोण, नए विचार, नई सोच और नई मान्यताएँ बनने लगती हैं। इन परिवेशों की परिस्थितियों को वे अपनी रचना का विषय बनाते हैं। इनके द्वारा रचित साहित्य प्रवासी साहित्य कहलाता है।”<sup>2</sup> डॉ. विदुषी शर्मा के अनुसार— “प्रवासी साहित्य का अर्थ है भारत के अतिरिक्त कहीं और निवास करने वाले भारतीय ये मूल रूप से भारतीय हैं, परंतु उन्होंने अपनी कर्मभूमि विदेशों में बनाई है या इन्हें बनानी पड़ी है। इन भारतीयों के द्वारा जिस हिन्दी साहित्य की रचना की जाती है, वह प्रवासी हिन्दी साहित्य कहलाता है।”<sup>3</sup> ब्रिटेन प्रवासी लेखिका कादम्बरी मेहरा अपने अलग ही अंदाज में प्रवासी साहित्य को परिभाषित करते हुए लिखती हैं— “प्रवासी लेखक अपने अतीत से प्रेरित दिवंगत विषयों पर कहानियाँ लिख रहे हैं, जबकि भारत उनमें उभर चुका है, हो सकता है कि यह किसी को अखरता हो, क्योंकि कुछ लोग दिवंगत को नहीं जानना चाहते परंतु हम प्रवासी जिस भारत द्वारा निर्मित हैं उसे फटी कमीज की तरह कैसे उतार फेंक दें।

वह बचपन, वह तरुणाई, वह परिवार प्रेम जो हमें वीरान कर इस कर्म क्षेत्र में साधे रहा, जिस भारत में हमारे भेदभाव सृजित हैं। आज वह तीस-चालीस साल बाद भी जीवित है।”<sup>4</sup> ऐसी अनेक परिभाषाएँ हैं जो प्रवासी साहित्य को परिभाषित करती हैं। लेकिन इन सब परिभाषाओं में कुछ बातें कॉमन हैं, जैसे भारत के वे लोग जो किसी कारणवश अपना व अपने अपने परिवार का जीवनयापन करने के लिए विदेशों में जाकर बस गए थे और उन्होंने वहाँ रहकर भारत की स्मृतियों को याद करते हुए हिन्दी की जिस भी विधा में लिखा, वही प्रवासी हिन्दी साहित्य कहलाया है। इसे डायस्पोरा और गिरमिया साहित्य भी कहा जा सकता है।

प्रवासी साहित्य को कविता विधा ने अधिक सशक्त किया है। कविता लेखन में प्रवासी महिलाओं के योगदान को भुलाया नहीं जा सकता है। कविता का शाब्दिक अर्थ है—वह काव्यात्मक रचना या कृति जिसे कोई रचनाकर (कवि) छंदों के माध्यम और लयबद्ध तरीके से अपनी बात कहता है, यही बात करने की शैली कविता बन जाती है। प्रवासी कविता के अर्थबोध की बात की जाए तो यह प्रवासी साहित्य की सभी परिभाषाओं को अपने भीतर समाहित करती है। आचार्य रामचन्द्र शुक्ल अनुसार— “जिस प्रकार आत्मा की मुक्तावस्था ज्ञानदशा कहलाती है, हृदय की इसी मुक्तसाधना के लिए मनुष्य कीवाणी जो शब्द-विधान करती आई है, उसे कविता कहते हैं।”<sup>5</sup> हम सुनने-समझने के साथ जो प्रक्रिया व्यक्त करते हैं, उसे भाव कहते हैं। क्रोध, हास्य, क्रंदन, आदि भाव के अंग हैं। भावों से विहीन व्यक्ति, व्यक्ति नहीं हो सकता और साहित्य, साहित्य नहीं हो सकता। तभी वड्सवर्थ कहते हैं— कविता मनोवेगों का सहज उच्छलन है।

ब्रिटिश शासन काल के दौरान अंग्रेज़ एग्रीमेंट पर अनुबंध करार करके भारतीयों को अपने साथ काम करने

के लिए ले जाते थे, भारतीय मजदूरों को वहाँ पहुँचते ही उनके साथ शोषण होना शुरू होता जाता था। उनके पासपोर्ट छिन लिए जाते थे, उन्हें मारा-पीटा जाता था, इनके अलावा उनके साथ अनेक अमानवीय व्यवहार किए जाते थे। वहाँ काफी समय तक उनकी जिंदगी पशुओं से भी बदतर थी। अधिकांश भारतीयों के साथ शोषण की प्रक्रिया भारत से विदेश जाने वाले जहाजों में शुरू हो जाती थी। इस शोषण से हारकर कुछ मजदूर तो बीच रास्ते में ही अपनी जिंदगी की जंग हार जाते थे तो कुछ वहाँ पहुँचकर। इनके अलावा जो बचते थे, वे अत्यंत कठिनाइयों एवं संघर्षों के साथ अपना जीवन निर्वहन करते थे। अमरजीत कौर गिरमिया मजदूरों की पीड़ा को अपनी कविता 'गिरमिट' में कुछ इस प्रकार व्यक्त करती है कि—

“तन—मन हमारा तड़पे पापी  
भए न सुंदर लहंगा  
न नथनी न चमके चुनरी  
जोबन पद गया महंगा  
सड़ा सरदार जब सिर पर छाए  
विष पी मैं मर जाऊं  
छुरी कतार से पार उतारू  
या बंधी संग हेंगा।”<sup>6</sup>

भारतीय मजदूरों से वे सारे कार्य करवाए जाते थे, जो कार्य करने में मशीनें भी असमर्थ थी या जिन कार्यों को करने में जान जाने का जोखिम बना रहता था। कमला प्रसाद मिश्र 'गिरमिट की घटना' में 'रामसामी' पात्र के माध्यम से यह बताने का प्रयास करती है कि वहाँ के मालिक—मालकिन उनपर किस—किस प्रकार से शोषण करते हैं— घोड़े के गिर जाने पर उसके पैर की मालिस करना, मालिक को कहीं पर खतरा महसूस हो तो पहले अपने नौकर को आगे कर देना, यह सब मालिकाना व्यवहार में

साफ झलकता था। उदाहरणतः — “उठो रामसामी / चलो रामसामी ... / नहाऊँगी मैं किन्तु गहरी नदी है / बड़ा शाक पानी में डूबा अभी है / जरा तुम पानी में हलो रामसामी.. . / अरे नाच घर में आग जल रहा है / धुआँ किस तरह फैलता चल रहा है / बुझाओ इसे या जलो रामसामी / जले है कढ़ाई में आलू के टुकड़े / न चमचा यहाँ कि टुकड़ों को उल्टे / तुम हाथ से अब तलो रामसामी।”<sup>7</sup> यह कविता रामसामी के माध्यम से समस्त गिरमिटिया मजदूरों की दयनीय स्थिति का चित्रांकन करती है। भारतीय मजदूरों को अब तक इस बात का एहसास हो चुका था कि मालिकों पर इनके दुख—दर्द का कोई असर नहीं होता है, बल्कि ये तो इनके क्रंदन को सुनकर अत्यधिक खुश हो जाते हैं।

प्रवासी जीवन व्यतीत कर रहे भारतीय दिनभर की मेहनत से थक—हारकर जब शाम को घर लोटते हैं तो वे आराम के कुछ क्षणों में उन खुशी भरे लम्हों को याद करते हैं, जो कभी उन्होंने भारतीय सरजमीं पर बिताए थे। याद करते हैं कि वे कैसे रोजी—रोटी की खातिर अपना घरबार, गाँव और देश छोड़कर विदेशी जमीं पर आकर बस गए और यहीं के होकर रह गए। इस बीच उन्होंने क्या खोया और क्या पाया? कभी—कभी एकांत में आत्ममंथन भी करते हैं। उन्हें इस बात का एहसास हो चुका था कि यहाँ आने पर उन्होंने पैसा तो बहुत कमाया, लेकिन उनका बहुत कुछ छुट भी गया। भाई—बहन, माता—पिता, पति—पत्नी ये रिश्ते तो छूटे ही साथी ही छुट गयी गाँव की पगडंडी, मित्रों संग हसीं—ठिठोली, नदी का नहान, वो जामुन के पेड़, ऐसे ही न जाने कितने कीमती लम्हें छुट गए और रह गयी सिर्फ यादें।

दिव्या माथुर का 'ख्याल तेरा' कविता संग्रह प्रेमपरक है। कवयित्री इस कविता संग्रह में प्रिय मिलन के ख्यालों को विविध रूपों में व्यक्त करती है। प्रिय मिलन की तड़प

उसके मन को इतना व्याकुल कर देती है कि अब उसकी इच्छा है— प्रिय बादल के समान बनकर आए और अपने प्रेम की वर्षा से उसे इतना तृप्त कर दे जैसे बुँदे प्यासी धरती को करती हैं। यदि दिव्या माथुर के इस कविता संग्रह के संदर्भ में कहूँ तो इस संग्रह की अधिकांश कविताएं प्रकृति के प्रतिकों के माध्यम से प्रेम को अभिव्यक्त करती हैं। जैसे— कविता 'सौंधी मिट्टी', 'पतझड़', 'जलतरंग', 'गूंगे के गुड़ सा', 'गुलदस्ता', 'भँवरा', 'हिरण', 'अमावस', 'पुर्णिमा', 'लहर', 'मोर' आदि। कवयित्री ने अपने दूसरे कविता संग्रह '11 सितंबर' में न्यूयॉर्क में हुए आतंकी हमले का जिक्र किया है। इस कविता संग्रह के माध्यम से कवयित्री ने यह बताने का प्रयास किया है कि आतंकवाद का कोई देश, कोई धर्म या दिन—ईमान नहीं होता है। यह किसी का भी लहू बहा सकता है। इसका एकमात्र उद्देश्य होता है— आतंकवाद को बढ़ावा देना। इस संग्रह की कविताएं 'इतिहास', 'जंग', 'हाजरी', 'मर्सिया', 'कायर', 'आतंकवाद का सिलसिला', 'ओसामा बिन लादेन' आदि ऐसी कविताएं हैं, जो आतंकवाद की परतें खोलती हैं और मानव को मानवता का पाठ पढ़ाती हैं।

मालती रामबली 'जीवन की रोटी' कविता के माध्यम से यह बताने का प्रयास करती है कि हमारा जीवन भी रोटी के समान ही है। जैसे रोटी कभी मुलायम तो कभी कड़क बन जाती है, ठीक वैसे ही जीवन में भी अनेक उतार—चढ़ावों का सामना करना पड़ता है। जीवन में कई बार कठिनाइयों का सामना करना पड़ता है तो कई बार मन खुशियों से सराबोर हो उठता है। लेकिन सुख की एक प्रक्रिया के पश्चात दुखों का आना भी स्वाभाविक है। ऐसा समय भी आता है जब मेहनत व्यर्थ जान पड़ती है, ऐसी स्थिति में हमें हिम्मत हारने के बजाय निरंतर मेहनत करते रहनी चाहिए। ऐसा करने से— "जीवन की रोटी खिल उठेगी जब / प्यार और मेहनत से / गूँधता है आटा / सद्गुणों

का पानी मिलाकर / खुशियों की मिठास लाती / जीवन की यह रोटी।"<sup>8</sup> 'नारी' कविता में कवयित्री ने यह बताने का प्रयास किया है कि नारी तितली की भांति कोमल दिखती है, लेकिन यह पत्थर—सी मजबूत होती है। यह स्वयं टूटकर घर, परिवार और समाज को जोड़ने का कार्य करती आ रही है। कवयित्री पुरुष सत्ता समाज को आह्वान करती है कि इनका इतना शोषण भी न करो कि ये स्वयं को विपरीत साँचे में ढाल ले। यदि ऐसा हुआ तो—

“यह बन सकती है बाढ़  
या तूफान बनाकर नष्ट कर सकती  
सारा जग महान।”<sup>9</sup>

चंपा विशिष्ट मुनि की कविता 'शरणागति' समाज को यह समझाने का प्रयास करती है कि हमें विषम परिस्थितियों में एक—दूसरे का हाथ थामे रखना चाहिए, हमें एक—दूसरे का साथ कभी नहीं छोड़ना चाहिए। यदि आपकी शरण में कोई व्यक्ति आता है तो उसका सम्मान करने के साथ उसकी उचित सहायता करनी चाहिए—

“यह सुन बोली मैं जीओ अब इस नन्हें के लिए  
तमन्ना बुलंद रखो इसके भविष्य के लिए  
मेरे घर में आज से तू बनेगी मेरी सहायक  
मेरी शरण में फलों तू और तेरा बालक।”<sup>10</sup>

माँ की स्मृति में लिखी गयी कविता 'शामला दुखन' मातृत्व के सरोकार को उभारती है। व्यक्ति जब अत्यंत दुख—दर्द—पीड़ा से जूझ रहा होता है तब माँ और माँ का साया ही याद आता है। हमारी कराह में भी माँ शब्द सर्वप्रथम निकलता है। प्रवासी जीवन व्यतीत कर रही चंपा विशिष्ट मुनि भी माँ को इसी रूप में याद कराते हुए लिखती है कि— “आपने प्यार का बौछार हम पर बरसाया / धरती की गोदने समेट ली आपकी यादगार काया / रह गयीं अब सिर्फ आप की यादगार साया।”<sup>11</sup> 'जैसा देश वैसा

भेष', इस कहावत को विदेश में गए भारतीयों ने अपना तो लिया है, लेकिन वे अपनी सभ्यता, संस्कृति, रीति-रिवाज, तीज-त्यौहार और सामाजिक परम्पराएँ नहीं भूले हैं। आज भारतीय त्यौहारों को भारत ही नहीं अपितु विदेशों में भी मनाया जाता है।

इनकी कविताएँ प्रकृति प्रेम को दर्शाती हैं। बादल, झरने, पाहड़, हवा, वर्षा, समुद्र, लहरे, वृक्ष ऐसे ही न जाने कितने प्राकृतिक तत्वों का जिक्र इन कवयित्रियों की कविताओं में दिखाई देता है। शामला दुखन अपनी कविता 'जब उषा आई' में प्राकृतिक सौंदर्य का वर्णन करती हुई लिखती है कि— "पर्दा हटाया, बाहर देखा तो / क्या दृश्य रचयिता ने रचाया। / पहाड़ की माला दूर-दूर तक दिखाई दी। ..हलकी हवा में उड़ती आई / उषा की मीठी महक, सब को जगाया / अम्बर में दुलहा, दुलहन के माथे पार सिन्दूर लगाया। / सिन्दूरी रंग की साड़ी दुलहन पहनी थी। / बादल दुलहे ने, दुलहन का बाल बिखराया / दोनों से सुबह में अद्भुत नृत्य दिखाया।"<sup>12</sup> प्रकृति चित्रण के ऐसे ही अनेक उदाहरण अधिकांश कवयित्रियों की कावताओं में दिखाई देते हैं।

अंततः कहा जा सकता है कि प्रवासी मजदूरों ने विदेशी जमीं पर जिस पीड़ा को सहा, महसूस किया, मालिक और नौकर के बीच वास्तविक स्थिति का जो कड़वा अनुभव ग्रहण किया और इनके अलावा वे तमाम शोषण, जिनकी वजह से भारतीय मजदूर चैन से कभी सो न सके, उन कारणों को भारतीय प्रवासी लेखिकाएँ अपनी लेखनी के माध्यम से हम सबके सामने लाती हैं। इनके लेखन में दर्द, पीड़ा, चीख-चीत्कार, आक्रोश तो है ही साथ में जीवन में नवपरिवर्तन की आश भी है। प्रवासी हिंदी साहित्य के अंतर्गत काव्य की भाषा से संबंधित बात की जाए तो प्रवासी हिंदी काव्य में लोकगीतों का प्रयोग बहुत ही सुंदर ढंग से किया गया है। प्रवासी कविताओं में हिंदी के साथ संस्कृ

त, अरबी, फारसी, उर्दू, अंग्रेजी, पंजाबी, भोजपुरी, गुजरती, मराठी आदि भाषाओं के शब्द देखने को मिल जाते हैं। प्रवासी हिंदी काव्य की भाषा— सहज, सरल एवं स्वाभाविक बोलचाल की भाषा है। इसको विभिन्न भारतीय भाषाओं के शब्दों के समावेश के बावजूद आसानी से समझा जा सकता है। इसमें प्रतिकात्मकता, चित्रात्मकता, संक्षिप्तता, मुहावरों—कहावतों और अलंकार धर्मिता के बेजोड़ उदाहरण देखने को मिलते हैं। लेकिन इन सबके बावजूद शाब्दिक त्रुटियाँ कहीं—कहीं देखने को मिल जाती है। इन त्रुटियों को दूर करते हुए प्रवासी हिंदी भाषा निरंतर सुधार की ओर अग्रसर है। यह बात भारत व हिंदी भाषा को और अधिक गौरवान्वित करती है कि प्रवासी हिंदी साहित्य को बढ़ाने में प्रवासी लेखकों के साथ लेखिकाओं ने भी अपना अहम योगदान दिया है। प्रवासी लेखक—लेखिकाओं के मिलेजुले लेखन का यह परिणाम हुआ है कि आज हिंदी को जानने—समझने—पढ़ने वाले भारत में ही नहीं हैं बल्कि विदेशों में भी बहुसंख्या में मिलते हैं।

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## INSTRUCTIONS FOR AUTHORS

1. Triplicate copies of manuscripts typed in English/Hindi on one side of the A4 size paper should be submitted along with an abstract not more than 200 words. The length of a paper including tables, diagrams, illustration etc. should be between 3000 to 5000 words. Papers/ articles should be original & unpublished contribution. Papers should be accompanied by a declaration that the material is original, has not been published elsewhere in part or full and the same has not been submitted for publication in any other book or journal or elsewhere. Leave the margin of at least one inch on all sides of paper and one & half inches on left side of the paper. Electronic version of the paper must accompany CD-ROM in MS-Word document format and it should be identical in all respect of the hard copy. Paper without CD will be rejected. Electronic copy must sent to the given E-mail addresses. Article must be in MS-Word in Times New Roman/Hindi Kruti Dev 010 in font size 12. Refused articles/papers will not returned if the self-addressed and Rs. 50/- stamped envelope not attached with paper.
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4. The paper once submitted to this journal should not be resubmitted simultaneously to other journals of else when for consideration.
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6. Footnotes in the text should be numbered consecutively in plain Arabic superscripts. All the footnotes, if any, should be typed under the heading 'Footnotes' at the end of the paper immediately after 'Conclusion'.
7. For citation of books (a) the author's name should be followed by the (b) title of the book (c) year of publication or edition or both (d) page number (e) name of publishers and place of publication.
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### **(i) Books**

- \* Malik, A.P. (1998) Education Policy and Perspective. New Delhi: Allied.

### **(ii) Journal**

- \* Majumdar, Ramesh (1997) "The Role of the Society", Journal of Educational Views, 1 (3 & 4), July-October, pp. 1-11.

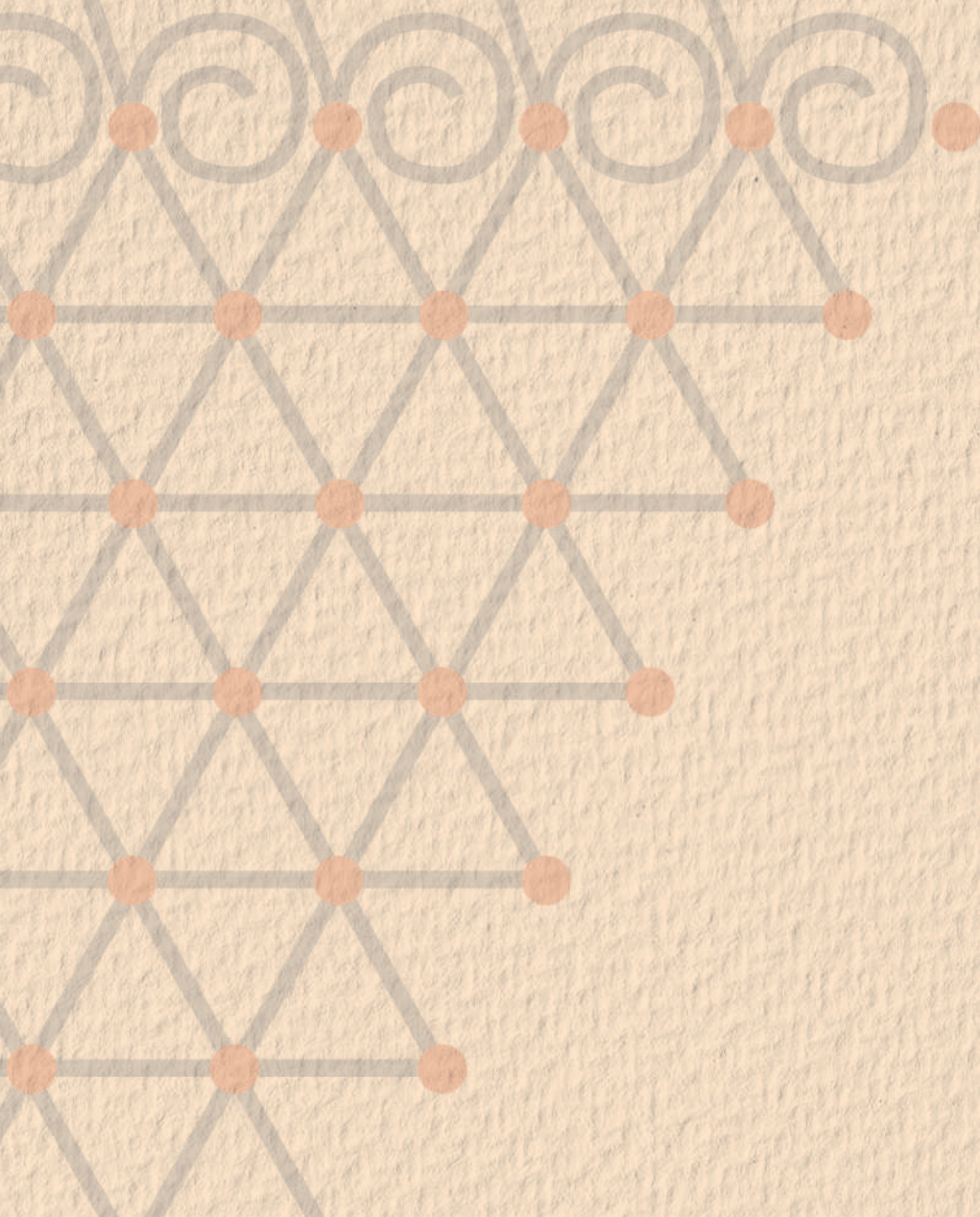
### **(iii) Others types**

- \* Ganeshan, P.R. (1989) "Educational Finances in a Federal Government", Seminar on Mobilisation of Additional Resources for Education. New Delhi: National Institute of Economic Planning (mimeo).
- \* Saley, Hans (1996) "Perspective of Education: An Internal View", in Abdul Raza (ed.) Educational Policy: A Long Terms Perspective. New Delhi: Concept, for the National Institute of Law and Administration, pp. 70-92.



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# INTELLECTUAL RESONANCE

DCAC JOURNAL OF  
INTERDISCIPLINARY STUDIES

*(Double Blind Peer Reviewed)*

Dec 2022, Volume 5

DELHI COLLEGE OF ARTS & COMMERCE

(UNIVERSITY OF DELHI)

NETAJI NAGAR, NEW DELHI-110023



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## *About Intellectual Resonance*

### **DCAC JOURNAL OF INTERDISCIPLINARY STUDIES**

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The DCAC Research Journal *Intellectual Resonance* is an annual interdisciplinary, double-blind peer-reviewed journal that provides Faculty and Research Scholars an academic space to submit their unpublished research papers, book reviews, and research essays for publication. The Journal caters to the disciplines of Humanities and Social Sciences and is published in English. The Journal was started in 2013, with ISSN: 2321-2594. The Journal has an Editorial Advisory Board comprising scholars from Indian and Foreign Universities and Institutions. The Editorial Board comprises Prof. Rajiv Chopra, Principal DCAC, as the Editor-in-Chief and Dr. Smita Banerjee, Associate Professor, English Department as Editor, along with a few other faculty members of the College as Members. The interdisciplinary foci of the Journal enable dialogues and convergences across disciplinary domains ranging from Literature, Cinema, Finance, Public Policy, Media and Cultural Studies, Communication Studies, History, Marketing, and allied subjects to name just a few. This diversity and range provides the readers and researchers a vibrant and rigorous academic opportunity for fostering critical thinking and participate in creating new areas of interdisciplinary research and knowledge dissemination.

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Delhi College of Arts & Commerce is located in the quiet and peaceful enclave of Netaji Nagar in South Delhi. The College began its journey as a Liberal Arts & Commerce College in the year 1987. It is a co-educational constituent College of the University of Delhi. This College was a pioneer in offering an undergraduate course in Journalism Honours in the University of Delhi in the year 1989. At present, it offers Bachelor Honours courses in Journalism, English, Commerce, Political Science, History, Economics and B.A. (Prog.) and B.Com.

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## EDITORIAL

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It is with immense pride that we are presenting this issue of Intellectual Resonance: Annual Interdisciplinary Double-Blind Peer Reviewed, the DCAC Research Journal, ISSN: 2321-2594, Volume 5 for December 2022.

This issue carries ten Original Articles, one Research Essay and two Book Reviews. The articles carry interesting insights from various disciplines Social Sciences and Humanities.

The first two articles engage with pedagogical concerns regarding gender and the English curriculum as well as talking about historical experience, subjectivity and consciousness in contemporary graphic narratives from India. The next set of articles engage with significant insights that have emerged in the wake of the Covid-19 pandemic and its implications for patent waivers and leadership challenges during this difficult time.

This issue carries articles where the authors discuss a wide range of interventions which focus on industrial regulations and contractualisation from the early 1990s to emerging trends in virtual marketing and digital accounting systems, as well as reviewing the significant role of public sector banks in India.

The last set of articles foreground the troubled aspect of terrorism and narco-terrorism in the context of India and Myanmar, as well as glimpses of deconstructing poetic voices that arose in Sri Lanka during the troubled times of the armed conflict of the island nation.

In the research essay, we get a view about the fluidity of concerns governing the possibility of intersectionality as a theoretical framework to understand biographies of sex work and sex workers. We also look

at two interesting book reviews that draw upon biographies of Kathy Acker and Nariman Karkaria whose exploits during the first World war make for a very engaging read.

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# COUNTERING PREJUDICE, CREATING RESILIENCE: CONCERNS IN DEVELOPING GENDER SENSITIVE ENGLISH CURRICULUM

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## **Abstract**

The pandemic has acted as a critical event which has necessitated digital education on a hitherto unprecedented scale. At the same time, it has triggered and exacerbated anxiety and other mental health issues in an alarming manner and stretched people's -both children and adults'-coping mechanisms to the limit. In this context, language education is not just about learning to use a language to listen, speak, read and write the language but also about imparting life skills. The National Education Policy (NEP) advocates the curricular inclusion of inculcating psycho-social skills and aims to encourage holistic growth. In this context, the texts chosen are of utmost importance: at multiple academic levels-primary and middle school, high school, and college, in tertiary education sectors, as well as the ways in which we use the text to raise important and pertinent questions in the classroom. This article cites selective school textbooks for English to indicate the kind of study material, which is value based and gender sensitive, without being overly moralistic or preachy. At the same time, it will also attempt to suggest ways of creating workbooks/sheets which enable and encourage an active engagement with the text, while being alert to the risk of biases which tend to creep in. This essay is based on classroom exercises of English language and literature learning and pedagogy. It is partly founded on empirical research based on school workshops that I conducted and participated in.

**Keywords:** Literature Curriculum, Ethical Concerns, Pedagogy, Gender, Dialogue.

## **Introduction and Context**

Without reiterating a cliched humanistic notion about the hallowed function of literature and what the literary can achieve, or how it could substitute for religion, the paper argues that literature imbues

us with greater empathy and at the same time, can give us emotional resilience. As an academic who is most comfortable working at the intersection of literature and gender, English teaching brings with it the responsibility to promote not only language competence but also something that brings with it a basket of concerns which could perhaps be classified as ethical, affective and political.

In English teaching, whether at the school and college level, we find that texts we choose for our curricula are extremely important as well as the way we teach it. In the context of higher education there might ensue a battle of the books of the kind that was witnessed in the Learning Outcome Curriculum Framework (LOCF) syllabus introduced in Delhi University in 2021, apropos the English syllabus. The significance of choosing particular texts and determining the way they are transacted becomes even more important in the context of school textbooks, given the fact that some of the centralized boards cater to a wide cross-section of heterogeneous students across the social spectrum. This heterogeneity may also translate into lack of access to digital education for students who can hardly acquire a smartphone, much less a computer. The five observations in this paper are mostly based on an experience when I was briefly involved in a consultative capacity with a well-known publisher involved in writing/editing English textbooks for Grades 1-8 for the ICSE about four years ago. I was asked to investigate aspects of content, choice of texts as well the exercises framed around the text to mobilize and energize language learning. Gender, social differences, political correctness, both the metatext and subtext in a sense, came under our purview.

To energize and ensure language learning, the publishers also designed accompanying workbooks with writing exercises that could guide teachers as well as ensure engaged pedagogy and a system of learning by doing. I will here draw on a particular story that was taught and transacted at the middle-school level and in a sense, present a case history of what we-as teachers could suggest leading to an active and sustained engagement with the text. However, before I foreground the text and exercises to stimulate language learning, there are a few issues that one needs to keep in mind, perhaps a statutory warning that “our school textbooks cannot pretend” that they exist in isolation from social inequalities and that these inequalities do not “permeate them” (Nawani, *Indian Express*, Dec 1, 2021)

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## Concerns

In an earlier article, Disha Nawani, a Professor of Education at TISS, had expressed skepticism about the “joy of learning” saying that the joy of learning lies not in creating song and dance but about “creating a positive ecosystem that facilitates participatory education and teaches how to derive pleasure from the process of learning” (Nawani, *Indian Express*, Sept. 16 2021) In many instances these days we see a certain level of hate culture being peddled in social media through vicious trolling.

Underlying such actions/events are “deep rooted prejudices, stereotypes, expressions of self-righteousness, mistrust and hatred for those who are different from us-in terms of religion, gender, caste and class” (ibid). The author goes on to argue that schools do not exist in isolation but are a microcosm of the society around us. Thus, if there are rifts and “cleavages” in society, they will get reflected in schools. As an example, Nawani suggests that the experiences of a Dalit girl or a Brahmin boy would be different, even if the school happened to be the same. This is to emphasize that the subjective matrix of the experience cannot be dismissed. It is inevitable that the social reality outside of school would also impinge upon and impact, at an overt or covert level, what the learner experiences in school. An apparently innocuous issue like dropping last (often caste) names has different implications for an upper caste/class person and a lower caste/class person. Similarly, the upper caste person has the liberty to overlook caste difference though the obverse does not hold true.

In other contexts, too, it could be advocated that school education should be responsive to specific experiences. To suggest an example, many schoolchildren have lost at least one parent during the pandemic. Thus, at the most basic level, the textbook could tweak the idea of the normative family and give instances of caregiving by other family members or friends. Instead, there is often a tendency to impose a “one size fits all” picture of a prescriptive family, which may be different from a description of more flexible notions of family. The other issue is also the way many traditional textbooks visualize women (mother as a lady in a sari with hair in a bun) and gendered labour (Bhog 2002, 2011). Here, one can cite the importance of nursery rhymes and the stories they tell and the subliminal messages they carry.

Nawani in this context foregrounds other issues. In imposing a homogeneous set of expectations on the students, the school takes no note of stratification or diversity. The child's experiences are not allowed into the schoolroom. Moreover, representations of other cultures are done in a skewed way, their specificities either ignored or misrepresented. The school textbook consciously or otherwise, replicates patterns of discrimination which prevail outside. Lower castes or Dalits, disablism or trans-identities, minority cultures and practices tend to be represented in a poor light or in a tokenistic way.

In seeking to educate school pupils in the Humanities, we often become more dehumanized. This happens when we endorse the sacrifice of an "Eklavya" who gave his thumb to Dronacharya as "gurudakshina," rather than calling it out as an act of gross injustice and condemning it. Instead of interrogating Brahminical hegemony, we are upholding it. Similarly, every time we extol and glorify Sita's or any instance of maternal sacrifice, we are condoning gender injustice. The worldview that gets shaped explicitly holding up "one nation, one world." But the collectivity, the "we" it manufactures and creates, is a deeply fractured one. In all this, a child who experiences discrimination on a daily basis-the dalit, Muslim or tribal -runs the risk of having their everyday experiences negated and invalidated. As Nawani puts it, "prejudice becomes our lens, shaping the way we look at the world and others around us" (*Indian Express*, Dec1, 2021).

### **The New Education Policy**

The National Education Policy (hereafter NEP) document in its vision statement aims to identify and "foster the unique capabilities of each student, by sensitizing teachers as well as parents to promote students' holistic development in both academic and non-academic spheres. It also aims to promote flexibility so that learners could choose their own learning trajectories according to their talents and interests" without differentiating or drawing sharp lines between curricular and extra-curricular and creating silos between different areas of learning-the sciences, social sciences arts, humanities, and sports for a multidisciplinary and holistic education. It proposes to focus on promoting conceptual understanding rather than focusing on rote knowledge, innovation rather than regurgitative learning. Its stated intention is to encourage and foster/promote ethics, human and constitutional values like empathy, respect for others, cleanliness, courtesy, democratic spirit and a spirit



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of service, respect for public property, scientific temper, liberty, responsibility, pluralism, equality, and justice. It also aims to promote multilingualism with a view to communicate the power of language in teaching and learning processes.

Significantly, the NEP document also stresses on the importance of imbibing life skills such as communication, cooperation, teamwork, and resilience. Significantly, it articulates a resolve to respect diversity and the local context in all curricula, pedagogy, and policy.” Beyond diversity, it also pledges to respect values of equity, inclusion as the cornerstone of all educational decisions to ensure that all students thrive in the educational system. Moreover, the NEP document flags its concern with creating synergy in curriculum across all levels of education from early childhood care to school to higher educational institutions. Among other components it intends to encourage the pursuit, not of rote learning, but innovation and creativity in the teaching-learning project. It is on these ideas about innovation and out of the -box pedagogic methods that I now turn to.

Thinking about education has also been necessitated by the pandemic which has introduced and in fact, made digital education a possible and innovative way forward. And yet digital education is a challenge not easy to overcome, given our demographics, differential access to technology, smartphones and computers. These issues plague students and pose serious impediments and challenges to the teaching-learning process. Further, excessive screen time and work from home creates its own stresses that both teachers and students have to contend with. How can we promote language learning along with the values envisioned by the NEP document?

### **Designing Textbooks /Workbooks towards engaged pedagogy**

In order to address some of these concerns that I have flagged in the previous section, I draw upon Mahashweta Devi’s short story, ‘The Why-Why Girl’.

In this story the protagonist, Moyna who is a “shobor”, a girl from a tribal community lives in a village. She displays boundless curiosity about anything and everything and displays a questioning spirit. In the village Samiti (a collective where the author also worked) school and in the context of her home and community, she stands out for the

probing nature of the questions asked by her. Some of these are both fundamental and foundational, not only her curiosity about natural processes but also social structure and relationships. In the first instance, Moyna asks why she cannot eat all kinds of snakes. The author tells her that not all snakes are edible. I would analyze this as a clever narrative manoeuvre, since this account makes space for naturalizing and even domesticating difference, without any comment about the social groups that hunt, forage and cook different kinds of food and meat. Though her poverty is not highlighted, it comes up in the context of her other questions when she asks why she cannot eat rice twice a day and why she cannot go to school in the morning but has to work for the village “zamindar” or landlord. Instead of accepting hierarchies and embodying an attitude of resignation, Moyna persists in asking some probing and sometimes uncomfortable questions.

Thus, she asks why the landlord/zamindar’s sons cannot do the work of herding animals, but have to have her, Moyna, or her brother do the work. The point about Moyna’s active mind, her refusal of any stance of passive acceptance of or passive acquiescence in the status quo is clearly illustrated by the author, Mahashweta Devi.

The task for the teacher is to enhance understanding, help to develop language competence and promote certain positive values like integrity and moral courage. Following the NEP vision document, parts of which have been quoted above, pedagogy would involve imparting and imbibing both certain life skills as well as criticality. What are the tasks that could be set in order to promote “conceptual understanding rather than focusing on rote knowledge, innovation rather than regurgitative learning”. How can the story be deployed “to encourage and foster/promote ethics, human and constitutional values like empathy, respect for others, cleanliness, courtesy, democratic spirit and a spirit of service, respect for public property, scientific temper, liberty, responsibility, pluralism, equality and justice”, communicate life skills, cooperation and innovation?

Invoking Paulo Freire’s (1968) idea of the pedagogy of the oppressed, a foundational text of critical pedagogy, I would argue that Moyna takes the first steps in questioning and critically reflecting on her situation and oppression. As an educator, one way of going forward with this story

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may be to suggest and devise ways where students could be engaged in a participatory activity to energize the curriculum, as it were.

This could be done through creating a dialogic format and dramatizing the text. English language teaching practitioners have pointed out the significance of dialogue as a valid pedagogical method (Thornbury and Slade, 2006) I present my own attempt at reworking this story in a dialogic format.

### ‘The Why Why Girl’: Dialogue Format

Moyna: Do you know why the sky is blue? Why do girls have to do all the household work? And graze cattle? And work on the landlord’s farm?

Teacher: You have so many questions. And as for why girls have to do all the household work, earn a livelihood and supplement the family income is something we have to think about. It may be because of a system called patriarchy where men have effectively controlled the action and movements of women.

Moyna: But Ma’am there is a difference between men as well. The landlord and his sons are different from my father and brother. Why is that so?

Jharna (Moyna’s friend): You can’t stop asking questions. And that way the class will go on and on. It will never get over. There will be more things for us to learn. Can’t you keep your questions to yourself?

Teacher (who has overheard part of this conversation): On the contrary, it is a good thing that Moyna asks questions. You can say that it’s the most important part of the learning process.

Moyna: But that does not answer my question, teacher. Why do I have to get the cattle home for the landlord? Why can’t his sons work?

Teacher: The landlord and his sons have to manage the estate and do accounts. Moreover, as long as they have cheap and unpaid labour to do the work for them, they will avoid working.

Moyna (interrupting as if she has stumbled upon a new understanding): The labour will not be available once there are other ways for us to make a living and earn.... We will not be dependent on the scraps they throw our way... (turning to her friend Jharna and seeking approval from the teacher) That is why we need to learn, earn and make our way in the world.

Teacher: And perhaps help to change the world you live in. And you can start doing that by asking meaningful questions. Asking questions is a sign of an active mind which seeks solutions and answers, is ready to receive ideas and thoughts and absorb them more quickly than others.

Moyna (feeling somewhat triumphant): So there, I don't know why you people complain so much.(to her classmates). So, Ma'am, it is not a bad thing to ask questions, is it? My mother also complains that I ask too many questions.

Teacher: As I said, raising questions is one way to gain knowledge. The method of learning through asking questions is also called the "dialogic" method or the Socratic method. There was a philosopher in Ancient Greece called Socrates who used this method or mode of inquiry to discuss a lot of natural and social issues.

Moyna: Who is a philosopher? What does he do?

Teacher: A philosopher is a person who is trained to make us think about the meaning and purpose of life, how we should think, why it is important to be good, what makes us human and so on. So Socrates, one of the greatest philosophers of Ancient Greece, used this method. He would draw to himself many of the young men of Athens, and encourage them to ask questions. And through a series of questions and counter-questions, he would gradually lead them, logically and step by step, to discover the answers.

### **English textbooks: Pedagogic Tools and Functions**

In the course curriculum from grades 1-8 there were quite a few noticeable features that were appreciable. The first item is the choice and selection of the chapters which were a mix of classic pieces along with some contemporary pieces developed by the authors. Before launching upon a detailed analysis of the selection of chapters/reading material used, suffice it to say that most of the exercises that have been developed based on usage, grammar and composition, demonstrate intelligent utilisation of the reading material. The pedagogic function of these chapters becomes quite clear when one realises the gradual but systematic and cumulative build-up of the language component across the different grades. There is a level of internal coherence and thematic unity that is evident in the systematic build-up from Grade 1 to 2 and so on. The thread of continuity is visible in several chapters. This attempt to build up themes at different levels of maturity and understanding is a sound pedagogic practice.

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Some of the issues about which writers have to be sensitised are at two levels at least: one at the ideological level and the other at the level of metanarrative. Thus, in the later grades, the idea of including chapters on national flags, Independence Day and nationalistic sentiments, while invoking feelings and notions of patriotism should also suggest the porosity, the constructedness of borders and boundaries, rather than suggesting xenophobia/jingoism. There is a thin fine line that separates the two and that should emerge in the discourse. One way to tackle this problem is to include readings like Shiv Kumar's poem on "Border Guards" (Class 12) in a later grade. At a more complex level, there is Wilfrid Owen's "Strange Meeting." As authors and editors, we can consciously seek to introduce pieces on pacifism. Both Shaw's 'Arms and the Man' and Aristophanes 'Lysistrata' for later grades and high school are relevant texts, if maybe a little too long.

Secondly, the question of health and hygiene which has acquired tremendous resonance in the pandemic context could also provide a window to different modes of belief about health and hygiene which are culturally relative, for instance of the practice of smearing mud on huts and of using cow-dung as a cleaning agent. This in turn could set the stage and prepare the student for an introduction to tribal/rural life, belief and worldview instead of imbibing homogeneous ideas about modernity. Similarly, the chapters on hygiene which have been included across a couple of grades, can be used to develop their ideas and understanding about hygiene in a way where there is a cumulative build-up. The piece on "Manual Scavenging" could be used to interrogate notions and ideas about hygiene. As a matter of fact, this chapter could be used to generate a debate on ideas of 'cleanliness.' Sensitization to issues hitherto shrouded in silence is a very vital ingredient of our education. The educator could ask the students if making a documentary film on this issue is a good idea, in order to call attention to this spectacle of abjection? Or is it an instance of "poverty tourism", especially if such a film were to be shown outside India? Wherever possible, it might be a good idea to have the students debate on the topic.

Advertisements on fairness creams is a prickly and tricky issue and again a debate, oral or written, could be used as a pedagogic tool. On the one hand, the learner could develop his/her argument about the racist implications of such advertisements. On the other hand, the contrary view could develop the theme of freedom of choice, free market

etcetera. This chapter could also be used to generate a discussion about the “beauty” practices of different social groups and communities.

The continuity of theme is evident in the choice of a piece like “The Why-Why Girl” in Grade 5 and “Bholi” in Grade 6. The education of the girl child is obviously a vital issue and needs to be foregrounded. Similarly, sensitivity towards and understanding of other cultures, different ways of life, issues to do with environment, should be fully evident in the choice of texts. Another reading practice which encourages active engagement is where readers are encouraged to make analogies and read in an interconnected way. Classroom teaching and pedagogical exercises could be calibrated to develop this method of reading where the learner could learn to perceive interlinkages and could be encouraged to compare and contrast different ways of dealing with similar issues. Thus ‘The Why-Why Girl’ can be read in tandem with K.A. Abbas’s story ‘Bholi’ (<https://ncert.nic.in>jefp109>) develops the idea that it is important to educate the girl child.

The chapter on Food and Food Reviewing could be utilised as a launch pad to generate vocabulary exercises where the learners learn words, methods and processes associated with cooking, names of different ingredients, the food items of different regions and countries. Also, an oral exercise could be carried out where students describe the recipe of a favoured food item. This speaking exercise can be devised as a role play where they enact the role of a chef or a TV celebrity chef. The exercise of narrating a recipe is dependent on and encourages sequential thinking, using appropriate connectors, conjunctions and adverbs as well as alerting the learners to acquaint themselves with the manifold tasks associated with cooking.

Underlying literature teaching there is the idea of a value-based humanism. However, if we transact the concept or idea of “Heroism and the Human Spirit” uncritically through Rudyard Kipling’s “If”, we might fall into a trap of seeming to propound hegemonic masculinity. While conceding the declamatory value and literary merits of the poem, one might have a couple of caveats or reservations about this piece. Kipling’s undeniable imperialism made its way into my critical judgments. So, the key sentence that the poem ends with, “you will be a man, my friend” was problematic when viewed from the lens of empire, race and gender. As an articulation of the assertion of the

human spirit and heroism, the poem seemed a little dated, and limited in its universal applicability. Also in question was its confidence in its hegemonic masculinity. I found that the digital assets related to the poem focused on values, good manners and principles, all of which is of course appreciable and a necessary part of literature's ethical content. Perhaps discussion could be used to generate some questions about the finality of values and principles.

In the world that we live in, it is increasingly evident that we need to invoke our own humanity in multiple ways and learn to understand and accept other ways of being. Textbooks and digital material that help inculcate sensitivity and reflexivity are an invaluable resource in this context, imparted by teachers trained to both teach and arouse the joy of learning. Curiosity need not kill the cat, but arouse in learners the desire to ask more and more questions, which can lay the foundation for education beyond literacy. The claims and vision of NEP would then truly be realized and actualized.

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# CONTEMPORARY INDIAN GRAPHIC NARRATIVES: TRACING INDIAN SUBJECTIVITY, CONSCIOUSNESS AND HISTORICAL EXPERIENCE

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## **Abstract**

In India Graphic Narratives have been a relatively less researched form within the magnum corpus of what is considered Literature in the contemporary age. Indian Literature itself eschews any straitjacketed forms or styles due to its historical longevity. Nonetheless, many of its most influential works of Graphic Fiction have proliferated at the turn of the century, or are simply post-millennial. This reflects a trend in the publishing industry and the spaces available for Indian Fiction. It is important because it can provide a sliver of reflection on the upcoming Indian social milieu. Graphic Narratives provide a different form of language for the author and artist to express themselves. This language is purely visual and is aided with text, usually the form of which, or its lettering also provides an important insight as to what is being conveyed through the narrative. Visual aesthetics within graphic fiction cannot simply be reduced to descriptions within written language, and that is what makes it a complex mode of expressing and understanding the world around us. This paper is an attempt to understand Indian Graphic Narratives and their importance in the contemporary literary and intellectual environment. The texts discussed are *The Hotel at The End of The World* by Parismita Singh, *Delhi Calm* by Vishwajyoti Ghosh and *Bhimayana: Experiences of Untouchability* by S. Anand.

**Keywords:** Graphic Narratives, Indian Graphic Narratives, Post Millennial Literature.

## **Introduction**

*Delhi Calm*, *The Hotel at The End of The World*, and *Bhimayana* are important artefacts of Indian visual culture, constituted by Indian Graphic narratives. It is understood that these graphic narratives have a limited, English-speaking urban audience which transmutes into a

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class of educated people being able to access these particular narratives within the larger canon of Indian Graphic Narratives. These three stories speak in the language of Indian Activism, where they can socially speak into the space of the History of trauma that people in India have faced within the different sections of society. *Delhi Calm* and *Bhimayana* are politically charged but speak of entirely different issues within History, namely state brutality and caste-based discrimination, which are relevant today as well. *The Hotel at The End of The World* focuses on memory and History told orally, along with the focus on the trauma experienced by Indian soldiers, and certain forgotten pasts.

### **The Re-imagination of the Emergency in *Delhi Calm***

*Delhi Calm* catalogues the Emergency years in India and through its artistic style of the visual mode, communicates to the reader the darkness of the time, along with the dictatorial sense of “calm” which was maintained during the time. The Emergency was imposed on June 26, 1975, during the tenure of Indira Gandhi as the Prime Minister. The “Calm” in the title *Delhi Calm* can potentially refer to many things, along with the voices of dissent that were compulsorily silenced at the time. In the novel, Vibhuti Prasad and his friend Parvez embody the voices of dissent that have to camouflage themselves during the state of emergency in Delhi and their sense of idealism undergoes a myriad of challenges because of heavy state censorship. The calm is imposed through complete state control over the newspapers and the media, where no articles could be published that voiced themselves against state policies. The entire graphic novel has a unique art style with a blend of sepia tones with monochrome black and white sketches, that refer to the eerie state of the affairs in India during the time of the Emergency where free speech and basic human rights were usurped from the Indian citizens under the leadership of Indira Gandhi, who is referred to as “Mother Moon” in the text.

The graphic novel starts at a self-reflexive note, where it calls itself a work of fiction, proceeding to mention further that due to its nature of being categorised as “fiction”, where the resemblance to any people or events in what people consider to be reality is entirely coincidental, and thus it is a “self-censored” work. Censorship is a major theme that runs throughout the text and was a major component of the Emergency that lasted for a long period of twenty-one months in India. The time was

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characterised by forced muteness of the people and due to no freedom of the press and assimilation of unlawful arrests within the realm of legality, the nation was forcefully put in a state of a metaphorical slumber where the everyday activities of the Capital, Delhi and its core atmosphere of political education, free expression and artistic freedom was forcefully curbed. The novel repeatedly refers to the radio announcements, stressing that “there is nothing to panic about” (Ghosh, 2010, p.3), which contributed to the ironical state of affairs during the time. The emergency was announced by Prime Minister Indira Gandhi for her own self-interest, and the nation was plunged into a state of internal panic, heavy surveillance, bureaucratic violence and mass incarcerations, that the text focuses on. The government silenced all the criticisms against the Emergency era with the tool of censorship. Furthermore, it became another major component of the forceful suspension of the rights of Indian Citizens. The events that were proof of tyrannical state power were invisibilized through heavy censorship of the press.

Democracy is another major theme in the novel, and it is crucial to understand how the curtailing of democracy becomes detrimental to the safety, rights, and humanistic progress of the citizens of India in the country. The setting of the novel, as the title indicates, is Delhi. Delhi is referred to as the power polis of India by the narrator, and the nature of the term “power” is ruptured and faces a great degree of change within the text, as it did during the time of the Emergency. The infrastructure of politics, which is condensed in the tangible form of governance, called democracy, is not just a method of structuring the political power of the state. The structure of political democracy is a method of dissipating power among the citizens of a particular state. A democratic structure makes sure that if not evenly, power can at least be distributed at different degrees amongst all the citizens of a particular country so that accountability within a state set-up is not lost. During the time of the Emergency, the democratic distribution of power was curtailed leading to the concentration of power within the hands of the Prime Minister herself. This kind of concentration of power escaped the accountability of the government and paved the way for a kind of continuous fear among the citizens. Democracy becomes an important structure for the citizens of a country to form an active political society. A visible change in the period of the Emergency was the wilful expulsion of the Indian citizens from politically participating

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in the democratic structure of the government, thus making Mother Moon almost immune to all forms of accountability.

The seventies were a unique period for Indian society. It was still a young democracy, trying to find an identity that would be more than its postcolonial characterization. Post-coloniality has been historically shared by many formerly colonised nations, but it is their economic, social and political infrastructures that move in and out of their anxiety of influence and characterise their individual state identities. India was also in the middle of its pre-cable-television era, where the radio was an important part of popular culture and its own infrastructure. It was also a means of spreading information and communication at a collective level. The late seventies and the early eighties would see the earlier attitudes of the Indian state towards an era of free market capitalism and its characterization of the meaning of “progress”. In such a malleable period that could be looked at from a point of retrospective gaze, Indian Democracy was turned into a collapsible caricature of itself and the Emergency was imposed. Through the lens of Vibhuti Prasad (VP), one sees Delhi as a representative space of the Indian Political; atmosphere and its quick metamorphosis during the emergency months. The Indianness of the graphic narrative, which removes it from its Western contemporaries, is represented through the spatiality of Delhi, its culture of poetry, street food, films and collective cultural ethos which also faced grave precarity during the emergency era.

The spatiality of the events of the text is another major component of the novel. Delhi is a site of freedom of speech, protests, and a freedom of exploration of oneself, where prescribed frameworks of morality can be questioned and navigated through. Delhi is represented through its street food vendors, local markets, *chaiwallas*, buses, public transport infrastructure, and the like. The spaces within the infrastructure of the urban space, namely Delhi, can be seen as spaces that can be open to signification and can be turned into what the inhabitants of the space want them to be. A significant example is that of the cinema hall, where people engage in a pleasurable voyeuristic gaze to understand their desires and not repress them. The spaces within Delhi are localised versions of significations for Indian citizens. The text represents those spaces within Delhi and then goes on to trace a state of radical change in those very spaces during the Emergency, where freedom is repressed and people face incarcerations without committing any

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crimes. Addressing the city, as if all its infrastructural components were alive, VP remarks, “Bloody hell. This city I have almost adopted is now staring at me suspiciously. As suspicious as a new neighbour, not sure whether to smile but constantly gauging. I am surrounded by invisible eyes, watching only me. Trailing me, step by step. When did Delhi get this way?” (Ghosh, 2010, p.9) This becomes important because the city changes in terms of its nature and the way people inhabit its spaces. The food stalls of political discussion are stripped of their freedom and it also addresses the mass surveillance that took place during the Emergency years. Promod K. Nayar puts the change in the spaces of Delhi succinctly, pointing out:

When travelling on public transport VP wonders why a fellow passenger stares at him (Ghosh 8). Roads, buses and coffee houses have new décor: signs announcing silence and conformity (5). Intruding into public spaces are the regulatory, regimenting and disciplining call-ins such as ‘do not guess’, ‘do not think’, ‘punctuality is next to spirituality’, ‘an ideal family is made of four, don’t even think of more’, ‘no bargain in the times of emergency’, ‘no talking politics’ (Nayar, 2017, p.25)

The Emergency can be seen as an event in the History of India, that serves as a rupture in the middle of the chronological continuity of the Indian socio-political climate. The event is categorised by a sudden change in the social dynamics of Indian citizens during the time and the extreme changes of signification that followed after. The nature of development and progress changed radically during the time of the Emergency when Indira Gandhi pushed for hurriedly executed reforms. These reforms were situated in the ethos of the aesthetics of Late Capitalism. Neoliberalism reached its zenith of a structural framework in Indian society during the nineties. Nonetheless, as the text documents, the wiping out of slums and the aesthetic view of a progressive family of New India was situated in the social ethos of free market Capitalism. The nuclear family is an essential component of free market Capitalism and its policies around the family and housing. Multi-storeyed flats and residential high rises are a testimony to that. The rhetoric of “*hum do, hamare do*” or simply the idea of a couple needing no more than two children was actively disseminated by Indira Gandhi’s government. Slums were wiped out in Delhi, an early foreshadowing of Sanjay Gandhi’s politics during the time as well. This evidence harkens forward to the shape Neoliberalism would take in India in the post-nineties era. *Delhi Calm* as a graphic novel serves the

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purpose of prolonging the event, which is the Emergency Era, within the mode of a graphic text. The event, in this context, is understood as a rupture within the everyday life of the common person in India, which was characterised by the Emergency. The mode and the event come together in a later time of the post-millennial era, that E Dawson Varughese traces the proliferation of Indian Graphic Narratives to, in *Visuality and Identity in Post-millennial Indian Graphic Narratives*.

The sterilisation drive by Indira Gandhi is also an important subject of discussion in the text. It is one example of the state exercising body politic over its citizens. Here, the biological intersects with the political. In the novel, an entire page is dedicated to the artwork of an umbilical cord attached to a baby, and it is surrounded by razor blades. Masked faces are directly looking at the baby, implying the danger that people's reproductive rights were at the time. The most marginalised people were targeted through the sterilisation drive, with meagre benefits offered in lieu of sterilising their bodies. This dystopian nature of the events surrounding the Emergency is effectively documented in the text and the art style of the panels in the text. The state being able to create subjects out of its citizens and enter their private sphere of existence, where they stripped them of their biological rights in the name of family planning, was a dystopian reality in which the citizens had to live during the time.

*Delhi Calm* can be viewed as a subjective reanimation of history as it played out in the retrospective gaze of the narrator, VP. It does not only offer an individual's subjective gazes but stands as a representational testimony of a collective national memory and experience. The dark tones in which Delhi is represented, and the imposing juxtaposition of the radio acting as a mouthpiece of the state are important to note in the text because its visuality indicates the experiences of fear as an everyday reality, and the symbol of the radio acting as an animated piece of propaganda of the government. People are represented as wearing smiling masks, which serves as visual irony to the reader because, in contrast to the smiling masks, the people embodying the government's narrative only carry out acts of violence and encourage suppression of freedom.

Popular culture and the objects constituting it become a site of repression and a mode of distraction in the text. The radio becomes a symbol of

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authoritarian state power in the text where all the announcements of government reforms are made through it. It becomes a symbol of irony and fear simultaneously. Films become a site of suppression because there are police crackdowns in the theatres, as shown in the text. The radios keep on announcing a myriad of vague-sounding reasons for the imposition of the Emergency, which turns into a symbol of irony and propaganda at the same time. After the Emergency is announced to be over, people still live in the fear of something similar happening again, where one's power over oneself can potentially be taken away.

### ***The Hotel at the End of the World and its Reformulation of Narratives***

After understanding the historical significance of the graphic reimagination of the Emergency in India, one can shift their gaze to a different Graphic Novel of the Indian literary imagination, *The Hotel at The End of The World*. Written by Parismita Singh, and published in 2009, its focus is completely different, as it represents the stories of different travellers and the owners of a hotel, which in its literal sense, seems to be at the end of the world since its geographical location seems to be nowhere. The graphic text is divided into several stories, which are narrated by different inhabitants of the hotel. The text is infused with Indian subjectivity and harkens back to oral modes of storytelling. The shaping of a contemporary Indian identity is seen through a unique mode, where one can visually engage with, and read different kinds of narratives and History, and understand contemporary Indian subjectivity.

Through the narrative of the graphic novel, it can be understood that it takes place somewhere in the North Eastern part of India, although one cannot deny the fact that the geographical location of the hotel is not specified. Moreover, the nature of the people being travellers also creates a dissonance in the sense of the geographical location of the text. The conversations and storytelling mention wars and delve into tales about the ghosts of soldiers. Nonetheless, it starts with a humorous note of a tale about the yak and the cow and how the former borrowed the latter's coat and failed to return it. The tone of the narrative establishes itself in the beginning where the gutters are extremely clear and panels usually do not intersect. The style is simple and it is a juxtaposition of bold black sketches on white background. The juxtaposition of black against white can be seen as similar to Marjane Satrapi's *Persepolis*. The similarity between the two graphic texts also lies in the fact that scenes that depict violence have stronger shades of black and hardly

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any white background is visible. Page number 82 and 83 depict the violence that took place during the Battle of Shangshak. This takes place in “The Soldier’s Story,” one of the stories that make up *The Hotel at the End of the World*. According to Wikipedia, “The Battle of Shangshak took place in Manipur in the forested and mountainous frontier area between India and Burma, from 20 March to 26 March 1944. The Japanese drove a parachute brigade of the British Indian Army from its positions with heavy casualties, but suffered heavy casualties themselves” (*Battle of Shangshak*, 2022). These panels have bold shades of black and certain panels have entirely black backgrounds to depict the darkness that the soldiers faced during the war.

Promod K. Nayar argues that “As ghosts of political processes and decision making, the soldiers represent the haunting past of the entire region. It is a region populated by such ghosts from the wars that shaped the place, and the subjects of that place” (Nayar, 2017, p.37). This testifies to the fact that present-day attitudes of aspirations and morality, among other cultural aspects of a society, are deeply entrenched within such events and chronological ruptures and turns within history. It is also interesting to note that one soldier is shown as the representative of all the soldiers in the wars mentioned chronologically in the book, carefully picked from history. The depiction of suffering in war through one individual’s experiences shows the reader the monotony and similarity inherent in all wars throughout time. Each war fought within History has proved to alienate the soldier from his own individuality and identity. Parismita Singh goes on to say that this was not the war of the soldier which further implies the alienation of the soldier as a subject from the state and the soldier as an individual from the event called war. Here, the rupture within different courses of history is war and the subject that loses out on their own self-recognition are usually the people who experience it in an unmediated manner.

Nayar goes on to comment on how the art style within the graphic novel also depicts the burden of historical trauma one after the other on people who experience those historical events. According to him, the vertical sequence of panels juxtaposes one onto the other showing that very burden of chronological history. Nonetheless, one can go on to argue that it is not the only singular function the art style serves for the reader. It is important to note that page number 92 and 93 do not consist of any panels in “The Soldier’s Story”. The vertical sequence



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of the panels functions in a horizontal manner. It is clearly divided into horizontal gutters. In simple words, the horizontal space taken up by the panels that make the vertical sequence possible shows us the larger background against which the soldier is juxtaposed. Nayar does mention that it is to show the weakness and vulnerability of the soldier against the larger background which is depicted by the hills. Nonetheless, I would like to argue that this is also a testimony of the deep solitude that a soldier goes through during war because of the isolation that he feels. Graphic depictions on page number 92 and 93 are important because there is no depiction of any background. This serves as evidence to showcase how the graphic novel engages the gaze of the reader to depict the pure isolation of the soldier. During the time of war, the soldier is separated from the normal sequence of events within his own country. War also forces many soldiers to go away from their places of residence. The soldier's identity is encapsulated only in the instinct of self-preservation and the annihilation of the "other". Having to exist in such bodily precarity without a clear means to identify oneself in a holistic manner forces soldiers within states of mental illness and isolation. The written narrative also mentions. "And then one day. . . he stopped. Looking around, he couldn't understand. . . . Where was the war? Where was his regiment? And the British, he couldn't see them anywhere. They had gone. There were other battles, he could see. But this was not his war. . . ." (Singh, 2009, pp. 92-94)

The historical perspective that one can understand in the graphic novel is extremely interesting because it engages with the history of India in the Global context yet manages to localise the events that took place within the part of Indian history which is mostly overlooked. The North Eastern states within India are mostly underrepresented and therefore their histories are usually given lesser space or are intentionally or unintentionally invisibilized. *The Hotel at The End of The World* through its oral narratives brings to life the recollections of a traumatic past that the people of the Northeast have had to face due to international aggressions and post-independence skirmishes at the Indian border.

"The Girl's Story" takes place in the present time as it can be easily noted that it is the only story which is not narrated and she is the youngest inhabitant of the hotel. It is an extremely interesting example of the intersection of history with the present. The girl is the subject of the present and the history of war is not her experiential history.

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Nonetheless, when she goes to fetch water in the woods, she has visions of the soldiers running. A very interesting aspect of the graphic novel is that it is represented visually through all its panels. Thus, figments of imagination and fragments of objective reality within the graphic novel are all represented equally. The reading of the girl's story can be that of Magical realism or it can also be seen as psychological hyperrealism. One cannot determine if the vision of the soldiers is just imaginary or if it is real in terms of its materiality. The girl directly interacts with history when she is the one who goes inside the war tank and fires tank shots over the hotel. Her experience can be argued as an example of post-memory. Post-memory occurs within Art Spiegelman's *Maus*. In *Maus*, Spiegelman recounts the experiences of the Holocaust which were not directly experienced by him but were a recollection of the memory of his parents. The historical trauma is real for him because it is generational. He has authorial power over it because he comes from a past that he has to make peace with and understand the Holocaust as a part of his identity. Similarly, the girl graphically interacts with the soldiers and the tank as symbols of war which has been experienced by the generations before her. As she is born to a generation of a history of war, she is co-opted into it through the narratives told before. That is why she does not narrate her story directly but it happens to her and it is the last story of the novel. Post memory is extremely interesting because it is shared by a myriad of people inhabiting the newer generation. *Delhi Calm* becomes an interesting example of the reader engaging in their own post-memory. The Emergency of 1975 has been experienced by all the Indian people of that time. Interestingly the contemporary reader can only read *Delhi Calm* in the post-millennial era which makes it a very potent example of the reader engaging in post-memory.

### **Historical Experience of Untouchability in *Bhimayana***

*Bhimayana* is a graphic novel that broke most of the conventions of even graphic storytelling. It is important to emphasise that because even graphic storytelling is something that did not get immediate recognition as a medium that could be taken "seriously", in terms of defining it as a literary mode or "high art" form of storytelling. One can even observe that this kind of perspective is comparatively stronger in the West, as most forms of media and storytelling associated with graphic art mostly consisted of themes that could be consumed by children or teenagers, or could be easily commercialised, with flashy themes of superheroes and

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the commonly perceived idea of what “nationalism” could mean, which was a strong subtext of what a superhero should embody. Contrarily, Japanese Manga for instance has been more liberal in terms of who its target audience was, what kind of themes they would handle, and also how the graphic works could convey the philosophical and/or political ruminations and leanings with the reader. We can take many texts to understand this, for instance, the almost never-ending *Marvel Comics* universe, which recently started diversifying its themes, versus different manga like *Akira* which was written in 1982 first, covering various themes, from political stagnation and religious revivalism to technology addiction and drug abuse. American storytelling chose the medium of films to cover cyberpunk themes instead.

This series of ruminations can go on but one must understand how *Bhimayana* is related to all the debates and ideas surrounding the larger climate of graphic storytelling and its position in the world of storytelling. *Bhimayana* tells the story of Dr. B.R. Ambedkar through the medium of graphic art, conveying the message that merely written storytelling in an already existing font cannot truly convey the story of Ambedkar that has unanimously represented the story of millions that have gone through caste-based discrimination, and a lot more people who throughout history have faced discrimination due to the prejudice in their society. It also appropriates a mode of storytelling that has been identified with popular culture, at once making itself a work that should be in the realm of common knowledge, almost like a book of bedtime stories or a highly famous work, which after a point has to become common knowledge for all. It can be seen as doing that, along with visual art and written material that deserves critical attention and can be used as a pedagogical tool to undo the injustices that take place to date in Indian society due to caste.

A comic book is usually divided into panels, and can also be defined as a sequential combination of pictorial art and text that conveys a story and within it a sense of time and instant visual engagement. According to Scott McCloud, even this definition can prove to be insufficient to truly understand graphic works. Many critics tend to separate the terms “graphic novel” and “comics” to convey the difference between the kind of material offered by the text in terms of its themes, and thus how seriously it should be taken. In the vein of the arguments made by McCloud, one needs to understand that these binaries simply cannot be

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absolute. Thus, for the sake of the graphic novel and its art, and doing justice to its cultural importance, one can also see it as an extremely interesting comic dealing with the issue of caste and a novel attempt to bring it into the realm of global awareness.

The graphic novel is exceptional because it modifies the very mode it opts for in order to convey its story and ideology. As it is mentioned in the book itself, *Bhimayana* makes use of the Pardhan Gond Art and the creators made their own font which they used in the creation of the novel. It is a radical form of breaking away from what has already been established. Gond art is one that “does not represent, but signifies” and if one reads the graphic novel, this nature of Gond art is evident. Unlike most graphic novels, the art of *Bhimayana* does not try to use photorealistic images or even try to represent human beings, animals or objects in a realistic art form, or an abstraction that one is used to seeing within most eastern and western comics. On the contrary, it is highly symbolic in nature and uses anthropomorphism pretty extensively to convey its ideas about a more philosophical nature of understanding what humanness is. Attributes like kindness, sorrow, and empathy are time and again expressed through inanimate objects, to make the reader understand the nature of being a Dalit time and again. The answer to the how of truly being able to empathise with the plight of being a Dalit in India is through art, which is never violent in its graphic form, but one which constantly represents the state of being alone without much agency. Most people who communicate through the speech bubble of a bird are shown to be Dalits themselves or those who are against caste and its evils. The tragedy is that power is concentrated with those who love caste and derive power through it. The speech bubble represented by the scorpions does not only represent a binary of mere evil but rather is a larger symbol of oppressive power that also generates fear and anguish. There are various examples in all the three parts that the book is divided into, namely “Water”, “Shelter” and “Travel”.

One of the most important significations in the book is that of emotions expressed through inanimate objects and animals. The hierarchy of caste only exists in the human realm, which further makes one think about how hierarchies and power further mechanise human beings to act without sympathy or emotion in fear of social ostracization or losing their share of power if they do not partake in the wrongdoings that a social compartmentalization such as caste inherently can make

them do. An argument can also be made that reduces the most primal nature of humanity to something wholly bestial, evil and that which does not hesitate to kill or inflict the most torturous pain on others regardless of any logic or reason. Hate crimes are prime examples of this. It can also be said that due to social hierarchies not existing within the animal world or that of inanimate objects, they are the only ones who can truly feel the pain of wrongdoings, and especially their appropriation by caste Hindus to execute the evils that they act by.

## Conclusions

*Delhi Calm*, *The Hotel at The End of The World*, and *Bhimayana* have visually executed important functions of taking a critical look at Indian politics and history alike. It is interesting to also note that these novels were published in the post-millennial era, signifying that Graphic narratives appealing to an intellectually oriented audience has found a place in India. More accurately, one can understand that the audience for graphic narratives who wanted to take a visual look at more sombre topics in a realistic vein was always present, and have started to find that with a diverse publishing market. Many times, simply written history, literary archives or even films are not enough to look at one's own past and national trauma, and graphic narratives can provide a viable alternative to understanding oneself in relation to collective histories and memories. These novels discussed above are a few out of many that have given artistic expression to memory and historical experiences.

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# PHARMACEUTICAL PATENTS AND THE COVID VACCINATION PATENT WAIVER

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## **Abstract**

The paper is aimed at analysing, historically and empirically, the importance of the use of pharmaceutical patents in promoting research and development and fostering innovation and inventions in the pharmaceutical sector. This debate became relevant in the wake of the covid 19 pandemic that was witnessed with peaks in 2020 and 2021 and the associated vaccine patent waiver that the World Trade Organisation undertook.

Section I gives a brief background on how the patents are the backbone of any pharmaceutical company as they provide the company the incentive to do Research and Development (R&D) activities for the production of new drugs. Section II traces the genesis of the patent regime in India and the provisions, especially with reference to the pharmaceutical sector, of the Indian Patents Act, 1970 and its amendments. Section III focuses on the covid vaccine patent waiver, first by presenting an overview of the vaccine status the world over and then a discussion of the genesis of the patent waiver argument along with the ensuing debate, with the social welfare vs the profitability argument discussed at length. Section IV provides the concluding notes of the waiver policy being finally adopted by the WTO in June 2022 and the reactions of the nations thereof.

**Keywords:** Covid, Pandemic, Patents, Pharmaceutical Sector, Vaccination, World Trade Organisation.

## **I. Introduction**

The patents are the backbone of any pharmaceutical company. They provide the company the incentive to do Research and Development (R&D) activities for the production of new drugs. The research required

for producing the formula for any new drug involves huge cost outlays and by patenting these inventions, the drug companies ensure their profits by safeguarding themselves from their competitors manufacturing a similar drug. It is through patenting only that the costs spent on the R&D activities seem worthwhile to these pharma companies. There are some who argue that the R&D activities would be done anyway by these companies, which, without the profit motivation, seems a debatable argument in itself, especially in a market driven free economy (Yanni & Thomas, 2022). But even if one does give merit to such a school of thought, there is no denying the fact that such patents act as a catalyst for the drug companies to undertake these researches.

In a market driven free economy, especially in a high-cost industry like pharma, it is the profit earning motive that keeps the select firms alive and in business. Investment in the research for development of any new drug is akin to buying eggs in the hope of selling the chickens, albeit with some conditional probability. Not all eggs hatch, and even among those which do hatch, they do not give a homogeneous product to ensure uniform and high profitability. Similarly, investments in research of any new drug takes years and involve huge cost outlays and not all of these researches on new drugs culminate into patents for the same. Thus, without the motivation of profit, the companies would invariably shy away from making these investments (Jerry, 1994). By prohibiting their competitors from duplicating their drug formula, the patents act both as a cushion and an incentive to carry out these research activities that are necessary to develop and produce new drugs and formulas that have the potential to cure thousands of diseases and ensure a healthy survival of mankind and humanity at large.

## **II. Indian Patent Act, 1970 and its Amendments: Implications for the Pharma Industry**

A Patent is a statutory right for an invention granted for a limited period of time to the patentee by the Government, in exchange of full disclosure of his invention for excluding others, from making, using, selling, importing the patented product or process for producing that product for those purposes without his consent (The Patents Act, 1970 and the Patents Rules, 2003). In the pharma industry, this ensures that the drug formula, using various components in prescribed ratios, is not duplicated by any other manufacturer.



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The issue of patents rights in India is not a new one; such rights were introduced in India for the first time in 1856, called the Act VI of 1856. There were various amendments, addendums and deletions in the Act, till in 1970, The Patents Act, 1970 was passed, that repealed all other existing patent laws and acts in India. The Patents Act provides that any invention “that satisfies the criteria of newness, non-obviousness and usefulness” can be the subject matter of a patent (The Patents Act, 1970).

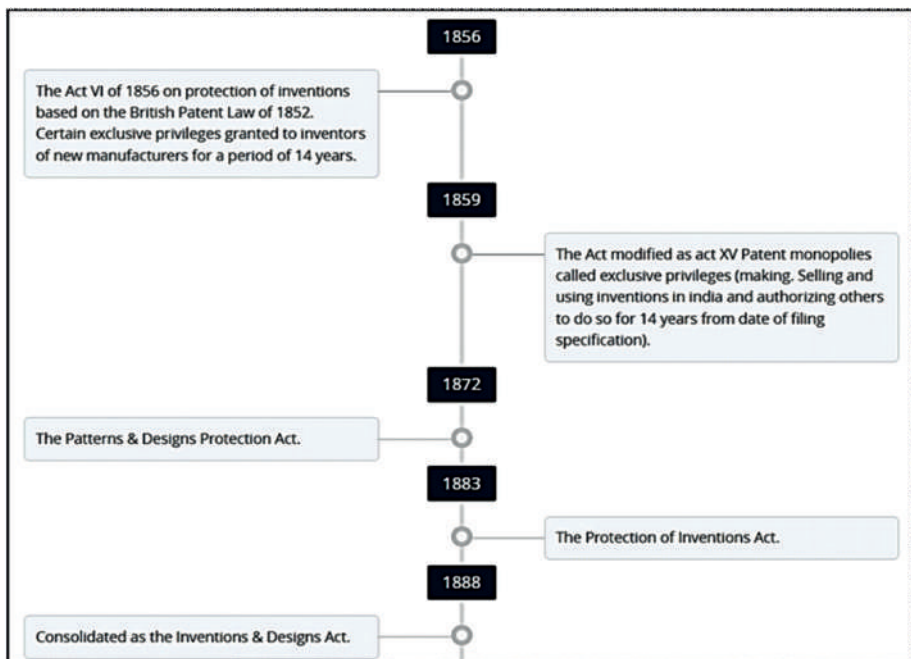
In the case of pharmaceuticals, the substances used in the drugs, that are, in themselves, capable of being used as food, stand-alone drugs or medicines, are not granted patents. It is when these substances are chemically processed, using a new formula, that leads to the formation of a new drug that has tested usefulness, that these drugs become eligible to be granted patents under The Patents Act, 1970. Thus, “methods of agriculture or horticulture, processes for the medicinal, surgical, curative, prophylactic or other treatment of human beings, animals or plants or substances obtained by a mere admixture, resulting only in the aggregation of the properties of the components, etc.” are not patentable as per the provisions of the Act (The Patents Act, 1970).

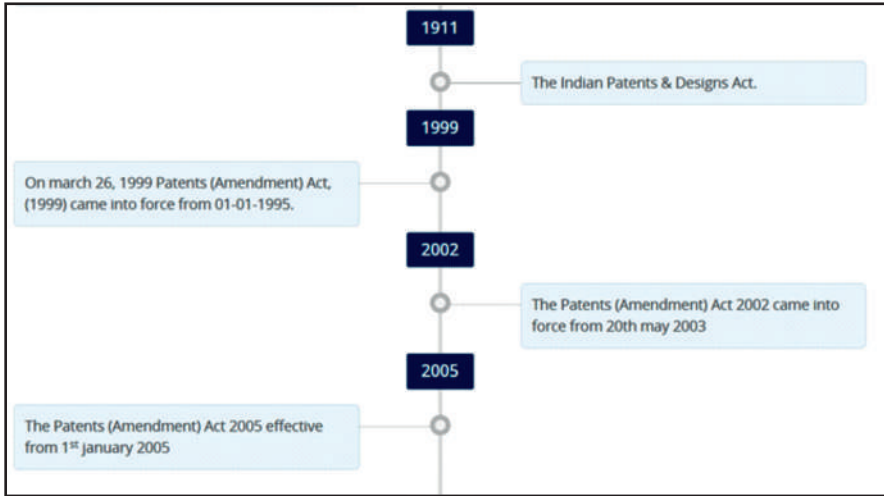
Having major implications in the pharmaceuticals industry, significant changes in the Indian Patents Act occurred after the formation of World Trade Organisation (WTO) when India signed the Trade Related Aspects of Intellectual Property Rights (TRIPS) agreement in 1995. Being a signatory to this Agreement, India was under obligation to make its Patents Act corroborate with the provisions of this agreement, and therefore brought about three major amendments in 1999, 2002 and the final one in 2005.

The Patents Amendment Act, 1999 was brought into force retrospectively from 1<sup>st</sup> January, 1995. The amended Act provided for “filing of applications for product patents in the areas of drugs, pharmaceuticals and agro chemicals, though such patents were not allowed.” However, such applications were to be examined only from 2005 onwards and in the interim, the applicants could be allowed Exclusive Marketing Rights (EMR) to sell or distribute these products in India. The second most important amendment came about by way of The Patents Amendment Act, 2002, though this was implemented with effect from 20<sup>th</sup> May, 2003. This amendment provided for a uniform term of a patent for

a time period of 20 years, to be counted from the date of filing of patent application. This was a very important amendment as far as the pharma industry was concerned, having long term implications on the way drug trials are being held. The third amendment was introduced through the Patent Amendment Ordinance 2004 that came into effect from 1<sup>st</sup> January, 2005. This amendment provided patentability of pharmaceutical substances to the extent that patents would apply to new chemical entities. Section 3(d) of the Patents Act, 1970, explains that a new form of a known substance, new property / new use for a known substance and the mere use of a known process are not patentable and are not considered distinct from the known substance. Based on this principle, inventions using known substances were not to be henceforth patentable, unless the invention would have displayed “a significant increase in efficacy” (The Patents Act, 1970 and the Patents Rules, 2003). The last set of amendments in this Act were made in 2006 that were primarily to do with decentralised administrative facilitation and process-based mechanisms.

### Exhibit 1: Diagrammatically shows the history of the Indian Patent System through the years





*Source:* Office of the Controller General Patents, Designs & Trade Marks, GoI website (<https://ipindia.gov.in/>)

One of the major fallouts of The Patents Amendment Act, 2002 is that the drug industry has fostered close associations with the medical institutions for their medical trials, as the drug companies have money and the resources to finance the drug trials, but they do not have the patients required for the same. Since usually the drug companies go in for the last stage of trials, i.e., the human trials, after they have obtained the patents, this directly eats into the time they have left of the patent period of 20 years to market and publicise their drugs. The human beings then become guinea pigs for these pharma companies, with complete understanding and tacit collusion of the medical practitioners. The long queues of ‘medical representatives’ of the big Pharma companies, waiting outside the clinics of popular doctors, is something that we all have witnessed and their motives, we are well aware of.

Delhi based independent civil society group All India Drug Action Network (AIDAN) in its study in 2019 (Rao, 2019) had claimed that illegal and unethical bounties, running into crores of rupees annually, are being offered to doctors under guise of consultancies, lectures and the like. Taking cognizance of many such prevailing practices, the Government of India has inserted Chapter III, Amendments to Direct Taxes, in the Finance Act of 2022, which states that “The legal position is clear that the claim of any expense incurred in providing various benefits in violation of the provisions of Indian Medical Council

(Professional Conduct, Etiquette and Ethics) Regulations, 2022, shall be inadmissible under section sub-section (1) of section 37 of Act being an expense prohibited by the law” (The Finance Act, 2022). In simple terms, this means that such an expenditure incurred by the Pharma companies cannot be claimed as a deduction for tax purposes, which will immediately lead to jacking up of the company’s profits and thereby the payable taxes. This, it is hoped, shall have a dampening effect on such illegal and unethical practices being followed by the Pharma companies, in order to move around the provisions of the amendments of 2002 of the Patents Amendment Act.

A look at the Economic Survey of India’s data (Economic Survey of India, GoI, 2021-22) with respect to the number of patents filed and granted in India will give a picture of the huge costs involved in the R&D process, yet resulting in less than half percentage of patents being granted.

**Table 1: No. of Patents filed and granted in India between 2010-11 to 2020-21**

Year	No. of Patents Filed	No. of Patents granted	% of patents granted vis-à-vis filed
2010-11	39400	7509	19.05%
2016-17	45444	9847	21.67%
2020-21	58502	28391	48.52%

*Source:* Author’s own compilation using the Economic Survey of India 2021-22 data

Though this is a remarkable progress in recent years, the number of patents granted in India are still a fraction compared to patents granted in China, USA, Japan and Korea. According to World Intellectual Property Organisation (WIPO), the number of patents granted in China, USA, Japan and Korea stood at 5.3 lakhs, 3.52 lakhs, 1.79 lakhs and 1.35 lakhs, respectively for the year 2020 (Economic Survey of India 2021-22, Chapter 9). In the context of the Patent Act, it is noteworthy that a substantial amount of investment is done in R&D before the patents can be filed. Hence, less than half of the patent applications getting approval also have the direct implication on the profitability of the Pharma companies and the underlying pressure of making profits to sustain the organisation from among the drugs that actually make it to the market after the rigorous R&D and the patenting process. The

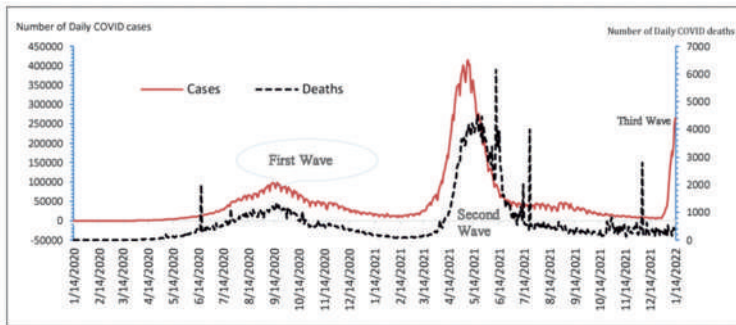
patents therefore do act as a cushion, crucial to Pharma companies' existence and profitability.

### III. Covid Vaccine Patent Waiver

#### III.1 The Background: The extent of the disease and the vaccination status

Year 2019 saw the advent of the Covid-19, which was soon to take the world by storm in 2020 and this generation witnessed, what is being called by many, one of the world's worst pandemics ever. The covid-19 pandemic exposed the world over, all the vulnerabilities that existed in the social infrastructure, especially the health sector. Survival itself became a challenge and saving lives and livelihoods became mammoth tasks for governments the world over. Health response, especially of densely populated countries like India, became critical to controlling and mitigating the spread of the pandemic. Crucial to this was the development of covid-19 vaccines and their dissemination to the masses at highly subsidised rates or preferably, for free, by the governments, especially in thickly populated underdeveloped or developing nations.

#### Exhibit 2: Daily COVID-19 Cases and Deaths in India



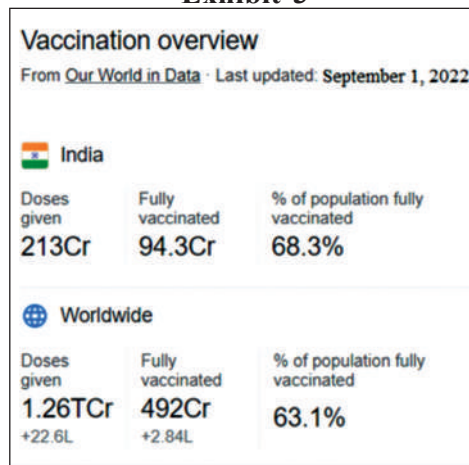
Source: World Health Organisation, as taken from Economic Survey 2021-22

Like the scenario was the world over, India too faced two massive waves of the pandemic, the second being deadlier than the first, both in terms of casualties and in terms of associated co-morbidities and impacts on peoples' health. Exhibit 2 shows the peak time of the two waves in India, in terms of surges in the number of daily deaths and cases. As per the Economic Survey of India 2021-22, during the first-wave, the cumulative number of COVID-19 cases started rising progressively from the month of May 2020, and peaked in mid-September 2020.

Thereafter, the country faced a massive surge in COVID-19 cases starting March 2021, with a peak of more than four lakh daily cases in May 2021 and more than 4400 daily deaths by the end of May 2021.

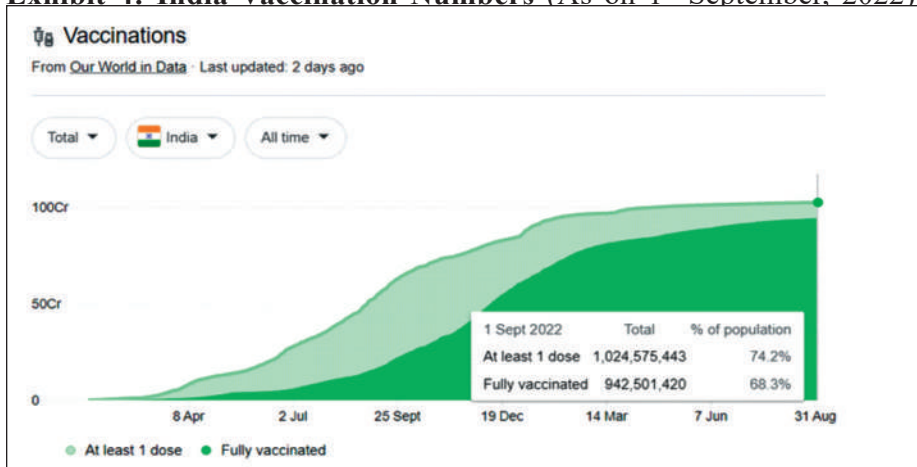
A fresh surge of cases and a new variant Omicron had surfaced in December 2021, but its effects were not felt as sharply as the first two waves, perhaps due to the vaccination drive launched by the country in its health response through the ‘Aatma Nirbhar Bharat Abhiyan’ packages and other related initiatives to mitigate the impacts of the pandemic. As on the date of writing this paper, i.e., till 1<sup>st</sup> September, 2022, 74.2% of India’s eligible population had been administered at least 1 dose and 68.3% is fully vaccinated, which is higher than the 63.1% of the world eligible population figure. Exhibit 3 and 4 show the covid vaccination status in India and its overview.

### Exhibit 3



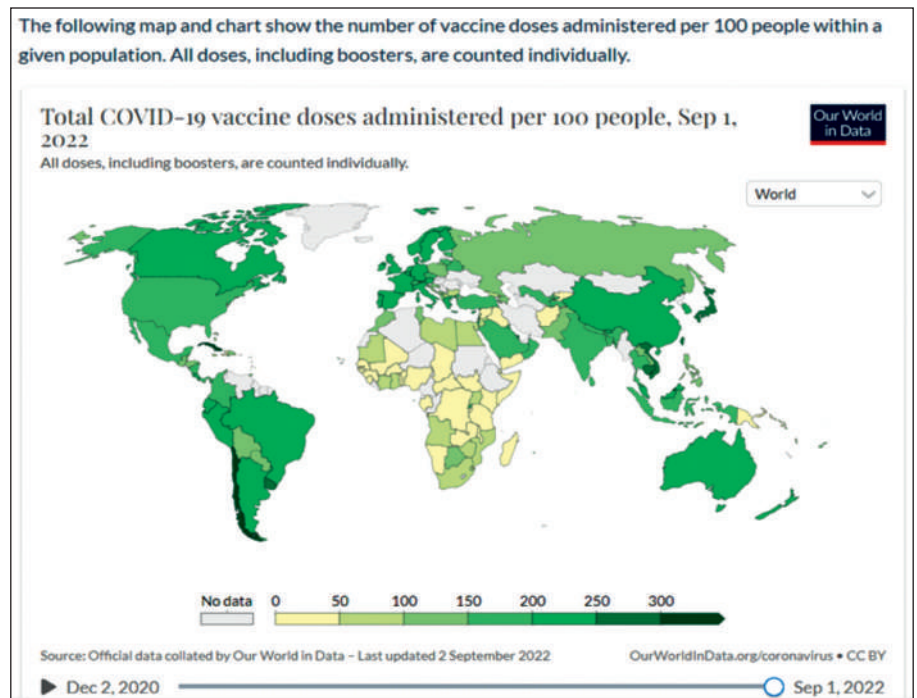
Source: “Our World in Data”, Oxford Martin School, University of Oxford.

**Exhibit 4: India Vaccination Numbers (As on 1<sup>st</sup> September, 2022)**



Source: “Our World in Data”, Oxford Martin School, University of Oxford

**Exhibit 5**

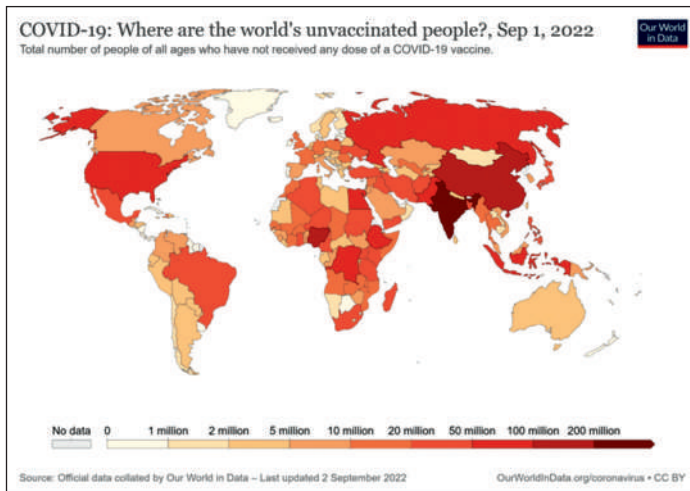


Source: “Our World in Data”, Oxford Martin School, University of Oxford

India, despite being a thickly populated country, has so far fared well in terms of covid vaccine accessibility and administration. However, when one looks at the world comparative pictures regarding the covid vaccines administered and the number of people still not vaccinated across countries, we get the real picture of how mammoth a task this is, both for the covid vaccine manufacturers to keep up the supply and for the governments to administer these doses free.

The exhibit clearly depicts how almost all of the countries of the African continent have not even been able to vaccinate 50% of their population.

### Exhibit 6



Source: "Our World in Data", Oxford Martin School, University of Oxford

These figures give us the real picture of where the world is in terms of covid vaccination. This brings to the fore the issue of accessibility and affordability by the nations, in the wake of the vaccines being patented, especially to those in Africa and other not so developed countries of the world.

### III.2 The Genesis and the Debate: Issues of Covid Vaccine accessibility and affordability

After its initial outbreak in 2019 and the alarming heights it took in wake of the first wave in 2020, many activists, especially in the developing



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world, dwelled on the contention that the World Trade Organisation's Intellectual Property Rights (IPR) regime limits access to vaccines by all, especially to those in the poor world. In the wake of the same, in late 2020, some countries, led by the initiative of India and South Africa, presented a proposal to the WTO to temporarily waive off the IPR protections, especially the patent-based protections for 'essentials', to combat the covid 19 pandemic. The waiver was demanded for pandemic-related health essential products and technologies, including vaccines, diagnostics, therapeutics, and personal protective equipment (PPE). WTO Director-General Ngozi Okonjo-Iweala had herself said in a public address that it was necessary to end the "morally unacceptable" inequity of access to Covid-19 vaccines. Pope Francis too had tweeted at that time that an equitable access to safe and effective vaccines should be fundamental to save lives and livelihoods and that Africa must not be left behind in providing access to covid vaccines, as according to him, no one was safe until everyone was safe.

This was, however, not for the first time that the WTO had been met with such a demand. Earlier too, for various life-saving drugs, especially for poor nations, it was demanded to have the patent protection waiver to ensure mass production of such drugs. Doha Ministerial Declaration of 14 November 2001, which came into effect from 2003, laid stress upon and provided validation for the use of 'compulsory licences' for the manufacture of such essential drugs and vaccines (The Doha Declaration, 2001, WTO). Under its provisions, the governments could issue compulsory licenses to allow other companies to make a patented product or use a patented process under licence without the consent of the patent owner, but only under certain conditions, aimed at safeguarding the interests of the patent holder. In essence, under a compulsory license, an individual or a company seeking to use another's intellectual property can do so without seeking the rights holder's consent, and pays the rights holder a set fee for the use of the specific license. However, for a pandemic of this proportion and magnitude, it was felt by the activists of public health that the compulsory licence route is too tedious, time consuming and piecemeal and would not have the desired result to increase the supply to meet the vaccine shortage that was felt in 2020.

The advocates of such a waiver felt that it would boost the production of the vaccines and, as a result of the same, the acute shortage that was

being experienced the world over could be eased. They also stressed that most of these pharma companies, including the big ones like Pfizer, BioNTech SE and Moderna, had been sponsored through generous government funding to support their research aimed at development of a safe and effective vaccine for covid, especially in a fast-paced manner. They advocated, that not only for the covid vaccination related research, but in general too, these pharma companies receive generous funds to undertake research from governments the world over and that over the past decade at least, their profits have always been on an upward trajectory. (Bill & Melinda Gates Foundation Report, 2020; Kansteiner, 2021 & Siripurapu, 2021)

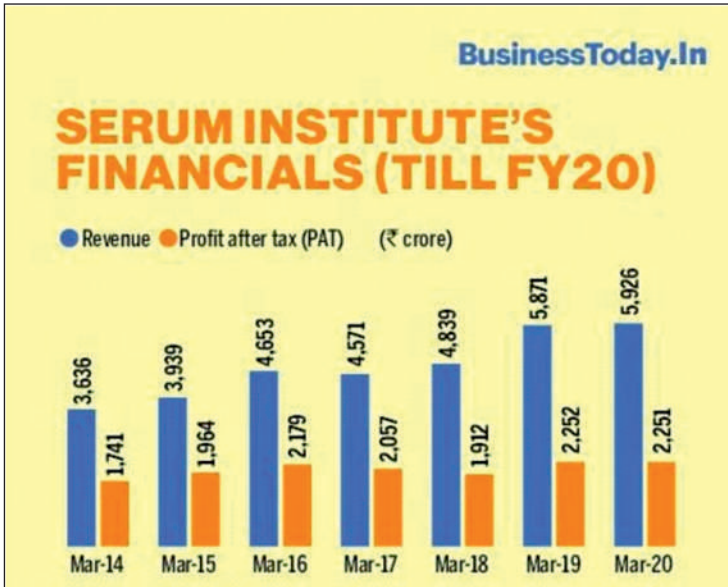
To get a deeper understanding of the profit positions of the big pharma companies in recent years and to get a picture of the steadily rising profits of various pharma companies the world over, a brief report of the case of Serum Institute of India (SII) has been analysed here in this paper. This profit-making pattern that has been observed in the case of SII, is similar to most of the big pharma companies of the world.

Pune based SII of India is the world's largest vaccine manufacturer and has recorded a surge rise in profits after the covid pandemic hit the world (Business Today Study Report, 2021). SII obtained the licence to manufacture and supply Oxford and AstraZeneca's vaccine, marketed with the brand name Covishield, and had received an overwhelming order for the production of the same.

Presented below in Exhibit 7 is a summary of SII's Financials, specifically the revenue and the Profit After Tax (PAT) values, till financial year 2020.

It is clear from Exhibit 7 that the company's income and net profit have been on the rise for a decade now. What is worth noting is that the company declared a growth of 158 per cent in disbursement in 2022, which stood at Rs 9,494 crore (SII statistics, 2022). A look at the growth figures of all major pharma companies of the world reveals similar patterns.

## Exhibit 7



Source: Study by the Business Today group, sourcing from 'Prowess IQ'

On the other hand, those opposing this move of patent waiver, argued that it is not the patent, but the low manufacturing capacity and the distributional bottlenecks that create the problem of accessibility of essential drugs in some countries. They felt that such a move will provide a disincentive to many pharma companies to henceforth invest in breakthrough medicinal research and those at the final stages of trials of covid vaccines too would feel the heat of such a waiver. They also stressed that the route of compulsory licence was always available to the governments that actually felt that there was a manufacturing shortfall for such drugs or vaccines.

They further argued that it was not the patent protection that had led to the vaccine shortfall in 2020-21, but the access to critical ingredients that was in short supply. It was also stressed that without the technical know-how and the expertise to produce such vaccines, a mere patent protection waiver would not really boost the manufacturing in the countries that were supporting such a move. Some even argued and criticised the USA for hoarding these vaccines, which they felt, was one of the primary reasons for geographical inequality in vaccine access.

### **III.3 Covid Vaccine Patent Waiver Granted: Provisions and Possible Implications**

After a two year long effort, in June 2022, the WTO did grant a patent waiver for covid vaccine manufacturing. However, India and the other countries that had led this move, call this stance half-baked and too late. It was felt that the negotiations at WTO took too long and it was only a timely intervention that could have prevented mass scale covid deaths, especially in the peak of the second wave. Presently, it was felt the world over, that there is no supply side constraint on the availability of the covid vaccines. The same is evident as per the data released by the European Federation of Pharmaceutical Industries and Associations, that, as of May 2022, there were 2.1 billion excess doses of Covid-19 vaccines and their production had outpaced the number of doses administered in recent months (European Council Reports and Publications, 2022).

It was also felt that since this five-year waiver was limited only to COVID vaccines and exempted the treatments for those with the virus, such as antibodies and antivirals, as well as the covid testing kits, the pressing issue and need of the hour had again been side-lined and this patent waiver was more like a paper tiger and a political gimmick. India's Commerce and Industry minister Piyush Goyal was quoted as reporting in mid-June 2022 that "only 14 percent of people in low-income countries have been vaccinated with one dose, while in November last year, the People's Vaccine Alliance reported that Pfizer, BioNTech and Moderna, the companies behind two of the most successful COVID-19 vaccines, were together making \$65,000 every minute. In another distressing fact, pharma giants like Pfizer and BioNTech had delivered less than 1 per cent of their total vaccine supplies to low-income countries, while Moderna had delivered barely 0.2 per cent." (Goyal at WTO Ministerial Meet, June 2022)

### **IV. Conclusion**

Patents indeed are the backbone for any industry, especially more so for the pharmaceutical companies, as the R&D for their products are both extremely costly as well as time consuming. However, despite this, there is no denial to the fact too that the pharma companies do find ways to ensure profitability of the company and have in the past managed to manoeuvre around deftly some of the clauses of various Acts, including the Patent Act, 1970 and its amendments.

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A policy like patent waiver is indeed a tightrope walking, where all sides of the argument seem meritorious. The International Federation of Pharmaceutical Manufacturers & Associations (IFPMA) had pointed to other “real challenges” that exist in scaling up production and distribution of Covid-19 vaccines. These include trade barriers, bottlenecks in supply chains, scarcity of raw materials and ingredients in the supply chain, and the unwillingness of rich countries to share doses with poorer nations. The scarcity of raw materials has been a growing issue for ramping up production; several manufacturers have been relying on specific suppliers, and alternatives are limited. Also, countries like the US had blocked exports of critical raw materials used in the production of some Covid-19 vaccines using regulations like the American Defence Production Act.

The present covid 19 wave seems to have been tided over and so does it seem that the vaccine shortage problem has been addressed too quite effectively in the present time. However, should such a health issue of this mammoth scale and intensity arise again in near future, the critical question remains whether patent waivers can resolve the issue of vaccine shortages. This is a complex question to which there is, so far, no clear answer. Besides merely patent issues, there are other considerations associated with vaccine manufacturing. Technology transfer is integral for commencing production. For instance, Pfizer had pointed out that its vaccine requires the use of 280 components from 86 suppliers and highly specialised manufacturing equipment. There is also the principle of scale operations that point out that it takes a considerable amount of time, even several years, for any producers’ plants to become operational at optimal capacity. This raises the question of whether today’s vaccines would even be relevant at that point in time, especially if new variants prove resistant to vaccine formulations currently available. Furthermore, in parallel to the waivers, a transfer of personnel, raw materials and equipment to developing nations also becomes necessary with such a waiver. This will involve waiver or total relaxations in various WTO agreements and treaties, which, if ever undertaken, shall open another Pandora’s Box of its own. The question of equity versus profitability has always been merit driven upon individual cases and circumstances and the same holds true for drug patent waivers too. One can however conclude that the covid patent waiver, though too late and too little, has at least paved the way for future negotiations on the matter on similar lines, should the need arise.

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# SPIRITUALITY AS CHAPERONE: OVERCOMING LEADERSHIP CHALLENGES POST COVID

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## **Abstract**

The Covid 19 crisis and the economic havoc it has wrought are harbingers of the extraordinary challenges that organizations will face. The social and economic landscape has dramatically reshaped itself in the backdrop of huge migration flows, climate change and technological advances which led to disruption of industries, economies and the nations. Post COVID, the need for blended ethical decision making based on the philosophical tenet of Utilitarianism (Bentham, 1781) and business-oriented pragmatism became an imperative. In order to maximize value creation for society, cognitive limitations (Kahneman, 2011) should be confronted. A parallel two system view of ethical decision making: intuitive and deliberative (Greene, 2015) enables comparisons creating more value. Business leaders need to shape the environment of ethical behaviour. Effective nudging in behavioural research has been studied deeply. It can make the world a better workplace as people follow the behaviour of others, especially those who are in positions of power and prestige. Caring for others and society at large tilts decision-making in favour of creating values for all stakeholders. As new ethical challenges have been emerging in post covid times, building a new ecology which is purpose driven is the pathfinder through the haze of uncertainty. Focus on ESG concerns and SDGs require a compelling mission at the heart of every company's efforts to enhance its positive impact on the environment and the society. Taking an intergenerational perspective that extends beyond the tenure



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of any management team requires moving from intention to results. The global society is facing enormous challenges and those who outperform others in this new era will survive. Spirituality refers to the “healing power” (Marx, 1987) that awakens a human being from his “indifference” toward others and makes him responsive in all of her/his manifestations. This paper posits that in post Covid times, organizations who follow System 2 (Kahneman, 2011) of deliberative thinking, which is slower, conscious, effortful, and logical will come much closer to rationality leading to more ethical behaviours. Spirituality-based management seeking balance between the extrinsic and intrinsic motivations will help check unfettered strategic rationality promoting spiritual engagement in dealing with indispensable moments of management.

**Keywords:** Spirituality, Leadership Challenges, Covid 19 Pandemic, System 1 and System 2 Thinking, Chaparone.

*“There are decades where nothing happens and there are weeks where decades happen.” (Vladimir Lenin)*

## 1. The Covid Crisis

Lenin’s words have never held more meaning than in the current times. The Covid 19 crisis and the economic havoc it wrought are harbingers of the extraordinary challenges that organizations will face. The social and economic landscape has dramatically reshaped itself in the backdrop of huge migration flows, climate change and technological advances which has led to disruption of industries, economies and the nations. The Covid 19 Pandemic brutally exposed the fragility of our existence. The robustness of economies, businesses, and communities is being sorely tested by the Pandemic even today. No other event since World War II has had worldwide fallouts of such great magnitude as this crisis, bringing even the biggest economies and most powerful nations to their knees. Its ability to affect the masses in a non-discretionary manner makes it even more pernicious. The business and economic scenario has altered permanently. As organizations restructure and improvise themselves to sail through this crisis, prescribed formulas and materialistic solutions will not be the total answer to organizational problems.

The expostulations for the business world in the aftermath of Covid 19 pandemic are multifaceted. Huge migration flows, supply chain disruptions, continuing adverse impact of long countrywide lockdowns, purchasing power reduction and shift in demand patterns in societies, are the socio-economic dilemmas being experienced across the board. As corporations have a supererogatory work force and mulled over

layoffs, it not only hurted individuals but societies at large with growth and innovation taking a back seat.

Contrary situations and ethical dilemmas are grappling decision makers where they are confronted with one of the most challenging exigencies in recent times having economic, social, emotional and ethical overtones. How they have responded to the situation, shall be reminisced by the coming generations. Organizations are faced with a need to reorient their whole business purpose. With current businesses losing their anchorage with changing business environments, some are using some portmanteau to stay onboard, not only to sustain through the crisis but also contribute constructively to help society sustain the crisis. As new economic and ethical challenges continue to emerge in post covid times, building a new ecology which is purpose driven will be the pathfinder through the haze of uncertainty.

## **2. Post Covid Business direction**

The kind of leadership proficiencies that are required today are not to be found in the leadership playbooks which were originally designed for authority and control. Leadership model that fits this age of disruption cannot be bereft of new forms of pedagogy which are personal, intimate and experiential too. The situation needs to be reviewed from multiple vantage points. Humans have an inherent capacity to reinvent themselves post any crisis. Clearly the leadership has to draw from the watchwords of human history: We Rebuild, We Heal, We Grow and We Learn. Leaders have to act as Chaperones helping their communities to rebuild, heal, grow and learn as best as they can, managing moment by moment, day by day. A Chaperone must possess qualities like flexibility, maturity, being sacrificial, teachable and prepared (Small, 2019) in keeping the journey moving in a positive direction. Chaperoning through this crisis requires leaders who have understood that Deliberate Calm and Bounded Optimism (Mckinsey Insights, Reimagining the way businesses operate, 2020) will be the keys to cope with uncertainty making organisation and leadership resilient and resourceful. Our paper also indicates that blended ethical decision making, based on the philosophical tenet of Utilitarianism and business oriented pragmatism must be woven into the culture of the organisations. We understand that Utilitarianism has faced its own criticism, hence adeptness at improvisations and heuristics, will require

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moral thinking in conflicting situations by weighing the pros and cons of each alternative and thinking critically.

Post Covid, as a bruised, grieving, anxious, stressed workforce returned to workplaces the need to heal and rebuild was even greater. Old school management principles, rooted into capitalistic thought and behaviour needed to be blended with the obscure teachings of the sacred to infuse spirituality in the corporate culture making way for corporate convalescence from the multifaceted crisis and also encourage employees to delve into their personal growth in a broader perspective. Most people are completely oblivious of the belongingness and connection to the one Universe. The Employees must be encouraged to bring moral concerns into the business conversation (Bowles, 2020). John Hope (John Hope, 2010) argues that love not only has a place in business but also is absolutely central to sustainable success. Wisdom of love, justice, dignity and respect are not just traditional spiritual ideas, they are also New Management Virtues needed in the contemporary workplace (Marcic, 1997)

### 3. Trends observed in Covid and post Covid times

The organisational culture and behaviours are expected to experience some foreseeable trends that are likely to emerge in the coming years for businesses to thrive. The areas that are drawing the attention of organisational leadership are vast. As researchers we attempt to list the most prominent ones:

- a) **Wellbeing:** Remote work increased feelings of isolation and loneliness, and managers of virtual teams made an all-out effort to combat that by fostering connection and belonging (Pitstick, 2020). Online reduced informal communication channels and at times team cohesiveness. Workforce, especially those who worked from home, were more vulnerable to encroachment of personal space. Continuous working from remote locations gradually reduced informal communication channels and at times team cohesiveness.
- b) **Sense of belongingness among employees:** Employees have a greater sense of belonging to a team where they are respected (De Cremer & R. Tyler., 2005), heard, receive fair procedural treatment (De Cremer & Blader, 2006) and feel connected to

the larger goals of the organization. They feel that their skill sets and strong points can contribute to the larger purpose of the organization. The coming time belongs to the cross-border organisations functioning in a world that is divided by geographical, political, ethnic, economic and social differences and binding the workforce cohesively is a major task for management. The feeling of belongingness to the team and organization makes people cross their distinctive socio-cultural-mindset templates to fulfill their commitment towards the greater goals, this in fact, can be an asset to a culturally diverse organisation. Approbation of contribution towards the organisation can help cultivate a sense of belongingness in a highly diverse and even polarized world (Volini, et al., 2020).

- c) **Humanity's precedence over technology:** Even before the pandemic, there was shifting propensity towards greater automation and digitalization of work, Advances in information technology and changes in social and economic relationships have led individual workers and organizations to explore various types of distributed work arrangements (Venkatesh & Vitalari, 1992). Covid-19 just accelerated the trends. Digitalization of work is rendering even the most skilled workforce obsolete with technological advancements taking place at a phantom pace and the only way to thrive is to build a workforce with a learning mindset which is open to renew and upgrade its skills and is keen on innovating. The advancements in technology led to the development of Tele-Health which was predicted to replace humans (Korzep, 2010). However, it must be understood that technology can amplify and supplement work but can't be a replacement for human intellect and commitment. The humane side exhibited by the healthcare workers during the pandemic is awe inspiring and showed that Technology shall be seen as an augmentative and synergistic tool to amplify human efforts rather than substitute for it.
- d) **Stakeholder capitalism:** The capitalistic theory propounded by Adam Smith no longer holds ground. Balance between economic interest and greater good is the only way to thrive in the long

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run. Leaders need to recalibrate organisational and personal goals towards stakeholders, building trust between organisation and its various stakeholders. However, a bounded oculism towards direct stakeholders only will no longer serve the purpose. The pandemic and its aftermath has paved way to a more capacious perspective towards stakeholders than the current philosophies of being responsible towards stakeholders through CSR and sustainable business practices.

- e) **Building trust** - Reliable behaviour, good communication, sincerity, competence, integrity and goal congruence (Karlsen, Græe, & Massaoud, 2008) are the cornerstones of building trust between the organisation and the pool of stakeholders. A clear and truthful communication can lay the foundation stone for trust building as it creates an environment for sincere mutual codependency. Growing skepticism towards organisations makes leadership, communications, trust, corporate performance and reputation inextricably linked (Beslin & Reddin, 2004).

#### 4. Spirituality: A Chaperone post Covid crisis

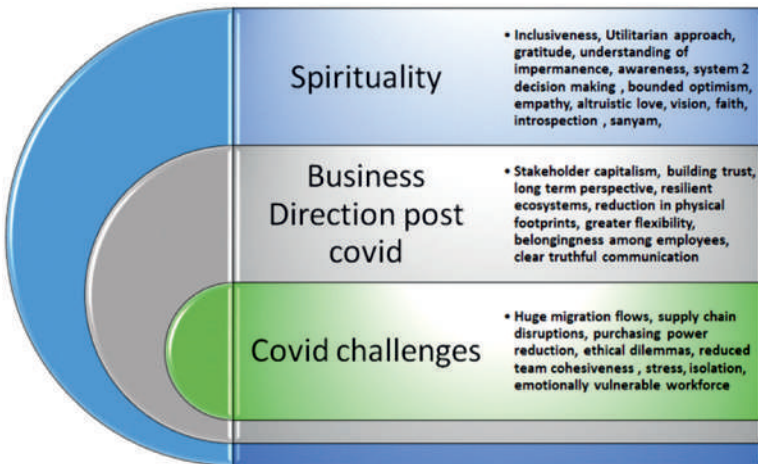
*“ Great leadership begins with being a whole human being ”* (Tony Schwartz).

What are we looking for in the Leader in such tumultuous times! Who is and who can be a whole human being?

Successful leaders are more fluid in their approach towards decision making. They conjugate their teams through common goals instead of flow of authority in a top-down approach. Such an approach gives the team members autonomy to deliberate over situations and provide input and take decisions instead of following a chain of command. Studies have suggested the qualities that are expected of leaders in times of crisis and how they should operate to bring their people together and sail through the crisis as a team (Popovics, 2022) (Banerjee, 2014) (Datskovska, 2020). Much less has been said about how a leader should equip himself to cope with the pressures that may emerge with uncertainties and surprises that essentially define any crisis. The recent crisis has made everyone realize that those who do not have spiritual moorings may lose their way buckling under pressure as their patience runs out and frustration sets in. As Covid continued to lash out at all

economic activities and no activity could be undertaken, big or small without accommodating this factor into account, there seems to be no immediate end to this crisis. It takes a great deal of consciousness from leaders in the midst of crisis and upheaval to maintain a balance that is neither too negative nor overly optimistic (Mckinsey Insights, May 2020). Amid the storm, there needs to be an anchor to hold and this role has to be played by the leader in the organisation. This role is not only to take balanced decisions, but also inculcate a culture where the leader takes the clan forward towards a balanced approach amid crisis.

There is extant literature which has looked at theories of spiritual leadership. Spirituality, which has been long neglected particularly because of capitalist pursuits of the organizations and the leaders. Fry (2003) was first to incorporate spirituality into leadership theories, thus propagating the concept of spiritual leadership, the essence of which emphasizes motivating oneself intrinsically and also the others. The leader’s values, attitudes, and behaviors are its three components (see figure 1).



**Figure 1: Spirituality as Chaperone**

In complex situations, where there is time to do so, we must try to rise to the more reflective and deliberative critical level and ask what action we should endorse. What really is the right answer? Hare argues that in such situations we should employ utilitarianism (Hare, 1981).

Behavioural economist and psychologist Daniel Kahneman has done extensive research on how people think and make decisions. He construed that people use one of two systems for decision making depending upon the speed of taking decisions (see figure 2). **System 1** is the fast-thinking process, often done unconsciously and effortlessly. Human thinking process is affected by cognitive thinking and heuristics, in routine and easy tasks mostly decisions are taken instinctively, quickly based on past experiences, resemblances and rule of thumb. Emotion may play a pivotal role in these decisions. System 1 thinking is generally applied and useful where the situation warrants quick decisions and decision stakes may be low. However, it may not be the best way of handling difficult or novel situations (Kahneman, 2011). **System 2** thinking in contrast is a conscious thinking which gets triggered when awakened. This awakening would occur when we have to deal with problems that are not mundane and require deliberations. When more informed choices have to be made the need to usher in factors that will support these choices kick in. These factors require analysis and controlled slow paced focus and penetration. Thus it is often said that System 2 thinking is lazy and entails costs as it will not awaken naturally. Managers face constant dilemmas and their choices would be based on how swiftly and competently they are able to awaken System 2 thinking. (Rzeczynski, 2014)

	System 1	System 2
Characteristics	Fast Effortless Unconscious Triggers emotions Associative Looks for causation Looks for patterns Creates stories to explain events	Slow Effortful Conscious Logical Deliberative Can handle abstract concepts
Advantages	Speed of response in a crisis Easy completion of routine or repetitive tasks Creativity through associations, so good for expansive thinking	Allows reflection and consideration of the "bigger picture", options, pros and cons, consequences Can handle logic, maths, statistics Good for reductive thinking
Disadvantages	Jumps to conclusions Unhelpful emotional responses Can make errors that are not detected and corrected, such as wrong assumptions, poor judgements, false causal links	Slow, so requires time Requires effort and energy, which can lead to decision fatigue

**Figure 2: Kahneman’s System 1 and System 2 Decision making model**

Source: (Rzeczynski, 2014)

Translated to any crisis situation, System 2 thinking will essentially require people to suppress their instincts, question their assumptions and think deeply about the situation. This System 2 thinking, as mentioned

earlier is unfortunately more time consuming and more demanding than making a rapid evaluation and following the rules. And in the pressure of the moment people default to their intuitive thinking mode (Kaplan et al., 2020).

### **How does one trigger this effortful, conscious, logical and deliberative System 2 thinking?**

System 2 thinking can be inculcated through tapping into mindfulness and spirituality. Imbibing the spiritual dimension of mindfulness into management treats organizations as a value-based system, maintaining constant interaction with the environment. The journey of personal growth through self-development and self-transcendence needing deeper commitment to existential realities can build a foundation stone for system 2 thinking at individual level. System 2 thinking can't be imposed by any outside means, it's more of a self-inculcated way of functioning. It is this aspect where spirituality can play a very important role as it has shown in several studies that a spiritual quest and deep understanding of spirituality leads to individual transformation of human beings. (Pruzan, 2011). Spirituality is neither religion nor rituals, philosophy or dogma, it is rather an internal experience and a process of walking towards self-transformation. Conceptually, vision, hope/faith, and altruistic love can be the three components of spiritual leadership translated in the form of a leader's values, attitudes, and behaviors, respectively. Vision refers to a future with a meaning lending intrinsic self-value and life purpose to the employees. Hope/faith is built upon the confidence of the leader in his ability to achieve the said vision. High levels of a leader's confidence can push the subordinates to attain the organizational mission. Altruistic love arises out of a series of leader behaviors which pegs itself on mutual care and respect and produces a heightened feeling of being understood and appreciated by organizational members, thus forging a favorable organizational culture. In this spiritual leadership model, Vision gives intrinsic purpose to the existence (Chen & Yang, 2012) and is spiritually rooted when employees have a sense of hope/faith that the common vision will inspire them to achieve future goals (Wang et al., 2019, Fry & Cohen, 2009). In its purest form, this feeling becomes the intrinsic reward for employees to create firm beliefs and encourage the pursuit of a meaningful organizational vision (Chen & Yang, 2012, Wang et al., 2019). Here, authors would like to state that workplace spirituality can come through its leadership as they are the



biggest actors who can shape the culture of the organisation. Hence our paper postulates that the cascading effect of Spiritual leadership is vast and multifold spreading over to the workplace, employees and in all activities of the organisation.

Spirituality is concerned with the matters of spirit. Spirituality originates from the Latin word *spiritus* which means “breath of life”. Spirituality refers to a search for meaning that transcends material well-being. It is a focus on basic, deep-rooted human values, and a relationship with a universal source, power, or divinity (Pruzan, 2011). Mindful and deliberate thinking for a long time has a tendency to transcend beyond the object and process, and capture a bigger picture for greater long term good. A sense of detachment in the thinking process helps in keeping the egoistic thinking at bay and hence decisions can be in harmony with common good. Patanjali’s Yoga sutras bring forth the concept of *sanyam* whereby one can use a combination of simultaneous practice of *Dhāraṇā* (concentration), *Dhyāna* (meditation) & *Samādhi* (union) to get to the root of thought process transcending the object and process, giving a complete knowledge of the subject to the thinker. A thinking and decision making approach on these precepts is expected to be more deliberative. *Sanyam* as per yoga sutras works at sensory, mental and spiritual level and gives a deeper understanding of the object (Indradevi, 2020) (Rajvanshi, 2020)

Another aspect that spirituality imbibes into human beings is compassion and inclusiveness. A widely used term **वसुधैकुटुम्बकम् (Vasudhaiva Kutumbakam)** is a Sanskrit phrase that means that the whole world is one single family. This idea is widely accepted in Hindu philosophy, this itself is a path to inclusiveness when you consider all a family, the differences reduce and acceptance increases. Another aspect is Faith and fearlessness. These are also the cornerstones that are developed by imbibing a spiritual outlook. The belief that faith brings fearlessness and hence ability to focus on issues at hand, fearlessness is a common trait amongst great leaders. Faith in oneself or in some higher identity acts like a pillar of psychological support and hence fearlessness. The common concept of *Leap of Faith* gives a sense of feeling that whatever happens is for the greater good and hence releases from the pressure of expectations based on numbers fueled with gains maximization and hence greed. Faith helps us adopt the strategy followed by mother Nature which focuses on giving rather than accumulation. Reduction

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in greed and stress will lead to sustainable living and happiness. (Rajvanshi, 2020)

योग:कर्मसुकौशलम् - Yog Sutra advocates that spirituality should be a way of life whether in professional sphere or private. Spirituality is more of a process than an end. Long term recovery of the organisations no doubt is a long haul and may need accommodating and nurturing what they have constantly skirted. The organizations will do well to consider what truly nourishes them along the way. A new order of the organizations which hails an integrative worldview is a harbinger of the space meant to harbour the aspiration of oneness. Organizational leadership that promotes self management will unleash individual energies as people set higher inner standards which need to be met and constantly upgraded through continuous learning. The development of the self of the decision makers forms the prerequisite for creation of such organizations. A state of consciousness which is embedded in everyday activity will reinforce oneness in the organizations. The Spirituality in management perspective extends traditional reflections on corporate purpose and focuses on a self-referential organizational-existential search for meaning, identity and success (Mitroff, 1998). The foundation of better organizational decisions lies in the development of decision makers who are more inclusive and have a peaceful consciousness. The broader the concept of self, the more the decision maker moves towards being an empathetic and all-encompassing manager. Spirituality can serve as a vehicle to reach such states by managerial decision makers, building a strong foundation for the organizations, economies, ecosystems and world in general. Ending on the note that lessons taught by Covid crisis should not be forgotten and should remind us that together we can surmount all challenges. The organizations must root its leadership into spirituality to remain sustainable. Such leaders will truly act as chaperones navigating its people successfully through turbulent times.

### **Conclusion and Implications for the Post Covid period**

The scenario that we are witnessing today is far more challenging in every aspect compared to the pre covid era. The workforce behaviour and needs as well as expectations from employers have been reset. The pre-covid business scenario aiming at growth and profits based on Kahneman's System 1 approach to leadership supported by systematic, fast, unconscious pattern-based leader responses has to give way for a

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more subtle System 2 approach being more slow, effortful, conscious and deliberative decision making the leadership handle abstract situations in the post covid era. The solutions are not readily available as the ability to have deep insights into the minds of the employees, workers and fellow colleagues post covid is relatively untested. This paper tries to invoke System 2 thinking by inculcating spiritual leadership traits. Spirituality can be a means to achieve the conscious system 2 leadership that can be the chaperone post covid crisis by triggering in the leaders of the organization who are mainly seen as the vanguards of maintaining the workplace. Various dimensions of spirituality across different cultures project toward altruistic love, inclusiveness, utilitarian approach, vision, faith, impermanence of all things and emotions, introspection, and bounded optimism. Adoption of these spiritual accouterments by the leaders can serve to be the tools for a more conscious organization which can be better equipped to handle unprecedented crises like the covid situation which is still raking the world to find solutions for a better future.

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# INDUSTRIAL REGULATIONS AND CONTRACTUALISATION IN ORGANISED MANUFACTURING INDUSTRY SINCE THE EARLY 1990s: A STATE LEVEL ANALYSIS USING ASI DATA

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## **Abstract**

In the post reforms decade of the 1990s, there have been many changes that have dotted India's economic landscape. Among them, declining quality of employment growth has been a very noticeable phenomenon. Contractualisation of the workers in the manufacturing industry is a matter of grave policy concern from the perspective of inclusive growth. It has been observed that contractualisation has intensified particularly after 1994. This paper attempts to examine how industrial regulations have uniformly contributed to the contractualisation phenomenon across major states in India. Was it due to the policies that were pursued in the pre-reform period (1950-1990) or only an outcome of the New Economic Policy of 1991?

**Keywords:** Contractualisation, Manufacturing, Industrial Regulation, Economic Reforms.

## **1. Introduction**

Even as contractualisation in India's organised manufacturing sector intensified in the post reforms period, it can't be attributed to the policies of the economic reforms alone. The mainstream literature blames labour legislations solely (Table 1). However, the empirical evidence does not support this argument if analysis of contractualisation is done at the state level. We observed that the forces and pattern of contractualisation at state level are akin to their nature at the national level.

**Table 1: Main labour legislations in India**

Category of legislations	Central labour legislations
Related to Industrial Relations	The Trade Union Act, 1926
	The Trade Union Amendment Act, 2011
	The Industrial Disputes, 1947
Related to work conditions	The Industrial Employment(Standing Orders) Act, 1946
	The Factories Act, 1948
	The Building & Other Construction Workers (Regulation of Employment & Conditions of Service)Act, 1996
	The Contract Labour ( Regulation and Abolition)Act, 1970
	The Shops and Establishment Act,
Related to wages	The Payment of wages Act, 1936
	The Payment of wages (Amendment) Act, 2005
	The Minimum Wages Act, 1948
	The Payment of Bonus Act, 1965
	The Equal Remuneration Act, 1976
	The Dock Workers(Regulation of Employment)Act, 1948
	The Plantation Labour Act, 1951
	The Mines Act, 1952
	The Merchant Shipping Act, 1958
	Related to Social Security
The Workmen’s Compensation (Amendment)Act, 2000	
The Employees’ State Insurance Act, 1948	
The Payment of Gratuity Act, 1972	
The Unorganised Workers’ Social Security Act, 2008	
Related to Women and Children	The Maternity Benefit Act, 1961
	The Child Labour (Prohibition & Regulation)Act, 1986

*Source:* Singh (2022)

The growing firm size, capital intensity, and rising technical efficiency have actually constrained growth of regular employment in the organised manufacturing sector (Singh, 2022). As the wage differential between regular and contract workers widened, contractualisation grew in the entire manufacturing sector. It has increased both in capital and technology intensive industries (like coke & refined petro-products, other non-metallic products, and other transport equipment, basic metals, and chemical industries). Therefore, the scope for growth of regular



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employment for huge size of unskilled labour is very limited given internal and external challenges of the organised manufacturing sector. We argue that the variation in extent of contractualisation across states is caused by state specific factors in addition to impact of industrial regulations.

The chapter is structured as follows. Section 2 gives a theoretical background of contractualisation in the manufacturing sector. Section 3 discusses the role of economic reforms policies in influencing contractualisation across states. Section 4 describes the research methodology adopted to carry out this study. Section 5 introduces the database that has been used for econometric analysis. Section 6 presents results and analyses the causes and forces of contractualisation in manufacturing industries at factory level. Section 7 presents the conclusions.

## **2. Industrial Regulations and Contractualisation: Theoretical Background**

Even though contractualisation in India's manufacturing sector has been pushed by global factors, the roots of the problem lie in industrial policy interventions since the decade of 1970s. It was an outcome of multiplicity of labour legislations, low education level among labour and high capital intensity across industries. Despite positive spill over effects for the formal sector, contractualisation has made economic growth less inclusive, although there are contrasting views about this in the existing literature.

Some studies argue that the multiplicity of labour legislations and their arbitrariness has constrained performance of the manufacturing sector. On employment protection legislations (EPL), many economists have argued for diluting the jaws of these legislations to improve performance of the sector (Fallon and Lucas, 1991; Lucas Jr, 1993; Besley and Burgess, 2002; Dougherty, 2008). In India's context, there are many other studies that have underlined the severity of labour legislations (Ghose, 2005; Roy, 2004; Panagariya, 2008).

However, others refuted these arguments for several flaws in the methodologies used (Nagraj, 2004; Schmidt, 2005; Chaudhari, 2015; Anant et al., 2006; Sakthivel and Joddar, 2006; Sood et al., 2014).

They also argue that there were instances of blatant violations of these laws in the post reforms period. There are several others who denounce labour market informality by saying that it leads to income inequality as labour has weak bargaining power (Jose, 2008; Sharma, 2006; Rutkowski, 2006). Other studies argue that the increasing use of capital-intensive production methods by manufacturing industries has displaced regular labour (Mundle, 1993; Deshpande, 2004). The industrial concentration across states was not determined by quality of business environment only in the post-reform period. Rather this has to do with the persisting regional imbalance in industrialisation over several decades (1950-1990), which was also caused by these policy interventions (Papola, 1994b). This is revealed by Table( 2). The percentage share of only three states -Maharashtra, Gujrat, and Tamil Nadu, increased sharply over after 1999-00. It is surprising that none of them is among top achiever states in terms of ease of doing business ranking. Top ranking states include Andhra Pradesh, Telangana, Haryana, Jharkhand, Gujrat as per 2018 report of World Bank. See <http://www.doing business.org>.

**Table 2: State wise share in industrial distribution (2018-19) (%)**

States	GVA	Mfg GVA	Workers in total industrial emp	Workers in Mfg Emp	TPE to industrial emp	TPE to total Mfg emp
Gujrat	14.6	14.84	10.05	10.08	10.14	10.2
Maharashtra	21.46	22.17	12.72	12.58	13.93	13.74
Karnataka	6.35	6.24	6.76	6.73	6.85	6.81
West Bengal	2.61	2.51	5	5.05	4.77	4.81
Tamil Nadu	10.02	10.2	15.72	15.9	15.12	15.32
Panjab	2.24	2.37	4.65	4.74	4.45	4.54
MP	2.4	2.22	2.29	2.27	2.38	2.35
AP	2.54	2.29	3.97	3.81	3.86	3.7
Rajasthan	3.07	3.02	3.41	3.4	3.47	3.46
Uttarakhand	3.98	4.03	2.99	2.97	2.86	2.86
Haryana	4.19	3.91	4.48	4.57	4.52	4.64
UP	5.71	5.39	6.72	6.69	6.74	6.69
Others	20.83	20.81	21.24	21.21	20.91	20.88
Total	100	100	100	100	100	100

*Source:* Author’s calculations based on ASI data

\*TPE-Total Persons Engaged

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Without scratching into the nitty-gritty of the index, we find that these states have done well in industrial performance. However, there are structural characteristics of every state that determines its industrial performance factors (Factors such as productivity level differences, capital investment, infrastructure, human resources, regulatory framework, and human development). This index may not have captured all such factors. Papola (1994a) argued that industrial growth has diverged across states after reforms. The states like Gujrat, Maharashtra, Haryana, and Tamil Nadu were the most industrialised in 2008-09 in terms of share of the manufacturing sector to gross state domestic product. He argued that while most of states have displayed structural shift from agriculture to other sectors, Rajasthan, Orissa, and Gujrat have registered largest shift in favour of the manufacturing sector. Industrial productivity does vary across states and capital intensive is essential to raise it.

Even as capital intensity is essential for adding to productive capacity, productivity must be raised to enhance economic growth efficiently (Lewis, 1954). However, the need for more doses of capital can be avoided for improving manufacturing value added if efficient human capital is available in an economy. This will promote labour absorbing industrial growth. The chronic shortage of skilled manpower is another decisive factor underlying contractualisation. As skill formation was not among core concerns of industrial policies even in the pre-reforms period (1950-90), reform measures comprising amendments in some industrial regulations can't account for the phenomenon of contractualisation. We argue that contractualisation was not caused by the economic reforms of the early 1990s rather it resulted from lack of holistic industrial policy interventions of pre-reforms period largely.

### **3. Economic Reforms and Contractualisation Across States**

Contractualisation across states is not impacted by amendments in industrial regulations as attempted by some states. Rather it is due to factors like import penetration, rising profit share has also contributed to extent of contractualisation particularly after 2005. Dougherty (2008) argued that amendments to industrial laws have enabled industrial performance in Indian states (Maharashtra, Karnataka, Punjab, Gujrat, and Uttar Pradesh, Tamil Nadu, and Madhya Pradesh), who amended key industrial regulations, including the Industrial Disputes Act, 1947 and the Factories Act, 1948. The Contract Act, 1970 has been amended

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in states like Rajasthan, Karnataka, Gujrat, Andhra Pradesh, Punjab, and Orissa} in addition to the previous group of states.

It was observed that the states having better industrial relations have recorded an improvement in their industrial performance. This improvement has served interests of employers as profitability has increased.

We observed that profits in organised manufacturing sector increased sharply. The percentage growth in profits was to the tune of 3900 percent during entire period 1990-91-91/2014-15. Whereas emoluments increased by 1400 percent only over this period in nominal terms over 1990-91/2014-15. Profit share in distribution of value added increased sharply and highest from 1999-00 onwards which started to decline after 2007-08 only. It is but natural to conjecture that rising profit share might have induced contractualisation.

In addition to the rise in profit share, wide wage gap between regular and contract workers added to the share of contract workers. The latter earn 45 percent less than regular workers. The empirical results do validate this causality for all firms. Bhandari and Heshmati (2005) argued that wage gap between regular and contract workers is determined by factors such as education level, skills, union membership, and migration. They argue that factors like difference in labour productivity and weak bargaining power of contract workers. Table(3) reveals that wage gap for regular and contract workers is huge. Real wages of regular workers were higher than that of contract workers. The regular workers earn three fourth of total wage bill across industries barring a few industries (like food, wood, other non-metallic, leather, electronic, and fabricated metals).

The disparity in level of contractualisation across states may be due to its growing importance for industrial performance and inflow of foreign direct investment. Few states/union territories namely Maharashtra, Delhi, Tamil Nadu, Karnataka, and Gujrat which have collectively received more than 54 percent of total FDI approved since 1991. Figure (1) reveals that states of Punjab, Haryana, Rajasthan, Gujrat, Maharashtra, and Andhra Pradesh have contractualisation level above national average. Among them, Andhra Pradesh and Haryana have recorded highest level. The state of Andhra Pradesh has allowed use

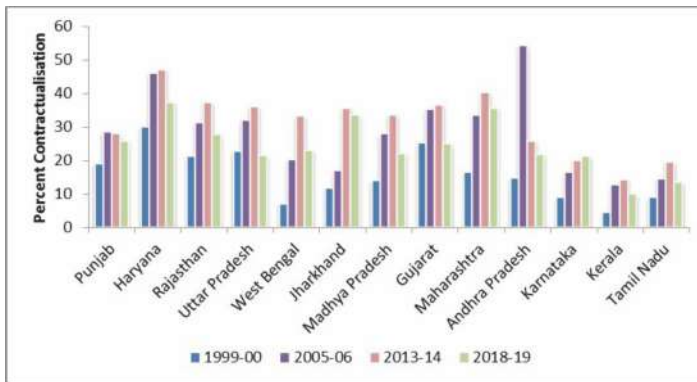
of contract workers in non-core activities of any establishment under the State Amendment Andhra Pradesh Contract Labour(Regulation and Abolition) Act, 2003. However, these establishments are engaged in production activities which are normally done by contractors, do not require permanent workers, and are subject to market instability.

**Table 3: Wage gap between regular and contract workers  
(at 1991 prices)**

Industry	1999-00	2005-06	2009-10	2018-19
<i>low tech industries</i>				
Food products & Beverages	46.33	39.75	52.96	75.81
Tobacco products	-263.35	-203.00	-90.76	35.99
Textiles	80.73	76.48	76.21	84.97
Apparels, Dressing & Dyeing of fur	80.86	65.53	71.15	84.74
Tanning and dressing leather	62.09	50.70	61.95	77.03
wood & products	62.76	24.15	41.51	64.96
Paper & paper products	68.94	66.67	71.41	78.89
publishing, Printing & recorded	93.76	88.53	84.68	87.71
Furniture & mfg.	62.57	78.04	76.41	83.76
<i>Medium tech industries</i>				
Coke & refined petro products	89.03	85.08	84.89	94.43
Rubber & plastics	79.98	66.84	73.33	73.25
other non-metallic products	31.61	9.97	25.79	40.69
Basic Metals	83.77	80.92	76.06	84.92
Fabricated metal products except machinery equipment	62.39	42.06	58.06	71.50
<i>High tech industries</i>				
Chemicals& Chemical products	80.37	71.05	70.28	76.65
Machinery Equipment	55.98	24.45	22.47	65.19
Office, accounting, computer	97.90	95.73	80.94	84.32
Electrical equipment	90.51	78.25	73.53	80.29
Medical, precision and optical instruments, clock & watches	94.75	86.75	79.39	92.70
Motor Vehicles, trailers, semi trailers	92.55	82.16	78.64	82.60
Other Transport Equipment	88.73	71.08	69.28	75.77
All manufacturing sector	72.92	64.58	66.09	77.52

Source: Author's calculations based on ASI data

The lack of uniformity of the labour legislations has much influence on contents of amendments and their purview. There are dissimilar benchmarks in its application of the Contract Labour (Regulation and Abolition) Act, 1970 across these states. While it applies to all establishments employing ten or more workers in Gujrat and West Bengal, the threshold of workers is fifty in Rajasthan for this Act to apply. It may appear that favourable investment climate must have induced contractualisation. However, there is no such homogeneity in nature of contractualisation at state level. We argue that state specific conditions have influenced extent of contractualisation there which is shown by empirical analysis in subsequent sections.



**Figure 1: Contract workers in total workers in organised manufacturing across states, 1999-2019**

*Source:* Author's estimates based on ASI data

#### 4. Research Methodology

In comparison to empirical studies on analysis of productivity growth, there is relatively lesser literature on contractualisation and casualisation in India's manufacturing sector. Many research studies have estimated productivity to study its implications for employment growth. We have used Ordinary Least Square (OLS) method for running multiple variable regression models (Model-I & Model-II). Model-I was framed to check significance of contract workers for the manufacturing output at different points of time. Model 2, was framed to examine significant of relevant explanatory variables.

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These regression models have taken four different points of time (1999-00, 2004-05, 2009-10, and 2013-14). We have used NIC-1998 classification in this study. Appropriate concordance has been done. The influence of multi-collinearity and endogeneity on estimates was thus minimized by making it a cross-sectional study. Given the huge volume of observations for every variable across the years in post reforms period, we decided to study contractualisation phenomenon at four points of time as mentioned in the beginning of this section.

Regression equation(2), has been used to find out significant determinants of contractualisation at factory level in organised manufacturing sector. In order to get BLUE estimates (Gauss Markov theorem requires a particular dataset to meet standard assumptions to satisfy the best linear unbiased estimates(BLUE) property), we have made a zero conditional mean assumption. In addition, we have assumed that error term to have equal variance  $E$  has equal variance. As data on many variables in this database suffers from problem of outliers, their values were winsorised.

The Ramsey RESET (11 Regression specification error test (RESET) which is used to detect misspecification of functional form of a regression model) and Linktest (For empirical analysis, this test is used to rule out misspecification of explanatory variables) were carried out to check for model specification and ruling out error of omitted variables from the model. There was no multi-collinearity as the value of VIF (It shows that how much coefficients of estimated variables are inflated vis-a-vis predicted variables, was very low (Wooldridge, 2015). In order to deal with it, heteroskedasticity-robust estimation was done. The estimation has been done for contribution of contract workers to output of all firms at unit level.

## 5. Data

We have used select variables from the Annual Survey Industries (ASI) data which Central Statistical Organisation (CSO) publishes annually for the organised manufacturing sector. We have chosen the Annual Survey of Industries database for its coverage, accessibility, and availability at the firm level. It is a large database and is updated annually. The raw data of ASI for fifteen years (1998-99 to 2014-15) was arranged in usable format for processing with STATA-statistical software- as per tabulation programme that comprises information on twenty-seven variables of organised manufacturing sector for each year. Questionnaire

and flow chart of technical programme carry details to extract and match data with publish reports of Annual Survey of Industries.

### ***5.1. Description of sample***

The ASI database provides data on most of the variables for organised manufacturing industries. However, it does not collect data on tariff rates, skilled manpower, and investment climate etc. In this research, we have developed two modelsto test study significance of contract workers for the manufacturing output growth and find out determinants of contractualisation at factory level.

### ***5.2. Construction and description of variables***

We have used different indicators of the manufacturing sector performance as given in ASI data for the empirical analysis. We have used physical capital formation, imported inputs, wage gap between regular and contract workers, and supervisory staff as proxies for industrial investment climate, tariff rates, labour cost, and skilled manpower respectively.

## **6. Empirical results and analysis**

### **Objectives**

- 1 Examining impact of policy shift on growth of employment in manufacturing sector during 1999-00 to 2018-19
- 2 Assessing empirically determinants of contractualisation in the organised manufacturing sector.

We hypothesised that relatively easier access of large firms to imported inputs in post reforms period replaced regular work by contractual employment. In addition, factors growing profit share and higher wages of regular relative to contract workers put pressure on job quality. For a precise understanding, these dimensions have been captured in both the models that we have framed for empirical analysis.



**Table 4: Description of variables used for empirical analysis**

Variables	Label used	Description
CONTRACT	Contra	Contractualisation
IMPTCOM	imp_share	Import Competition
LABCOST	cw_share	Wage gap between regular and contract workers
COSFINCAP	intt_cost	Interest cost of finance capital
INVESTCL	newcapital	Investment climate
PROFT	profit_shr	Profitability
OUTPT	log_output	Output
PHYCAP	log_invested	Total invested capital
ENERCO	log_fuels	Energy cost
LABFLEX	c_workers	Contract workers for labour flexibility
SKILLAB	super_staff	Supervisory staff

Source: Author’s estimation based on ASI data

*Hypotheses*

1. High capital intensity induced contractualisation across the manufacturing production
2. Imported inputs displaced regular workers by contract workers
3. Labour cost is not a significant factor of contractualisation
4. Financial liberalisation has induced contractualisation
5. Rising profit share in manufacturing value added induced further contractualisation

**Model I**

$$\log Y_i = \beta_0 + \beta_1 \log X_{1i} + \beta_2 \log X_{2i} + \beta_3 X_{3i} + \beta_4 X_{4i} + \epsilon_i \quad (1)$$

$$\beta_0 > 0, \beta_1 > 0, \beta_2 > 0, \beta_3 > 0, \beta_4 > 0$$

where,  $Y_i$  = output of  $i^{th}$  firm,  $X_{1i}$  = invested capital of  $i^{th}$  firm,  $X_{2i}$  = fuels of  $i^{th}$  firm,  $X_{3i}$  = contract workers of  $i^{th}$  firm,  $X_{4i}$  = supervisory staff of  $i^{th}$  firm

## Model 2

$$Y_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \beta_3 X_{3i} + \beta_4 X_{4i} + \beta_5 X_{5i} + \epsilon_i \quad (2)$$

$$\beta_0 > 0, \beta_1 > 0, \beta_2 < 0, \beta_3 > 0, \beta_4 > 0, \beta_5 > 0,$$

where,  $Y_i$  = contrac of  $i^{\text{th}}$  firm,  $X_{1i}$  = profit\_shr of  $i^{\text{th}}$  firm,  $X_{2i}$  = cw\_share of  $i^{\text{th}}$  firm,  $X_{3i}$  = intt\_cost of  $i^{\text{th}}$  firm,  $X_{4i}$  = newcapital of  $i^{\text{th}}$  firm,  $X_{5i}$  = imp\_share of  $i^{\text{th}}$  firm

A model similar to our Model-I has been used by Rajeev (2009) for finding out contribution of contract workers to the industrial output though it was a panel data study. Unlike it, we have framed the model-II to understand determining factors and processes of contractualisation. The dependent variable, CONTRACT, defines contractualisation as proportion of contract workers out of total workers that are engaged in each industry. The independent variables include: *PROFT*, *LABCOST*, *COSFINCAP*, *INVESTCL*, and *IMPTCOM*. The variable *IMPTCOM* has been used as a proxy for import tariffs to see as to how import competition has influenced contractualisation. With trade liberalisation, the share of imported inputs has increased manufacturing production.

The variable *COSFINCAP* is used for studying impact of financial liberalisation on use of contract workers. It is hypothesised that financial liberalisation tends to raise capital intensity in production due to declining interest cost of institutional credit. The relatively easier access of big industries this type of credit prompts them to respond actively to slight changes in interest rates. Hence, declining interest rate tends to encourage producers to replace labour factor with machinery and capital in production process.

The variable *INVESTCL* is used to know the statistical significance of investment climate for contractualisation of workforce. Last but not the least, *LABCOST* was included to find out whether wage gap between regular and contract workers has enhanced use of contract workers largely. As wages of regular workers go up, employment of contract workers will go up. Thus, contractualisation will increase in medium and big industries and, in turn, which would impact feasibility of realising inclusive growth in the country.

### 6.1. Determinants of contractualisation across states

The growing profit share and higher labour cost of regular workers are two key factors that have expedited contractualisation of the manufacturing jobs across states with some exceptions (Singh, 2022). We find that if it has to anything to do with rigidity or flexibility of industrial regulations. In states such as Tamil Nadu, Uttar Pradesh, Andhra Pradesh, Rajasthan, and Karnataka, which have flexible regulations have seen no lesser degree of contractualisation than that in Bengal, Odisha, and Maharashtra where industrial regulations are rigid.

We also find that in case of Tamil Nadu and Gujrat it was wage gap which was statistically significant as revealed by table(5c) and table(5a). The process of contractualisation is influenced by many factors at state level. In case of Gujrat, it is wage gap that was that main catalyst for contractualisation as shown by table(5a). All other factors simply did not matter. Unlike inference made by Hirway and Shah (2011), capital intensity is not statistically significant. They had argued that industries in the state had become more capital which led to informalisation of jobs.

**Table 5a: Contractualisation in Gujrat**

Contra	1999-00	2004-05	2009-10	2013-14	2018-19
imp_share	na	376.80	-34.59**	-873.90	0.160***
		-281.00	-12.30	-615.70	-0.0133
intt_cost	na	0.00	0.00	-0.0450*	-0.13
		0.00	0.00	-0.02	-0.0677
profit_shr	na	0.00	0.0000126**	0.00	-0.000522***
		0.00	0.00	0.00	-0.0000673
cw_share	na	0.802***	-0.0000878***	0.00	0.226***
		-0.02	0.00	0.00	-0.0111
newcapital	na	-19.85	0.00	0.01	-82.17***
		-87.98	0.00	-0.02	-17.59
_cons	na	0.220***	0.00261***	1.001***	0.179***
		-0.01	0.00	0.00	-0.00421
N		1059	1503	60	11008
R2		0.661	0.004	0.238	0.204

Source: Author's estimates, Note: Standard errors in parentheses

\* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001

Unlike Gujrat, all explanatory variables were influential in deciding the quantum and pace of contractualisation in Maharashtra. Table(5b) shows that the impact of wage gap, import competition, and investment climate was maximum for all these years in explaining this phenomenon. However, year 2004-05 stands out in this respect as the coefficient value of these variables were very high. The value of  $R^2$  was also high.

Table(5c) reveals that in case of Tamil Nadu, contractualisation process was not influenced much by variables in the model. We find that except 2009-10, variables were not statistically significant. For this year, factors such as imported inputs, profits, labour cost were instrumental for contractualisation.

**Table 5b: Contractualisation in Maharashtra**

Contrac	1999-00	2004-05	2009-10	2013-14	2018-19
imp_share	na	-210.5*	58.53***	-221.7***	0.0861***
		-82.60	-10.35	-63.78	-0.0151
intt_cost	na	-0.0520*	0.0195***	0.00273***	-0.204***
		-0.02	0.00	0.00	-0.0282
profit_shr	na	0.000217***	0.0000152***	0.00	0.000364
		0.00	0.00	0.00	-0.000431
cw_share	na	0.816***	-0.0000625***	-0.0217***	0.123***
		-0.01	0.00	0.00	-0.00603
newcapital	na	561.50	0.000766*	0.00	-335.9***
		-2470.20	0.00	0.00	-49.03
_cons	na	0.218***	0.00265***	1.021***	0.429***
		0.00	0.00	0.00	-0.00484
N	na	4095.00	4788.00	548.00	11736
R2		0.75	0.05	0.61	0.099

*Source:* Author's estimates, Note: Standard errors in parentheses

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

**Table 5c: Contractualisation in Tamil Nadu**

Contrac	1999-00	2004-05	2009-10	2013-14	2018-19
imp_share	na	376.80	-34.59**	-873.90	0.160***
		-281.00	-12.30	-615.70	-0.0133
intt_cost	na	0.00	0.00	-0.0450*	-0.13
		0.00	0.00	-0.02	-0.0677
profit_shr	na	0.00	0.0000126**	0.00	-0.000522***
		0.00	0.00	0.00	-0.0000673
cw_share	na	0.802***	-0.0000878***	0.00	0.226***
		-0.02	0.00	0.00	-0.0111
newcapital	na	-19.85	0.00	0.01	-82.17***
		-87.98	0.00	-0.02	-17.59
_cons	na	0.220***	0.00261***	1.001***	0.179***
		-0.01	0.00	0.00	-0.00421
N		1059	1503	60	11008
R2		0.661	0.004	0.238	0.204

Source: Author's estimates, Note: Standard errors in parentheses

\* p <0.05, \*\* p <0.01, \*\*\* p <0.001

Table(5d) discloses that for state of Karnataka, factors such as imported inputs, interest cost, profit share, and wage of regular workers were significant for 2004-05 and 2009-10. However, only imported inputs and profit share mattered for contractualisation in 2013-14.

**Table 5d: Contractualisation in Karnataka**

Contrac	1999-00	2004-05	2009-10	2013-14	2018-19
imp_share	-0.06	2462.8***	40.56***	-732.8***	-0.116***
	-0.03	-327.40	-11.11	-33.60	-0.017
intt_cost	0.534***	-0.686***	0.0125**	0.00	-0.397***
	-0.12	-0.11	0.00	0.00	-0.107
profit_shr	0.0290***	0.0312***	0.000104***	-0.000111***	-0.00127***
	-0.01	0.00	0.00	0.00	-0.000289
cw_share	0.00000999***	0.851***	-0.000446***	0.00	0.159***
	0.00	-0.01	0.00	0.00	-0.011
newcapital	-3793.5***	8795.10	0.00	0.00	-0.00454***
	-912.90	-6583.40	0.00	0.00	-0.0000811
_cons	0.122***	0.177***	0.00169***	1.002***	0.338***
	-0.01	-0.01	0.00	0.00	-0.00704
N	266	450	487	132	6224
R2	0.785	0.839	0.283	0.908	0.142

Source: Author's estimates, Note: Standard errors in parentheses

\* p <0.05, \*\* p <0.01, \*\*\* p <0.001

**Table 5e: Contractualisation in Andhra Pradesh**

Contrac	1999-00	2004-05	2009-10	2013-14	2018-19
imp_share	-0.09	376.80	-34.59**	-873.90	0.156***
	-0.06	-281.00	-12.30	-615.70	-0.0235
intt_cost	-0.07	0.00	0.00	-0.0450*	-0.123
	-0.04	0.00	0.00	-0.02	-0.133
profit_shr	0.00616*	0.00	0.0000126**	0.00	-0.00202***
	0.00	0.00	0.00	0.00	-0.000544
cw_share	0.00000752***	0.802***	-0.0000878***	0.00	0.146***
	0.00	-0.02	0.00	0.00	-0.0133
newcapital	8525.7***	-19.85	0.00	0.01	-46.89**
	-2066.70	-87.98	0.00	-0.02	-14.29
_cons	0.212***	0.220***	0.00261***	1.001***	0.308***
	-0.02	-0.01	0.00	0.00	-0.0101
N	326	1059	1503	60	2504
R2	0.473	0.661	0.004	0.238	0.158

Source: Author's estimates, Note: Standard errors in parentheses

\* p <0.05, \*\* p <0.01, \*\*\* p <0.001

The scenario changed for Andhra Pradesh where only labour cost has emerged as the only factor behind this phenomenon as shown by table(5e).

**Table 5f: Contractualisation in Rajasthan**

Contra	1999-00	2004-05	2009-10	2013-14	2018-19
imp_share	0.0729	2462.8***	40.56***	-732.8***	0.0509
	-0.0458	-327.4	-11.11	-33.6	-0.0302
intt_cost	0.0246*	-0.686***	0.0125**	0.0039	-0.127
	-0.011	-0.105	-0.00455	-0.00401	-0.162
profit_shr	0.00577	0.0312***	0.000104***	-0.000111***	0.00197
	-0.0033	-0.00458	-2.46E-05	-0.0000313	-0.00184
cw_share	0.0000110***	0.851***	-0.000446***	-0.000363	0.355***
	-0.000000465	-0.014	-4.82E-05	-0.00207	-0.0302
newcapital	596.8	8795.1	0.00127	-0.000012	-575.0***
	-1895.4	-6583.4	-0.0013	-0.00000683	-101.4
_cons	0.104***	0.177***	0.00169***	1.002***	0.286***
	-0.016	-0.0103	-0.000112	-0.00223	-0.0109
N	194	450	487	132	2704
R2	0.722	0.839	0.283	0.908	0.216

Source: Author's estimates, Note: Standard errors in parentheses

\* p <0.05, \*\* p <0.01, \*\*\* p <0.001

There were other factors like imports and profits were also responsible in the year 2009-10. The state has carried out substantial labour reforms<sup>16</sup> in past few years. As shown by table(5f), in case of Rajasthan, all factors except invested capital were significant for all years except 2013-14 in which imported inputs and profits only contributed to contractualisation.

Contractualisation across firms was pulled up by factors like rising import penetration, profit share, labour cost of regular workers, and declining cost of finance capital. However, the impact of wage gap on contractualisation was highest as the value of R2 increased fast as we included wage gap in the regression. Across states, contractualisation was caused by factors like investment climate, profit share, and labour cost. The empirical results bring home the point that amendments in the industrial regulations that were carried out in some states have not enabled them to achieve any decline in contractualisation.

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Unlike the existing studies, we have endeavoured to explore find an answer to the question as to what are the specific factors that contributed to contractualisation at firm level in post reforms period. As suggested by other studies that decision to hire contract workers is procedures for issuing a license to contractors has been made less time consuming.

The amendments made to the Factory Act,1956, the ID Act,1947, and the Contract Labour(Regulation and Absorption) Act,1970. The definition of a factory has been changed for both power using and without power using units. Under the Industrial Disputes Act, the threshold of workers for lay off and retrenchment has been increased from previously 100 workers to 300 workers. The use of contractual workers has got a policy push as administrative not just about inefficiency in labour use(Bhandari and Heshmati, 2005). It can't be about investment climate and business environment either. Had it been so, industrial performance would have remained low in states such as West Bengal, Odisha, and Maharashtra which are known for relatively more rigid labour laws.

In our results, we find that factors like growing import penetration, profits ,declining cost of financial capital, and high wage gap of regular workers were statistically significant for all firms in general. Thus, rapid growth of contractualisation in the manufacturing industries was attributable to them. Contrary to the inferences Besley and Burgess (2002), we have found that industrial relations environment does not matter much for deciding the quality of manufacturing employment growth across states. They concluded that pro- worker regulations tend to cause low investment, employment, productivity, and output in registered manufacturing industries. In our empirical results, we found that the states that have made substantial amendments to the Contract Act(Regulation and Absorption)1970 have not seen any improvement in quality of employment.

### **The way forward**

Contractualisation of the workers in India's organised manufacturing sector has risen rapidly since early 1990s.It is reflected by trends in industrial database of Annual Survey of Industries(ASI).The empirical results that overall factors such as import penetration, profit share, labour cost, and cost of finance capital were key determinants of contractualisation across organised manufacturing sector. We have also



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observed that productivity and small size of India's manufacturing sector have resulted from inappropriate industrial regulations.

In addition, nature of determinants did change for cross state contractualisation. Nonetheless, it is certain that policies of economic reforms were not accountable solely for contractualisation. Across states, contractualisation was caused by factors like investment climate, profit share, and labour cost. We have found that amendments in the industrial regulations have not enabled the concerned states to achieve any decline in contractualisation. On the basis of our empirical results we may recommend that urgent policy interventions must be initiated to remove multiple industrial regulations that constrain the performance of the manufacturing sector. The relevant industrial regulations must be amended so as to facilitate faster industrial growth.

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# INFLUENCER MARKETING: A NEW TREND OPENING UP NEW VIRTUAL PROSPECTS

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## **Abstract**

The development of the use of social media has changed the way people communicate in which companies connect with their customers. The capacity of important influence (also known as influencers) to interact with targeted customers to buy a company's goods is being leveraged by modern businesses, which are trying to recognize and utilise the capacity of these individuals to showcase their goods via social media. What inspires individuals to follow these influencers, on the other hand, is still mostly unknown. The current research seeks to fill this knowledge gap in the existing literature by attempting to comprehend influencer marketing. It was decided to write this paper about influencer marketing since, as previously said, it is a highly real challenge. There has been some influencer marketing in the past, but the concept seems to be more popular than ever before since social media currently provides so many opportunities for influencer marketing. However, it was still extremely difficult to locate scholarly studies or papers on the subject. Most likely, this was the case since influencer marketing is still a very new concept, and was not even recognized as a separate sector just a few short years ago.

**Keywords:** Marketing, Influencer, Social Media, Digital, Promotion, Relationship, Customer.

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**Introduction**

Influencer marketing is a kind of marketing that has grown in popularity significantly over the last few times. Influencer marketing is a tremendous stage to engage in, particularly now that social media is such a significant phenomenon. There are several various influencer accounts to be found on various social media platforms, including those of celebrities, bloggers, YouTube stars, and ordinary individuals who have many followers. A large number of the accounts are owned by people who collaborate with other businesses to market their goods and services. It seems that the phenomena of influencer marketing are not going away anytime soon as such partnership postings continue to surface on social media networks on a regular basis.

Influencer marketing is the technique of paying someone to actively promote the brand, often via social media platforms including Instagram and YouTube, among other places. As per a 2017 poll conducted by a Team of National Marketers External, 75 percent of organizations use influencer marketing as part of their overall promotional plan. Some colleges are providing degrees in influencer marketing methods and influencer-related public relations as the influencer marketing sector continues to expand. Influencers are individuals who can reach and connect with a big number of people, the number of that audience might vary. For example, Mega-influencers are well-known celebrities who have more than a million followers on social media and are well-known for their acting and other heavily publicized activities and have more than a million followers on social media. In most cases, macro-influencers are “popular on social media,” and they are often what people are referring to when they speak about “influencers”. They usually have between 100,000 and 1,000,000 (million) followers. Micro-influencers are much more specialised, well-known in their sector, and can have follower counts ranging from 1,000 to 100,000; Nano-influencers, have a more instant relationship with the people, either because of their subject matter or locational concentrate and typically have less than 1,000 followers (Hayes et al., 2020), are also available.

This article gives a good overview for anyone who is interested in learning more about influencer marketing, including its advantages, disadvantages, and statistics.

## **Objectives**

The research aims to fulfil the following objectives:

- To study influencer marketing' a number of advantages and disadvantages.
- To study influencer marketing, content platforms which are classified into many categories and using social media platforms.
- To study influencer marketing and some highlights on statistical data by using secondary sources.

## **Methodology**

Social media has transformed business-to-consumer communication. These influencers may engage with specific customers, develop ideas through digital word-of-mouth, and urge their own followers to buy things from a firm via social media. This study uses secondary data from reputed journal publications, various government reports and companies' statistical reports. It is ambiguous why people follow these influencers. To fill this information gap, this research seeks to comprehend influencer marketing.

## **Influencer Marketing**

Although the phrase influencer marketing may be described explicitly, if someone does not already know what it means, it is not hard to figure out the core meaning of the phrase by simply reading those two terms (Senn, 2020) if one does not already know what it means. An influencer originated from the term "influence," which simply means to influence someone or something. This leads to the conclusion that the term "influencer" refers to a person who influences another individual as well as things. Marketing people, on the other side, work in a broad field, but the fundamental principle behind their work is to answer the wants of clients in a lucrative manner in many circumstances. A corporation may employ various marketing tactics to increase sales by promoting the product or service. Put all together, these two points lead to the conclusion that influencer marketing, in its most basic definition, refers to the use of individuals who have an influence over other persons to advertise products or services.

An industry's ability to develop deep customer connections with its customers is very significant, and influencer marketing is an extremely

successful method of accomplishing this goal. In light of the fact that consumers play a key role in marketing, it may be worthwhile to consider including them in one of the marketing tools. Furthermore, portraying an organisation's goods as well as service to a customer through the use of influencer marketing can be effective even though influencers can be regarded reassuring as well as amiable, and particularly if they accommodate a product, it can boost the confidence and goodwill of a customer in goods or services, and ideally, at the final moment of the day, turn them into prospective consumers (Kumavat, 2012).



**Figure 1: Influencer marketing**

*Source:* Author

### **Influencers in the Marketing of Influence**

In this context, influencers are individuals which other people follow or who influence other people's choices. Influencers include, for example, celebrities, bloggers, Instagrammers, i.e., individuals who use the Instagram platform, and YouTubers, i.e., people who upload videos to the YouTube platform (Burnaz et al., 2021). Essentially, these are those who are well-liked by a huge part of the followers. Influencers are readily connected with social media these days since the platform provides a fantastic platform for influencers to work on. As social media has grown in importance in daily life, influencers have become more visible.

**Why is it beneficial to concentrate on a single influencer?** Because an influencer has a greater impact on many customers than the marketing does on a small number of consumers. The reason for this may be that when an influencer offers and informs about just goods or services, customers may believe him or her to be highly trustworthy and compelling in their decision. It is particularly effective when a celebrity influencer is well-known, and others see him or her as a role model or hero. This might encourage customers to make a purchase choice because they may want to acquire the same things as the influencer and, in this manner, connect to them or be like them. Overall, the connection between influencers and his / her followers is at the heart of influencer marketing, and this is where the magic happens. Consumers can also assume what types of people might buy using a service or product which an influencer promotes through all the usages of an influencer as well as an issue that is encouraged through influencer marketing, and because many customers buy things that are comparable to things that the individuals they appreciate might have, an influencer can use this to boost the effectiveness of his or her promotion.

In accordance with the extent of their reliability, knowledge, and attractiveness, celebrities have been demonstrated to be able to affect purchasing behaviour as well as brand sentiments or opinions towards advertising. Influencer marketing is effective because superstars may influence customers' decision-making processes, as seen by success.

In the same way that various brands are distinct from one another, so too are various influencers from one. The picture of a given brand does not always correspond to the picture of every influencer, or likewise (S. Kumar et al., 2018). The importance of precisely identifying the kind of influencer who is compatible with a brand and business when a firm attempts to use influencer marketing as one of its promotional strategies is underscored by the fact that in today's world, there are several different types of influencers operating on a variety of social media platforms and posting a variety of various types of material on their accounts. Therefore, a firm that wants to use influencer marketing as a marketing technique should do extensive research on the various influencers, their brands, and social media accounts, and thoroughly process the data obtained before beginning to interact with anybody (Holmes et al., 2008).



An outline of a step-by-step social media approach for reaching out to bloggers. However, even though the four procedures were carried out in the instance of bloggers, they may also be used in the instance of other social media influencers in identifying individuals (Booth et al., (2011). Table 1 shows the four phases that must be completed:

**TABLE 1. Four Phases of Social media approach**

1	Determine your goals and strategy.
2	Investigate and evaluate
3	Participate in and connect with others
4	Prepare a report and revise it

*Source:* Author

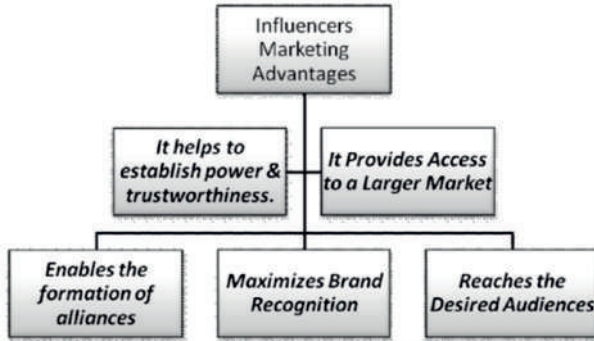
By using these methods, an organisation may better discover influencers, and then pick an influencer who is the most appropriate for the brand and who is also acceptable in other aspects, according to the organisation.

### **Influencer Marketing has several Advantages**

Influencer marketing is anticipated to grow to a \$5-10 billion sector within the next 5 years as even more companies embrace it to enhance their profitability. Considering its ease of use, many businesses are apprehensive to use influencer marketing (Tiautrakul et al. 2019). The excellent thing is that understanding how it operates & determining which influencer is best for your activities may radically transform and develop your company, making it a vital marketing tactic. Influencer marketing provides several benefits that might assist your company model in stabilising and growing.

#### ***A. It helps to establish power & trustworthiness***

Influencers have developed close connections with their followers, earning their followers' trust and reputation. Users take their suggestions seriously. Consider the example of when a celebrity promotes a service or a product, which immediately generates trust for the brand that the celebrity is supporting. Social influencers have a certain amount of power over the products or services that they are endorsing or promoting (Singh, 2021).



**Figure 2. Advantages of Influencer Marketing**

Source: Author.

### ***B. It Provides Access to a Larger Market***

By partnering with an influencer, you are not only addressing your target audience but also influencing them. You will also be able to establish a connection with a different part of the market. For example, teenagers and Generation Z customers are very valuable groups that may rapidly increase sales & earnings.

### ***C. Enables the formation of alliances***

Connecting with influencers is the beginning of a long-term relationship. By transforming yourself into an influencer, you would be able to expand your networks. Your collaboration with influencers will give great advantages to both of you.

### ***D. Maximizes Brand Recognition***

Improving brand awareness is among the immediate benefits of using influencer marketing. Your brand will become familiar to a platform target demographic, stories, and services. As a result, it is critical to provide informative information that boosts presence on social media (Cakmak, 2016).

### ***E. Reaches the Desired Audiences***

Influencers that are crucial to your brand have a social media following, which makes it easier for you to find them. As a result, when you employ an influencer, you will have an easier time reaching your

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target audience. And no need to invest more money only to evaluate and identify your target market since the influencer has already had one (Ouvrein et al., 2021).

## **Influencer marketing has a number of significant Disadvantages**

### ***A. Mistakes in Influencer Marketing Can Be Expensive for Your Organization and Brands***

Because influencer marketing is indeed a new approach, marketers are sure to make blunders. Because there is no manual for developing an effective influencer marketing plan, organizations must learn from their successes and failures. Among the most typical errors that influencers make that might harm a business are as follows:

- Failing to disclose that content is paid.
- Publishing material that does not connect with their intended demographic.
- Avoiding the FTC approval criteria, and
- Enabling to inflate followings & interactions.

### ***B. Dealing with Bad Influencers Can Be More Harmful Than Beneficial***

Finding the right influencers for a product's marketing takes a lot of time and effort. Your brand's image will suffer considerably unless you do not collaborate with the right influencers. Based on one survey, 61 percent of marketers find it difficult to locate the right influencers for their campaigns. It is difficult to tell whether an influencer has genuine followers. So, what could you do to stay away from it?

It encourages fourstarzz Media to avoid associating with the wrong influencers. This website includes a database of over 750K authentic influencers from which you may choose those who are a good match for your company. You can narrow down the influencers depending on region, speciality, reach, and other factors. You may also look for them using hashtags, usernames, and identities.

### ***C. Extremely Dangerous Situation***

As per a survey, approximately two-thirds of organisations want to increase their influencer marketing spending in 2019. However, the increased cost will not guarantee the desired results. If an influencer is unable to create appealing material, they may be unable to engage

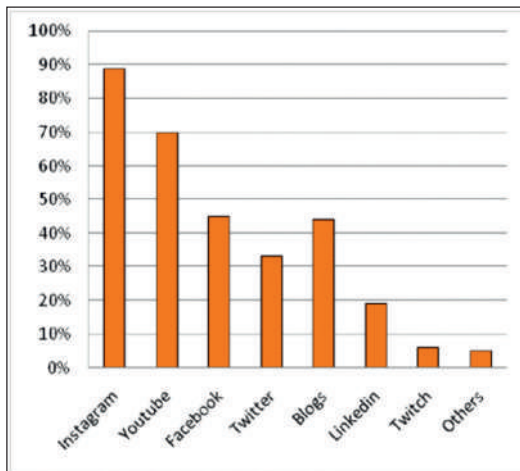
with your target audience. In such cases, your time and money would be squandered.

***D. Measuring Results Is Difficult***

You invest a deal of time and resources to discover the ideal influencers and start a petition. Your work, However, if you are unable to analyse and evaluate the state of your advertising, it may be rendered ineffective. You must decide if an influencer can produce the desired results. If not, you must discontinue your collaboration with them. When it comes to influencer marketing, though, assessing outcomes may be difficult.

**Influencer Marketing Content Platforms Are Classified into Many Categories**

Once you have decided on whatever you want to express, the following step is figuring out how to convey it in the most effective way. Listed below are many examples of the most prevalent forms of influencer marketing models, organised by platform (Kapitan et.al, 2021).



**Figure 3: Content Distribution Platforms for Influencer Marketing**

*Source:* Author

- Instagram: Instagram Post, Stories, Videos and IGTV are all available options.
- YouTube: (including YouTube Video and YouTube Live):

- Facebook: Facebook Post, Videos and Live are all examples of social media content.
- Blogs: Bloggers can post a blog post on WordPress.com.
- LinkedIn: LinkedIn Post and LinkedIn Video are some of the options.
- Twitch: Twitch Live streaming service

Influencer marketing platforms that are most often used (Influencer Marketing as a Modern Phenomenon in Reputation Management (2019).

**Influencer marketing is enhanced by using Social Media Platforms:**

However, although it is beneficial to be mindful of which social media platforms some organisations can use for influencer marketing efforts, your objectives will always change based on your marketing objectives.

When deciding which social media platforms to use for your marketing, it is critical to analyse all the parts of your advertisement and how they relate to a particular platform. Whenever it comes to influencer marketing, every platform has a distinct audience, a distinctive proportion of influencers, as well as its own set of key features (Kim et al., 2021) that makes it special.

**Table 2: Information about Social Media Platforms in the Context of Influencers**

Social Media Platform	Audience	Characteristics & Advantages
Instagram	Instagram features many young members and a significant number of Generation Z users.	Instagram posts are composed of photographs or videos that are accompanied by an explanatory description that appears in the newsfeed of followers (Aktan, 2018). Influencers may use posts and stories to place your products in a visually appealing manner, as well as to tell a narrative or give a coupon code in the caption of the post. Interacting images that portray a “specific moment” via a clip or a succession of photographs, Instagram Stories are becoming more popular. As opposed to Posts, Stories may also contain a link by using the “Swipe Up” function (Lee et al., 2020).

<b>YouTube</b>	YouTube is used by a diverse spectrum of individuals, mostly those between the ages of 18 and 34.	YouTube is known for its long-form video file, which allows influencers to share their thoughts on a funded engagement, explain how well a product performs, or effectively integrate a brand into their plot in order to increase acknowledgement. YouTube also allowed developers to include links in their explanation of the video, making it a useful platform for transformation marketing advertisements.
<b>Facebook</b>	With more than 2.4 billion members, Facebook has the greatest reach of any social media platform. Because of its large size of the audience, Facebook can reach virtually all age categories, while youthful viewers (including such Generation Z) are starting to migrate away from the site in favour of other social media platforms like Instagram, YouTube, or Twitch.	The social media network Facebook is used by many significant influencers as a secondary platform instead of their main platform. Even so, it may be a beneficial medium for magnifying an influencer's marketing if done correctly. In comparison to conventional videos, Facebook Live videos are viewed three times longer (F. Hong et al., 2014) and they may be utilized by key influencers to contact their audience in a direct, unfiltered manner.
<b>Blogs</b>	A somewhat older population of 25-49 years has accessibility to blogs, which is the most common group.	Blogs offer more in-depth, dramatic, and lengthy storytelling than traditional media. When marketing items and administrations that need in-depth description (for instance, a lengthy evaluation of a high-ticket item such as a mattress), blogs are an excellent avenue to use. They may also be used to provide additional context regarding distinctive parts of your brand's goal. Creating successful sponsored blog articles may also result in a gradual increase in organic search traffic (Trammell et al., 2005).

*Source:* Author

## Statistical Data for Influencer Marketing

The popularity of influencer marketing has only risen, which means that a great deal of study has been done, resulting in some fascinating figures. Let us look at some of the more eye-opening findings from these research projects presented below in table 3.

**Table 3: Statistics related to “Influencer marketing”**

1	<b>70% of Teens Trust Influencers More than Traditional Celebrities</b>	Although it is exceedingly tough for companies to achieve the same degree of trust as influencers do, with the help of influencer marketing, that trust might be passed on to the company. So even though 4 among 10 Younger followers believe their favourite influencer knows them better than their own friends. Influencer marketing has the additional benefit of allowing firms to avoid wasting money on self-promotion rather than rely on influencers to speak on their own and convey the message they want the audience to know and believe (Pittman et al., 2021).
2	<b>Influencer marketing assists brands in acquiring more loyal consumers.</b>	Building connections with influencers that relate to your business and developing initiatives that relate to an influencer’s followers’ beliefs have become much more crucial than ever before, especially in the digital age. Furthermore, 51 percent of marketers believe that influencer marketing can help them attract more profitable consumers.
3	<b>Influencer marketing is expected to see a rise in spending by top brands.</b>	Influencer marketing is becoming increasingly popular as even more companies and marketers understand the great outcomes it can create. Due to this effect, marketers are aiming to boost their expenditure in the next twelve months, with most choosing to work with micro-influencers. Approximately 71 percent of marketers intend to grow their expenditure in the next 12 months. The amount of money spent on advertising is rising, not just to help increase brand recognition, reach more customers, and promote brand support, but it is also quick to become a main platform, with many marketers adopting campaign KPIs to assess success (Coll, 2019).
4	<b>By 2022, the influencer marketing sector is projected to generate \$13.8 billion in revenue.</b>	During the last 2 years, the influencer marketing business has seen a tremendous increase in its growth. After just \$1.7 billion in 2016, the business is expected to rise to \$13.8 billion by 2022, as it experiences increased growth becoming a highly successful marketplace, according to the latest estimates. Given the increase in popularity, marketers will need to refine their influencer marketing strategies in terms of how programs are monitored, develop analytics to scalable programs, and consider how to handle partnerships among brands and influencers.
5	<b>Print marketing has been overtaken by social media marketing.</b>	This implies that companies are going through a period of transformation in terms of how they allocate their marketing dollars. Influencer marketing is replacing unproductive and costly ad buys, like as many more seen in magazines & newspapers, as the most effective marketing strategy. The return on the investment in social media marketing is currently outperforming that of any other conventional channel, by a significant margin.

<p>6</p>	<p><b>Instagram is now the most popular social media network in the world.</b></p>	<p>Among the most important social media platforms, Instagram is among the most popular, with around 2.5 billion monthly active users throughout the entire globe. The site is responsible for influencing 89 percent of all shopping choices. The company is being challenged by other social media platforms, but Instagram remains competitive, particularly given its control of WhatsApp and Facebook. As a result, it is critical to be engaged on Facebook and communicate with influencers in order to grow your Instagram following (Stuart, 2020).</p>
<p>7</p>	<p><b>Customers have already been affected by social media or blogs when shopping in a shop, as per 60 percent of customers.</b></p>	<p>The concept of comparative purchasing is altered as a result of this. As per study, just 3% of customers would consider purchasing a product in-store if it was sold by celebrities, compared to 60% who would consider purchasing a product if it was marketed by an influencer. The fact that more than half of buyers examine blogs &amp; social networking on their smartphones intention to buy highlights the necessity of conveniently available data and postings (on social networking sites &amp; blogs) to expose a product’s image.</p>

*Source:* Author

**Conclusion**

In recent years, with the fast-increasing popularity of social media & word-of-mouth advertising, influencer marketing has grown increasingly popular among businesses. By thoroughly knowing exactly what influencer marketing is, how it functions, and the benefits it provides, it will give a full understanding of one of the most popular marketing tactics used today and in the foreseeable future. The companies may acquire new consumers, increase brand awareness, and increase conversions by partnering with influencers, who provide them with daily engaging material and a limitless amount of spreading potential from their followers. It is possible to take social media marketing efforts to a whole new level by identifying the relevant influencers and developing an effective influencer marketing strategy. This is especially true for start-ups that have been struggling to get traction. Understanding how soon influencer marketing may help to achieve the digital goals and then using that information to other efforts will result in greater results. The use of influencer marketing may generate more revenue than its expenses, so long as the companies recognize its value and engage with the appropriate influencers as part of a comprehensive digital marketing plan.



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# THREATS AND OPPORTUNITIES IN DIGITALIZING ACCOUNTING SYSTEMS

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## **Abstract**

The challenges and opportunities presented by digital transformation in accounting were the primary focus of this research. The implementation of digital technology into the accounting process ought to result in accurate financial accounts. Before it can generate compliant financial reports, the system needs to be able to satisfy certain criteria. Information of a superior caliber might be obtained from external sources. Research data may be obtained from a variety of sources. The following are examples of secondary sources: books, journals, the Internet, newspapers, and reports. According to this research, digitization has altered the way accountants think and carry out their work. The majority of accountants are familiar with both the benefits and drawbacks of digitalization. Usability, accessibility, and cost-effectiveness are at the forefront of developers' minds while creating software for digital accounting. Certain research has suggested that a comparison of digital and manual accounting systems has been suggested as a possible solution. The effectiveness of accounting software and its widespread use are both contingent on the user's level of expertise. The collection of one-of-a-kind data is not only pricey but also time-consuming and requires a COVID-19. Understanding and utilization of accounting software were both improved as a result of the study. This study takes the viewpoint of accountants to investigate the positives and negatives associated with the use of digital technology in accounting. It demonstrates the limitations and viewpoints of accountants. The findings of this study suggest that accountants who make use of digital accounting software may have a better understanding of both theory and practice. More topics are required for more advanced study. The processes of accounting in the information age are identified in this paper.

**Keywords:** Digital Transformation, Accountant, Manual Accounting, Book-keeping, Digitalization of Accounting.

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## Introduction

The transition to digital accounting involves the creation of data, as well as its presentation and transfer. In spite of widespread opinion, it is not a substitute for accountants or for practice. It is beneficial to accountants' overall productivity. The technology used in finance has progressed. It is possible that software that simplifies data collecting and processing will one day take the position of accountants. This has made it easier for proprietors of businesses and accountants to review the data and report on it. Businesses are better able to concentrate on important tasks and issues, like managing their finances, when there are fewer things to distract them. Journals, ledgers, and sometimes even additional records are not always necessary in contemporary accounting. An innovation in accounting methodology that bridges the gap between conventional and modern practices. The modern method of accounting is trustworthy. In recent years, digitization and upgrades have been major drivers of growth in the accounting software market. Change is inevitable in business, just as it is in life. A wide range of sectors are being disrupted by technology. For businesses that are looking to the future, consistent accounting involves more than just bookkeeping and payroll. Accountants now have more authority thanks to digitalization, automation, and analytics. Accountants have the ability to expose unethical business practices, poor audits, inappropriate use of public money, and questionable actions conducted by both businesses and governments. They have a responsibility to protect the health and safety of everyone involved, including the general public, clients, businesses, and the government. It gives an honest and unbiased picture of how a firm is doing financially.

## Background of the Research

Before the widespread use of computers, the majority of businesses kept their books manually. Every banking transaction is required to be entered by hand into columnar sheets. There were several instances of manual computation. The practice of accounting has evolved in response to developments in technology and digitalization. Accounting used to be done manually, but now it's all done automatically thanks to software. The ability to focus on growing their businesses is facilitated by automation for business owners and accountants. In 2010, numerous top executives at major corporations said that accountants were obsolete. They are concerned that advances in technology, particularly digitization, may

eventually render the practice of accounting obsolete. Instead of trying to eliminate the COVID-19 outbreak, accountants and other professionals will need to find ways to adapt to it. The advent of digital technology has completely altered the playing fields. In order for businesses to remain competitive, they need to make use of the huge volumes of data at their disposal. The move into digital accounting will be seen as an opportunity by businesses that are prepared to implement the change. Because of COVID-19, millions of us have been forced to conduct our daily lives online, including participating in virtual meetings and maintaining online relationships with family and friends. In order to promote concord and reduce feelings of insecurity, local peace-builders make use of social media, statistics, and other technology. The majority of companies are transitioning to digital bookkeeping. Business and Peace is an example of a worldwide conversation that has been going on for a long time and a policy that addresses the digitalization of accounting because it gives timely financial reporting to stakeholders.

### **Literature Review**

Literature Reviews illustrate what's been done and what needs to be done. Digitalization in accounting risks and opportunities were examined in order to prove this. The following are some notable studies:

According to the findings of Saed's (2020) investigation, the topic comprises two important facets: accounting maturity and digital transformation preparation. This will become possible as a result of the elimination of accounting work and errors. According to the findings of Parlak (2020), the accounting profession and its procedures have been impacted by digital technology. Because of this, memorization, classification, summarization, analysis, and interpretation of financial statements, as well as the design and maintenance of systems, are all impacted. In order to adjust to the change, experts in accounting need to employ the systems that are already incorporated into their software. Demiroz and Heupel (2017) discovered that organizations do not have adequate awareness of the benefits of digital transformation. Several of these institutions are still in the first phases of digitalization since they must first overcome internal obstacles. According to Thipwiwatpotjana (2021), the success of digital transformation is dependent on senior executives, a company plan, an organization culture, access to alternative resources, and assistance. Additionally, the success of digital transformation is dependent on senior executives. According to Nguyen

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et al. (2021), the implementation of digitalization methods will make it possible for managers to find new consumers, increase product quality, and strengthen the organization's ability to compete. According to the findings of Phornlaphatrachakorn and NaKalasindhu (2021), digitalizing accounting has the potential to enhance accounting information and financial reporting, which ultimately boosts the effectiveness of strategic choices. His research, which will be published in 2020, will focus on the performance of accounting organizations and their digital transformation. This review will focus on both strategic and operational aspects.

### **Objectives of the Study**

1. To understand and appreciate the significance of the concept of digitalizing accounting..
2. To investigate potential risks associated with the digitization of accounting.
3. In order to ascertain whether or if there is potential for the digitalization of accounting.
4. To provide insightful recommendations for next research endeavours

### **Research Methodology**

The pros and cons of switching to digital accounting systems are outlined with the use of secondary data. For the purpose of this study, a variety of secondary sources, including but not limited to books and magazines, the internet, and newspapers such as periodicals and government publications were studied.

### **Concept of Digitalization of Accounting System**

The digital transmission of financial data is made possible by the digitalization of accounting. Tax cuts were the desired end result. Integration of systems, reporting in real time, and digitization of records all work together to make data accessible. Accounting "information on demand" is provided through the use of mobile devices, applications, and social media. New breakthroughs in technology make it possible for financial experts to spend so much time providing advice and formulating strategies. Bookkeeping, productivity, and the accuracy of data are all improved as a result. The availability of data in a timely manner

appeals to customers, workers, and other stakeholders. According to the Enterprise Research Centre, the use of digital accounting software led to an 11.8 percent increase in employee sales over a period of three years (ERC). *“During COVID-19, seventy percent of small and medium-sized enterprises digitised their accounting”* according to information provided by the ERC. The time spent entering data is reduced when accounting is digitalized. When the system syncs, accounting software sorts transactions into categories and creates accounts for them. Digitalization of accounting facilitates data retrieval. The use of accounting software is not a substitute for the need for business owners to hire an accountant. Technology has brought about shifts in accounting practices. The functionality is improved with each new expansion. The practice of accounting has been completely transformed by technology. Accounting software that is converted to digital format protects financial data.

### **Threats for Digitalization of Accounting System**

Rather than relying solely on the most up-to-date software, hardware, and organisational structures, businesses could consider digitalizing their accounting processes for a novel and original approach to completing an essential business activity. Before implementing digital accounting, businesses need to consider the reactions of their staff members as well as how the change would impact their costs, goals, and security.

1. It will be expensive to make the transition to digital accounting. An upgrade is necessary for every new version of the application.
2. Concerns are growing that the rise of computer technology will result in an increase in the rate of unemployment.
3. The advent of digital accounting needs new employees to go through training whenever the software is updated, which adds to the overall expenditures.
4. According to research conducted by SonicWall, the number of global ransomware attacks increased by 62 percent between 2019 and 2020. During the height of the outbreak, cybercriminals took advantage of the recent transition to digital working conditions, which had not been prepared.



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5. A lack of competence is a roadblock for the digital transformation activities of organisations. According to a survey conducted by CaseWare in 2020 among professionals working in finance and accounting, 62 percent of respondents stated that their industry was facing a significant skills gap, which is an increase from the 51 percent who said the same thing in 2016.
  6. There is a possibility that an error in the system will result in the completion of the task taking longer than expected.
  7. Digitalization of accounting delivers precise data, but it can't identify mistakes or fraud as it lacks judgement.
  8. It is possible for viruses and unauthorised users to access the application, which might result in the original documents being changed.
  9. Everyone who has a stake in the outcome of the digital transformation needs to get behind it for it to be successful. Therefore, leadership needs to come up with a strategy to circumvent resistance from employees.

### **Opportunities in Digitalization of Accounting System**

There may be a reduced requirement for manual operations as a result of the digitization of accounting, which may assist speed up processes and produce financial status of your firm. It is possible that this may result in various chances for the efficient running of a firm:

1. The future of accountants is brighter if they keep up with the times. The accounting profession is undergoing a cultural transition, as evidenced by a skills gap between what accountants perform and what educational institutions teach. Non-automatable abilities are required for accountants to compete (and fend off the robots).
2. It helps to verify the financial health of a business at any time and from any location. Accessing information no longer necessitates being in the workplace or having a laptop on hand for professionals. It is possible for you and your staff to access cloud-based accounting software from anywhere.

3. Conventional accounting techniques are less prone to errors than computerised accounting. Your company's finances are better understood and tax returns are completed more accurately thanks to this software. Compared to the old-fashioned methods of accounting, it is more accurate and error-free.
4. Machines are far superior to humans in many areas, and even the best humans can't compete. Computers are better at recognising, recording, categorising, and summarising information, according to Richardson. When it comes to analysing and reporting on data, accountants are the best in the business. When accountants combine their traditional skills with cutting-edge technology, they are at their most powerful.
5. Additionally, it may help streamline business processes and meet tax and reporting needs. This, together with improved decision-making, helps to increase productivity and efficiency. Using a digital accounting system, many accounting tasks may be automated.
6. Tracking fraudulent company activities and transactions has become much simpler because of the widespread adoption of digital accounting systems. Changing from paper to electronic record keeping might result in time and money savings for accounting companies.
7. A person who specialises in finance may look at real-time data and make suggestions on how to make it better. It keeps info updated. It automates actions that are time-consuming yet vital while providing you with comprehensive access to the company's data.
8. The most effective strategy is to digitalize accounting processes since this facilitates the automation of payment requests and invoices.
9. Today's profession differs from the 1800s, and more changes are ahead. If accountants and universities can't keep up with change, the profession's future is at risk. Richardson says accounting educators control the profession's destiny. "Accountants must revamp the curriculum to produce analytics-minded graduates."

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By teaching accounting students data analytics, they'll be able to help managers and stakeholders make informed decisions.

10. Because of this, companies have more time on their hands, which enables them to seek out new clients and ultimately increase their turnover.
11. It is possible to readily restore the data in the event that it is lost due to whatever occurrence since the data is saved in soft copies. This makes it feasible for the data to be easily recovered.
12. In the end, it will be a rewarding and exciting job. Improving your computer abilities is a piece of cake. It's just as crucial to learn digital skills while working as it is to learn them on the job. Digital skills courses and training are available at many colleges, and there are also free online courses on accounting, such as cloud computing, that are available.

### **Findings**

The following is a rundown of the most significant findings from the study:

1. Within the years, the field of accounting will experience significant development. The maintenance of white water demands the flexibility of the business.
2. As a result of the digital revolution of accounting, it will become increasingly common for businesses to relocate their operations to countries with lower overall labour costs.
3. The rise of digital technology is expected to bring about significant shifts in accounting and auditing practices in the not-too-distant future. When machines take over labor-intensive activities, experts may shift their attention to providing customers with more value while simultaneously cutting both the time and money spent on their services.
4. It will be feasible to automate the processes involved in auditing, and improved technology that can detect risk and fraud will be readily available. In the not too distant future, auditors will be able to focus on output analysis rather than spending hours

obtaining data from financial accounts, which will allow them to save a significant amount of time.

5. In the not too distant future, auditors and accountants will be required to make use of cutting-edge analytics and automation technology in order to carry out analyses, produce reports, and offer the right outputs.
6. It's possible that accountants struggle with the volume of data. For accountants to make sound choices about a company's finances, they require access to relevant data. This work demands excellent communication skills, both vocal and written. Even though computers have taken over, information is still secured.
7. The automation of routine accounting operations enables accountants and auditors to concentrate on far more specialised tasks, which benefits both parties. Accounting tasks currently performed by humans, such as billing for in-house services and calculating travel expenditures, will someday be automated by computers.
8. A broad variety of financial data will be connected to one another through the use of advanced information systems in order to guarantee the confidentiality of the data.

### **Recommendation and Suggestions**

This is done in order to assist accounting in attaining a higher level of accomplishment and company harmony than it does at the present time. The following are, in accordance with the findings of the study, the critical concepts for preserving business relevance:

1. Those who work in accounting need to familiarise themselves with the dizzying number of digital choices that customers have so that they may point them in the proper path and maintain their status as the industry's most trustworthy business consultants.
2. In order to properly carry out their responsibilities and conduct audits, accountants need to have a solid working understanding of contemporary accounting software, in addition to various accounting models and business models. It is imperative that auditors engage in ongoing training and strive for professional advancement in this field.

3. As the state of technology continues to advance, it is imperative that accountants acquire the skills necessary to make optimal use of digital accounting systems.
4. In order to advance, accounting firms need to evaluate each digital marketing strategy that they now provide to clients. This might be avoided by companies who are thoughtful and diligent.
5. It is important for businesses to keep up with the latest relevant technological advancements and to incorporate new technologies.
6. As their professions grow increasingly reliant on computers, they need to be more open-minded regarding emerging technology. In order to be a trusted business adviser, an accountant has to be able to communicate effectively with their customers and find ways to cut costs using technology.

## Conclusion

The transfer of accounting data digitally increases financial reporting, as well as usability and the capacity to make strategic decisions. The quality of financial reporting has an impact on both the usefulness of accounting and strategic decision-making. Integrity of financial reporting and accessibility of financial reporting help in digitalizing accounting-strategic decision effectiveness linkages, which enhances workplace harmony. The advent of digitization presents accountants with opportunities rather than challenges. Bringing accounting into the digital age improves both its accuracy and its efficiency. Time is conserved thanks to the accountant. In addition to this, we place an emphasis on the training of accounting experts. Fear about digitization is widespread among accountants. The idea of digital accounting has to be developed. In next studies, the use of digital transformation as a neutral antecedent variable might potentially yield better levels of understanding. It may assist entrepreneurs manage resources and talents. For the sake of your company's expansion, make the switch from manual to digital accounting. The digital revolution in accounting encompasses more than just the automation of accounting jobs. The information obtained from accounting helps in making strategic decisions, improving performance, and reducing time-consuming operations. The advancement of technology has made this conceivable. The motto of the modern world is "change or perish," and if the accounting profession does not begin to accept change, it will cease to exist.

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# PUBLIC SECTOR BANKS IN INDIA: A REVIEW OF LITERATURE

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## **Abstract**

This study aims to gain insight on various issues related to the public sector banking industry in India. For this study, forty research papers and studies related to market structure, conduct and performance of public sector banks in India have been examined. These studies made important contributions to the comparative analysis of profitability of public sector banking industry with respect to private and foreign banks, but none of them provided a rigorous analysis of the impact of reforms on the profitability of public sector banking industry over time. Issues explored in these studies are related to interest and non-interest income, bank size, technology issues, and formation of non-performing assets. In many studies, DEA, stochastic frontier analysis, ratio, regression, graphs and charts, production function have been used. In very few studies, the S-C-P framework has been used



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in the banking industry in India. Many of the studies have compared public sector banks with old private, new private and foreign banks. None of these studies have examined public sector banks at bank level. But now questions arise whether with the adaptation of liberal economic policies and market model, other objectives than profit are irrelevant. Secondly, given their own frame of reference, can they be dubbed as good or bad?

**Keywords:** Banks, Investment decisions, Market structure, Advertising, Investment.

**JEL Keywords:** G21, G11, L10, M37, E22

## 1. Introduction

In the development of every field of a study, a stage is reached when it becomes indispensable to take stock of the whole work done in the past. A critical review of literature needs to precede the research work. This helps to focus on the areas which did not receive adequate attention. The literature review must be arranged in terms of a theoretical framework used in the study so that the link between the theoretical framework used in the study and the review of literature becomes clear enough. This leads us to classify the extant literature in the banking industry in three categories relating to structure, conduct and performance because in the present study the Structure-Conduct-Performance paradigm has been used as a theoretical framework. Moreover, there is a large and growing volume of literature of varying quality in the field of Indian banking industry. Therefore, a brief review of this literature and committee recommendations on the banking sector has been made.

The research questions for this article are as follows:

1. How has liberalization affected the public sector banking industry in India?
2. Are there strategic groups within public sector banks in India?
3. How has the entry of private sector banks led to changes in the public sector banking industry?
4. What have been the changes in the market structure of public sector banks in India?
5. Which conduct variables can better measure the behavior of public sector banks?
6. How have market structure and conduct affected performance of public sector banks in India?

The literature review helps to focus on the areas which are not explored enough. The literature review has been arranged in terms of a theoretical framework that will be used in the proposed study so that the link between the theoretical framework used in the study and the review of literature becomes clear enough. This leads us to classify the literature review in the banking industry, in categories relating to structure, conduct and performance. Keeping these research questions in view, the theme of this paper is to lay out the literature that explores the public sector banking industry in detail. For this paper, we have explored forty research papers.

A brief introduction and research questions of this chapter (Section 1.1) is followed by the theoretical framework in section 1.2. Section 1.3 provides the literature review on the structure, conduct and performance of PSBs. Section 1.4 summarizes the research gap and conclusion of this paper is highlighted in section 1.5.

## 2. Theoretical Framework

Within the broader industrial organisation approach, there are three strands that are used to establish characteristics of an industry. The S-C-P framework (figure 1.) which is the most appropriate to study the banking industry has been used to study the nature of the banking market in terms of market structure, conduct and performance.

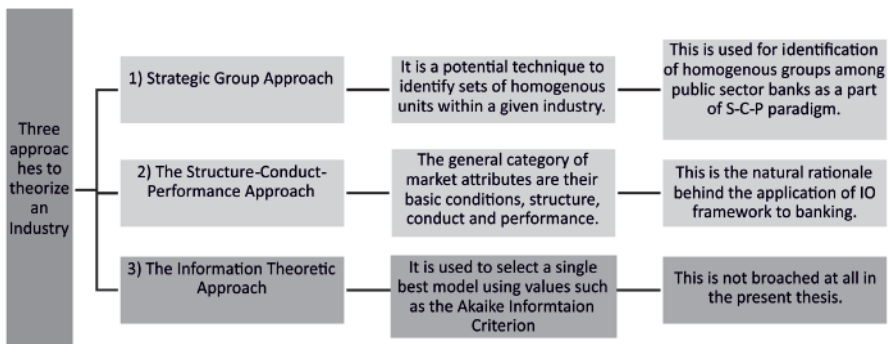


Figure 1: S-C-P Framework

Source: Authors' own compilation

The S-C-P paradigm assumes that there are certain attributes which are given and are referred to as basic conditions. Furthermore, there is a chain of causation that logically determines all the other attributes in a sequence as follows: In the chain, basic conditions are the primary determinants of the market or industry structure. In the next step, the structure of the industry influences the conduct or behavior of the participants in the industry. Conduct, in turn, influences performance finally. The schema of traditional S-C-P paradigm was like the flowchart below (figure 2):



**Figure 2: Flowchart of S-C-P paradigm**

Source: Authors’ own compilation

**3. Literature review**

S. No.	Name of the Author & Title of the study	Objective of the study	Time Period of the study	Variables of the Study	Data & Methodology	Main Findings
<b>A. Literature Review on Structure</b>						
1	(Murthy & Deb, 2014)  “Measurement and Determinants of Competition in Private Banking Industry in India during 1992-2002”	To analyse the limitations of concentration as a measure of competition.	1992-2002	Concentration and competition	Three-equation simultaneous equation model is used in the research through Tobit technique.	A fall in concentration ratio is equated with a rise in competition.  An analysis of concentration ratio needs to be supplemented by an analysis of changes in the identities of leading firms.
2	(Bajaj, 2008)  “Indian Public Sector Banking Industry: 1992-2006- An Impact of Reforms”	The focus was mainly on the impact of deregulation on public sector banks in India.	1992-2006	Assets, deposit, and advances	SCP framework	Share of public sector banks was slowly decreasing over the time because of the entry of new private banks and foreign banks.
3	(Gupta, 2013) “A comparative study of public and private banking industry in India”	It assesses the impact of banking reforms and competition in public and private sectors.	1996-2010	Net profit, operating efficiency, and absolute spread.	Use of Panel data research methodology involving 27 public sector banks and 19 private sector banks over fifteen years.	Competition has emerged in the form of new banks vs. incumbents rather than in the form of public vs. private banks. Operating efficiency and better conduct in terms of asset management, technology, advertisement, and absolute spread are the keys to performance.

S. No.	Name of the Author & Title of the study	Objective of the study	Time Period of the study	Variables of the Study	Data & Methodology	Main Findings
4	(Amel & Rhoades, 1988) "Strategic groups in Banking"	This paper tested the strategic groups hypothesis using cluster analysis.	1978, 1981, and 1984	U.S. Treasury securities; state and local government securities; real estate loans; construction loans; farm loans; residential loans; multifamily nonfarm loans; commercial and industrial (C & I) loans; and loans to individuals	The paper uses Analytical approach and non-hierarchical clustering algorithm.	The results indicate that approximately six strategic groups exist in banking and are stable over time Implications of the results are (1) intra industry profit differences may be due to strategic groups rather than efficiency differences, (2) markets may generally be defined too broadly, (3) investigations for collusion need to focus on homogeneous groups in an industry rather than the whole industry, and (4) there is no simple strategy choice for banks between retail and wholesale banking.
5	(Hannan, 1991) "Bank commercial loan markets and the role of market structure: Evidence from surveys of commercial lending"	To estimate the relationship between market structure and various aspects of bank conduct and performance as implied by the structure-conduct-performance (S-C-P) paradigm and thereby assess the most commonly tested relationships in this large literature.	1984-1986	Market concentration, maturity of the loan, size of loan, total assets, market population, business failure rate, and average hourly earnings of nonsupervisory manufacturing employees in the market.	Secondary data has been used by the researcher. For evaluating data, coefficient and regression is used.	Greater price rigidity in concentrated markets is offered as a possible reason for the observed differences in the relationship between loan rates and market structure over time.
6	(Heggstad & Rhoades, 1976) "An Analysis of changes in Bank Market Structure"	It tests the market structure-stability relationship in commercial banking.	1966 and 1972	Controllable variables are bank mergers, bank holding company acquisitions, branching, and holding company laws while non-controllable variables are initial market structure, market growth, and size of banks.	Analysis based on 228 markets and over 2,000 firms was conducted to determine whether elements of market structure have a systematic influence on stability.	The greater the level of concentration in a market, the greater is the stability of firms. Thus, the results are generally consistent with expectations.

S. No.	Name of the Author & Title of the study	Objective of the study	Time Period of the study	Variables of the Study	Data & Methodology	Main Findings
<b>B. Literature review on Conduct</b>						
7	(Arasu, Sridevi, Nageswari, & Ramya, 2019) "A Study on Analysis of Non-Performing Assets and its Impact on Profitability"	It investigates the impact of the level of Non-Performing Assets of private and public sector banks on profitability.	2014-2018	Profitability and Non-performing assets	The secondary data is collected for NPAs of 10 banks. The study has used mean, standard deviation, Pearson cross-correlation, and linear regression model.	The trend of Gross & Net NPA and profitability of both public and private sector banks are found significant.
8	(Nuner & Devika, 2019) "A Study on comparative Analysis of Non-Performing Assets in Selected Private Sector Banks in India"	It tries to study the trend of Gross NPA and Net NPA of Axis Bank, Federal Bank, IndusInd Bank only.	2014-2018	GNPA (Gross Non-performing Assets), and NNPA (Net Non-performing Assets)	The paper has used ratio analysis, trend analysis analysing data and Pearson correlation coefficient tool.	On concluding three private sector banks for the comparative is based on the sales report and their market values in the banking sectors.
9	(Kambar, 2019) "A study on the consolidation and merger of public sector banks in India: Issues and challenges"	It attempts to understand mergers and consolidation.	2016-2017	Deposits, Gross Advances, Gross NPAs, and Net Profits/Loss	The study has used secondary data based on descriptive analysis methods.	A steady rise in the NPA's of banks affects not only the banking sector but the country's economy. creating a bad bank remains a politically volatile idea and is difficult to implement.
10	(Kapadia & Madhav, 2019) "NPAs in Indian Scheduled Commercial Banks: Origination and Impact on Economy"	To investigate the trend in NPAs.	2006-2017	GNPA (Gross Non-performing Assets), and NNPA (Net Non-performing Assets)	The study is descriptive in nature.	The prudential norms laid down by the RBI must equip the banking system to reduce if not completely to keep away from the problem of NPAs.
11	(Kumari, Singh, & Sharma, 2017) "Impact of Non-Performing Assets (NPAs) on Financial Performance of Indian Banking Sector"	It examines the relationship between NPAs and financial performance (ROA) of selected public and private sector banks.	2013-2017	Return on assets, Gross Non-performing Assets, Net Non-performing Assets, and Age	It is an empirical study regression model.	The study found a significant and positive impact of GNPA and NNPA on financial performance (ROA) of public sector banks.
12	(Raj, Jain, Bansal, & Verma, 2018) "Non-Performing Assets: A Comparative Study of SBI & ICICI Bank from 2014-2017"	To study whether there exists any linear relationship between Net profit and Net NPA in case of both the banks.	2014-2017	NPAs (Non-performing Assets), and Net Profit	The data is collected using secondary data analysis and the techniques used involve correlation analysis using SPSS.	On comparing the two banks based on the effect on its profitability, SBI has higher NPAs as compared to ICICI bank because of its public nature.

S. No.	Name of the Author & Title of the study	Objective of the study	Time Period of the study	Variables of the Study	Data & Methodology	Main Findings
13	(Rayudu & Rajesh, 2018) "A Study on Non-Performing Assets in Selected Public and Private Sector Banks in India"	To study the status of Non-Performing Assets in selected public and Private sector banks.	2015-2017	NPAs (Non-performing Assets)	This study used techniques of mean, standard deviation, and two-way analysis of variance (ANOVA).	The government, Reserve Bank of India and management of banks should make more reforms in the financial sector especially in banking to control and avoid the bad loans and advances.
14	(Mishra & Pawaskar, 2017) "A Study of Non-Performing Assets and its Impact on Banking Sector"	The present study tries to understand the NPAs sector wise and the recovery through various channels.	2011-2016	NPAs (Non-performing Assets)	Financial Ratios	The conclusion of the study is that the Bank needs to have a better credit appraisal system so as to prevent NPAs from occurring.
15	(Alagarsamy, 2017) "Performance of non-performing assets (NPA) in state bank of India"	It analyses the performance of NPA in state banks of India.	2012-2017	GNPA (Gross Non-performing Assets)	Trend Analysis	The researcher concluded that the government and bankers have to make a serious effort to decrease the NPA otherwise it thoroughly damages the bank profit of the banker and also is not good for the developing countries.
16	(Mittal & Suneja, 2017) "The problem of Rising Non-performing Assets in Banking Sector in India: Comparative analysis of public and private sector banks"	It analyses the impact of NPAs on banks' performance and the reasons for mounting NPAs in banks in India.	2005-2016	GNPA (Gross Non-performing Assets), and NNPA (Net Non-performing Assets)	It is an analytical and descriptive study that analyses data using bar graphs and figures.	The government is taking many steps to reduce the problem of NPAs, but banks should also have to be more proactive to adopt a structured NPAs policy to prevent the non-performing assets and should follow stringent measures for its recovery.
17	(Bag & Islam, 2017) "Non-performing assets a biggest challenge in banking sector- a comparative study between India and Bangladesh banking sector"	To understand the concept of non performing assets of Indian Bank as well as Bangladesh Bank.	2011-2016	ROE, ROA, and NPA (Non-performing Asset)	The regression analysis has been performed to estimate the effect of NPAs on the profitability of banks in India.	The Conclusion of study is that the growth of NPAs in Indian public sector banks as well as Bangladesh State owned banks are dramatically upward rising while private sector banks in both the countries are more conscious about the NPAs as well as total advances.
18	(Laveena & Guleria, 2016) "A Study of Non-Performing Assets of Public Sector Banks in India"	This study tries to compare performance of public sector banks with private sector banks in India.	2011-2015	Net profit and ROA (Return on Asset)	This paper has computed NNPA to know the risk level of banks.	The NPA level of the banking system is still at a high level compared to the international standards.

S. No.	Name of the Author & Title of the study	Objective of the study	Time Period of the study	Variables of the Study	Data & Methodology	Main Findings
19	(Singh, 2016) "A Study of Non-Performing Assets of Commercial Banks and it's recovery in India"	It studies the status of Non-Performing Assets of Indian Scheduled Commercial Banks in India.	2000-2014	GNPA (Gross Non-performing Assets) and NNPA (Net Non-performing Assets)	The paper has used charts and graphs to represent data.	The conclusion of the study shows that the extent of NPA is comparatively very high in public sector banks as compared to the foreign banks.
20	(Durafe & Singh, 2016) "Cyclical Behavior of Public and Private Sector Banks: A Comparative Study of Non-performing Assets"	To study the cyclical behavior of public sector bank groups and private sector bank groups in India with a focus on non-performing assets.	1999-2013	NPA (Non-performing Asset), credit inclination, Loan maturity, unsecured lending, cost condition, GDP, and Inflation adjusted GDP deflator.	The study has used secondary data and the methods of Pearson correlation coefficient and multiple regression analysis for the analysis of data.	The findings indicate that when GDP increases, NPA decreases and when GDP decreases NPAs increase.
21	(Garg, 2016) "A study on management of non-performing assets in Context of Indian banking system"	To study the preventive mechanism for NPA and Compromise settlement scheme.	2010-2015	NPA (Non-performing Asset), profitability, liquidity, and credit loss.	The research has used a combined approach that involves both the features of analytical and descriptive research designs.	The conclusion of the study based on the problem of NPA has arisen due to the basic objective behind lending of public sector banks that is social welfare.
22	(Shiralashetti & Poojari, 2016) "Non-Performing Assets: A Case Study of Syndicate Bank"	To analyse the gross, net NPA, and sector wise NPA.	2011-2015	Net profit and Gross NPA	The data has been analysed by using percentage, t-test, regression and one way ANOVA.	Banks must take more care in avoiding any account becoming NPA by taking proper preventive measures in an efficient manner.
23	(Bandyopadhyay, 2016) "An Analysis of the Non-Performing Assets of some selected public sector banks in India."	To examine the overall trends of NPAs and to explore the dynamicity of NPA as the variable under study over time in selected PSBs.	1996-2012	NPA (Non-performing Asset) and strategic banking variables.	The study has used an empirical approach for analysing the movement of NPA and its impact on PSBs based on Secondary data.	The study has clearly demonstrated that NPA in PSBs are on the rise for the last three years and is expected to rise still further in next three years.
24	(Rao & Patel, 2015) "A study on non-performing assets management with reference to public sector banks, private sector banks and foreign banks in India"	To analyse and interpret various NPA related ratios for aggregates of Public Sector, Private Sector and Foreign Banks in India.	2009-2013	NPA (Non-performing Asset) and GNPA (Gross Non-performing Asset),	The paper has used Descriptive research design that includes tools like ratio analysis, application of least square method, and use of SPSS. The paper has used secondary data for analysis of NPA.	The conclusion of the study in case of ANOVA test is found, Ratio of Gross NPA to Gross Advances for Public sector, Private Sector and Foreign Banks does not have significant difference from 2009 to 2013, and it does not reject our null hypothesis.

S. No.	Name of the Author & Title of the study	Objective of the study	Time Period of the study	Variables of the Study	Data & Methodology	Main Findings
25	(Joseph & Prakash, 2014)  "A Study on Analysing the Trend of NPA Level in Private Sector Banks and Public Sector Banks"	To identify the trend in NPA level.	2008-2013	NPA (Non-performing Asset), Standard advances, Sub-standard advances, and doubtful advances	Ratios	The conclusion of the study is that compared to private sector banks, public sector banks are more in the NPA level.
26	(Ibrahim & Thangavelu, 2014)  "A Study on the Composition of Non-Performing Assets (NPAs) of Scheduled Commercial Banks in India"	To review the trend of Gross NPAs of public, private, and foreign banks of Scheduled Commercial Banks in India.	2007-2012	NPA (Non-performing Asset) and loss assets	The paper has collected secondary data for analysis and used regression analysis for finding conclusions.	The conclusion of the study is that the RBI and the Government of India have taken innumerable steps to reduce the volume of NPAs of the Scheduled Commercial Banks.
27	(Das & Dutta, 2014)  "A Study on NPA of Public Sector Banks in India"	The objective of the study is to find out whether there is any difference in the NPA occurrence between the various banks during the period of the study.	2008-2013	Net non-performing assets	For the purpose of this study, secondary data has been used and the researcher has used analysis of variance (ANOVA) one way.	The study finds out that there is no significant difference between the means of NPA of the banks at five percent level of significance.
28	Siraj K.K.(2014)  "A Study on Non-Performing Assets Of Public Sector Banks In India With Special Reference To State Bank Of Travancore"	To analyse the trend of the NPA in Public Sector Banks in India vis-à-vis State Bank of Travancore.	2001-2012	Variables used are total advances, capital, reserve and surplus, deposits, advances-sector wise, investments, total assets, Interest expended, operating expenses, provision and contingencies, total expenses, and profit or loss.	The study is both a descriptive and analytical study. It has used both primary and secondary data. The statistical tools used include averages, ratio, Exponential Growth Rate, Correlation-Regression, ANOVA, F-test, t-test, Sobel test, Welch statistics.	Significant differences are observed between SBI and SB of Travancore.



S. No.	Name of the Author & Title of the study	Objective of the study	Time Period of the study	Variables of the Study	Data & Methodology	Main Findings
<b>C. Literature review on Performance</b>						
29	(Sarkar & Sarkar, 1998)  "Does Ownership Always Matter? -Evidence from the Indian Banking Industry"	To investigate the effect of ownership by examining public and private sector banks.	1994-95	Explained variables includes ROA (Net profit/assets), OPR (Operating profit/assets), NIM (Net interest margin/assets), OCR (Operating cost/assets), and SER (Staff expense/asset) while explanatory variables are assets, investment in Govt securities/assets, Noninterest income/assets, rural branches/urban branches, and priority sector advances/assets.	Mean and standard Deviation	It is found privatization is likely to be an effective policy for improving the performance of ailing public-sector enterprises in emerging economies like India.
30	(Armijo & Jha, 1997)  "Centre-State relations in India and Brazil: Privatisation of Electricity and Banking"	This paper examined the political factors involved in privatisation of the banking and electricity sectors of two nations: India and Brazil.	The period of study relates to the early 1990s	Center-state relations and the gradual process of national economic liberalization	It is a descriptive paper and uses secondary data.	They arrived at the conclusion that the leftist ideology and beliefs of particular politicians may be a factor in shaping politicians' attitudes toward privatization, but it is unlikely to be the most crucial one.
31	(Mohan, Privatisation: Theory and Evidence, 2001)  "Privatisation: Theory and Evidence"	It attempts with the help of survey theoretical and empirical work on privatization to induce a measure of caution in statements about the likely efficacy of privatization.	1961-1990	Sales assets, and number of employees	The paper has used four performance measures that include return on assets, return on sales, net income, and return on equity.	The paper concludes that privatisation is seen to work best when allied with competition or deregulation.
32	(Subramanian, 2014)  "Financial Performance Analysis - A Case Study"	It makes an attempt to evaluate the financial performance of private sector banks in India and rank them based on each variable	2003-2006	Business per employee, return on assets, profit per employee, capital adequacy, credit deposit ratio, operating profit and percentage of net non-performing asset to net advance	Regression	The paper concludes that the Indian banking system has undergone a drastic change since liberalization. The new generation private sector banks have best used the technology; utilize the manpower in an effective manner

S. No.	Name of the Author & Title of the study	Objective of the study	Time Period of the study	Variables of the Study	Data & Methodology	Main Findings
33	(Prasad & Ghosh, 2005)  "Competition in Indian Banking"	This paper evaluated the validity of the claim that competition in the Indian banking sector has increased since the inception of the financial sector reforms in 1992.	1996-2004	Number of banks, Total assets, total deposits, and total credits	The research paper has used the PANZAR-ROSE test for assessing competition in banking.	The empirical evidence reveals that the Indian banking system operates under competitive conditions and earns revenues as if under monopolistic competition.
34	(Murthy & Deb, 2008)  "Operationalizing and Measuring Competition: Determinants of Competition in Private Banking Industry in India"	This paper provides a theoretical framework of competition that can be applied to banking also. Discussing the evolution of competition, the study proves how ordinary Structure Conduct and Performance Approach (S-C-P paradigm) is unsuitable in judging market dynamics.	1995-2002	It provides a methodology to arrive at a market form in banking industry through an analysis of all the aspects of basic conditions, structure, conduct and performance	Correlation coefficient, chi square test, and simultaneous equation.	This paper argues that sustained growth and dynamics of industry is not price led. Growth arises out of changing basic conditions and dynamics arises out of sharing the new market created by basic conditions
35	(Tabi & Joseph, 2006)  "Profitability Performance in the Banking Industry of CFA Countries: _ The Case of Commercial Banks in Cameroon"	This study tested empirically the Structure - Performance (S- P) hypothesis within the context of the Cameroonian Commercial banking system.	1987-1999	Independent variable includes Index of market concentration, Management of bank's capital, Bank's loan portfolio, Total advances to total deposit, Bank size, Expense control, and period of study while dependent variables include ROA, ROC, and ROE	Three accounting measures of bank's performance were utilised: return on capital (ROC), return on assets (ROA) and return on equity (ROE).	The results indicate that the market concentration power is of paramount importance in the determination of bank profitability the positive effects of bank's size, time and savings deposits to total deposit ratio and the 1994 CFA devaluation cannot be emphasized

S. No.	Name of the Author & Title of the study	Objective of the study	Time Period of the study	Variables of the Study	Data & Methodology	Main Findings
36	(Neuberger, 1998) "Direct Banking - A Demand Pull and Technology Push Innovation"	His paper reviews the literature by focusing on the links between theoretical and empirical research.	1994-1995	Market share is the independent variable while price data as dependent variable	The paper has used SCP (Structure-conduct-performance) Paradigm for conducting theoretical and empirical research.	The results are to alternative assumptions about the type of competition or structural variables affected by deregulations and technological progress.  He concludes, more research needs to be done which differentiates between different product and geographic markets and accounts for banking size, portfolio structure and regulatory settings.
37	(Srinivas & Kumar, 2010) "Is Structure-Conduct-Performance a case of structure-performance? Structural Equation Modelling of Indian industries"	This paper conceptualised a theoretical model Based on Bain's work for the Structure-Conduct-Performance (S-C-P) paradigm.	1991-2005	Structure variable is HHI and entry barrier; conduct variables are advertisement as proportion of sales, research and development  Expenditure, debt-equity ratio, and distribution expenditure; and performance variable include profit after tax	The paper has collected data for 124 industries and the technique of Structural Equation Modelling (SEM).	The results indicate that direct and total effects of industry structure on firms' profitability are positive and significant while the indirect effects are insignificant.  It is observed that in the presence of entry barriers, industry concentration has no significant effect on firms' profitability.
38	(Mohan, 2005) "Bank Consolidation Issues and Evidence"	It states that India's public sector banks lack a compelling rationale for consolidation.	1996-2004	Assets, deposits, profits, non-interest income, and operating costs	The study is a descriptive study and has used secondary data.	The performance of PSBs, measured by the appreciation in stock values, has also been very impressive. Also, greater size is the key to further performance improvement.

S. No.	Name of the Author & Title of the study	Objective of the study	Time Period of the study	Variables of the Study	Data & Methodology	Main Findings
39	(Kaur & Kaur, 2010) "Impact of Mergers on the Cost Efficiency of Indian Commercial Banks"	It examined the cost efficiency of Indian commercial banks	1990-2008	Input variables are labor, loanable funds, and physical capital while the output variables are non-interest income, net-interest income, and advances	The paper has analysed the cost efficiency of Indian commercial banks by using a non-parametric Data Envelopment Analysis Technique.	This study suggests that over the entire study period average cost efficiency of public sector banks was found to be 73.4 and for private sector banks is 76.3 percent.  The findings of this paper suggest that to some extent the merger programme has been successful in the Indian banking sector.
40	(Gupta & Murthy, 2012) "Demise of Development Financial Institutions in India: A Critical Appraisal"	It evaluated the views in favor and in against demise of DFIs in India and concluded that commercial banks are not in a position to fill the gap of long-term financing being taken care of DFIs earlier.	1999-2005	NPA, Profit after tax, Margin, and Capital adequacy ratio	The research paper is a descriptive study and has used secondary data from the bank's annual reports, journals, RBI website.	It has been concluded that Development finance institutions were capable of bearing the risk of undertaking huge projects.

#### 4. Research Gap

These studies made important contributions to the comparative analysis of profitability of public sector banking industry with respect to private and foreign banks, but none of them provided a rigorous analysis of the impact of reforms on the profitability of public sector banking industry over time. Issues explored in these studies are related to interest and non-interest income, bank size, technology issues, and formation of non-performing assets. At times, public sector banks have faced criticism that they are inefficient, uncompetitive, and a burden on exchequer. Many of the studies have compared public sector banks with old private, new private and foreign banks. But now questions arise whether with the adaptation of liberal economic policies and market model, other objectives than profit are irrelevant. Secondly, given their own frame of reference, can they be dubbed as good or bad? These issues are to be taken in the present study to have a deep insight into the functioning of public sector banks and to examine whether there are homogeneous groups among public sector banks.

#### 5. Conclusion

From the discussion of literature on structure, conduct and performance, it broadly follows that the PSBs are facing stiff competition after the

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entry of new private and foreign banks. Their share in the market is decreasing slowly and the share of private and foreign banks is increasing. The existing literature looks at concentration ratio in terms of asset, deposit and advances. Market structure needs to be analyzed by taking more variables like deposits plus advances to show barriers to entry, absolute advertisement expenditure as a proxy of selling cost, other income to show product differentiation, and concentration ratio which tells about the nature of the market. There is a strong need to check the presence of strategic groups amongst public sector banks in India because very often it is said that there are no strategic groups. Moreover, the State Bank of India (SBI) is the undisputed leader in the market, but we need to examine whether competitive rivalry has impacted SBI adversely. Also, we must investigate if there is presence of oligopolistic behavior in the market. In case of conduct it can be said that reforms have been successful in affecting change in the conduct of the banks. But banks still need to focus on various conduct variables to compete efficiently. The other conduct variables related to staff, operational expenditure, advertisement expenditure, other fixed assets, non-interest income, term loans to total advances, investment in G-sec etc. need to be examined in case of the public sector banking industry. There are some more general impressions about the public sector banking industry; they don't compete with new private banks which entered the Indian banking industry due to the historic accident which led to implementation of Narasimham Committee report I and II. Very often it is said that these banks are homogeneous in character and that is why they do not compete amongst each other. The extant literature shows that performance and productivity of the public sector banking industry has improved but banks level data needs to be analysed to have in-depth results to see how competitive forces are being unleashed in the industry. Moreover, one needs to check the impact of new policies and variables on profitability of the public sector banking industry because their profitability and efficiency is questioned at times.

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# EXPLICATING THE NEXUS BETWEEN TERRORISM AND NARCO-TERRORISM IN SOUTH-EAST ASIA: A CASE OF INDIA AND MYANMAR

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## **Abstract**

South East Asia's importance for India lies in its geo-strategic location which forces India to expand its strategic relations with these countries. For India's interest, it becomes a key player because of its two major worries viz. China's expanding influence over South East Asia and beyond and the threat of a growing belt of drug trafficking and its sponsoring of military activities and cross-border terrorism. The threat of instability caused by these twin forces-drug trafficking and cross-border terrorism, has impeded the growth of democratic institutions and civil society in the region that has larger implications for a democratic country like India with regard to its larger foreign policy. Furthermore, the clandestine activities and business of drug and opium trade in the South East Asia particularly Myanmar and Thailand have opened the doors of new possibilities for the militant groups. In fact, India's potential to neutralize security threats in this region defines its regional security calculus. Militant groups in the region of both South Asia and South-East Asia get financial and physical support from drug business. Needless to say that India and South East Asian countries face common threats of terrorism, extremism and separatism, drug trafficking and trafficking in general. The commonality of interest provides greater opportunity to cooperate more closely in addressing the regional security issues of narco-terrorism and terrorism as the increasing violence and instability in Myanmar are likely to have serious security implications for the region whose possible solutions can be drawn through organizations like BIMSTEC. Hence, this paper underlines the prime importance of a collective approach with regard to security issues as well as in countering transnational crimes for both India and Myanmar in particular and the South East Asian region in general.

**Keywords:** Transnational Crime, Terrorism, Narco-Terrorism and BIMSTEC.

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## **Introduction**

With the passage of time, the concept of security has shifted from traditional to non-traditional and trans-national security threats with widespread effect on the nation-states. The traditional concept of security arguably gives too much emphasis on military power, hence, it has had a narrowed use in recent times. On the other hand, the non-traditional security threats are defined in a much broader sense covering different areas like religious radicalism, drugs and human trafficking, illegal migration, environmental degradation, climate change, arms race, etc. (Singh K.N. 2013). Non-traditional security issues can be defined as non-military threats that threaten either the unity (political and social integrity) of a nation–state or the health of its inhabitants. They, thus, create insecurity not only for a sovereign state but also for the society as a whole. The problem of non-traditional security threats are not limited to any particular country or region, but has spill-over effect into an ever-widening geographical area with increasing consequences for world security as a whole. It is possible due to the global web created by modern communication, transportation and information technologies, and they all involve transnational and non-state actors (Mathew and Shambaugh 1998). In today’s borderless world, it becomes easy to reach each and every corner of the world. Transnational crimes cover offences committed in more than one state. It also takes place in one state but is planned or controlled in another.

Among these non-traditional and transnational security threats, terrorism and the trade in illicit drugs, arguably, carries the largest societal, political, and economic consequences for the whole world. It threatens the fabric of societies through addiction, crime, and disease. It exacerbates corruption in the already weak states, impairing their economic and political functioning. Moreover, through its linkages to insurgency and terrorism, the drug trade is an increasing threat to regional and international security.

## **Conceptualizing Terrorism**

There is no universal definition of terrorism. Defining terrorism is a complex task due to its nature. The fact is that there are different types of terrorist groups pursuing a variety of goals and using different methods. In 1994, the United Nations General Assembly’s resolution 49/60, stated that terrorism includes “criminal acts intended to provoke a state of terror in the general public, a group of persons or

particular persons for political purposes” and that such acts “are in any circumstances unjustifiable, whatever the considerations of a political, philosophical, ideological, racial, ethnic, religious or other nature that may be invoked to justify them (UNHC for Human Rights).” In 2004, United Nations Security Council Resolution 1566 defined terrorist attacks as ‘criminal acts, including against civilians, committed with the intent to cause death or serious bodily injury, or taking of hostages, with the purpose to provoke a state of terror in the general public or in a group of persons or particular persons, intimidate a population or compel a government or an international organization to do or to abstain from doing any act, which constitute offences within the scope of and as defined in the international conventions and protocols relating to terrorism’ (UNSC Resolution 1566: 2004). It is commonly understood as the acts of violence and terror that target the common people in the pursuit of their political or ideological aims. To fulfil their target, they recruit volatile young people, train them clandestinely, and provide them weapons illegally.

### **Defining Narco-Terrorism**

The term ‘narco-terrorism’ was first coined by President Belaunde Terry of Peru in 1983 to describe a violent collusion of cocaine traffickers and the Maoist group Shining Path to commit joint attacks destabilizing his government forces (Booty, H. 2012). In common language, it means an act or threat of violence by groups involved in the production, transport or sale of illegal drugs, with the aim of destabilizing the governmental ability to suppress these activities. Narco-terrorism is a combination of two terms viz., ‘narco’ and ‘terrorism’, where ‘narcotic’ means illegal drugs business or ‘terrorism’, i.e., where drug mafias become politically active or political actors begin to fund their way through the control of drugs. Drug trade involves several elements viz. Cocaine, Heroin, Marijuana (Ganja), Methamphetamine, Methylene-Dioxy – Methamphetamine, Lysergic Acid Diethylamide (UNODC: 2018).

Some of the simplest definitions on narco-terrorism are necessary to mention here for better understanding. Boyce (1987) defines narco-terrorism as ‘the involvement of terrorist organizations and insurgent groups in the trafficking of narcotics’. D. J. Davids (2002) defines narco-terrorism by taking the two terms i.e narco and terrorism together, ‘On the one hand terrorism that aims to protect and support the activities of illegal drug traffickers; and on the other, terrorism

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by organizations that use the financial profits of narco-trafficking to support their political, religious or other goals'. The simplest and widest definition of narco-terrorism is given by the Oxford dictionary (1999), 'Terrorism associated with the trade in illicit drugs'.

### **Nexus between Terrorism and Narco-Terrorism**

There is a strong and inalienable connection between terrorism and narco-terrorism. The term narco-terrorism is a combination of two phenomena viz. narcotics trafficking and terrorism. However, the relationship between drug traffickers and terrorists is one of mutual benefit. The relationship between organized crime and terrorism, the nexus most commonly applies to the straightforward use of crime by terrorist groups as a source of funding (Singh K.N. 2013). The formation of alliances between criminal and terrorist organizations is a common tactic (ibid). Drug traffickers benefit from the terrorists' military skills, weapons supply, and access to clandestine organizations. Terrorists gain a source of revenue and expertise in illicit transfer and laundering of proceeds from illicit transactions. Both groups bring corrupt officials whose services provide mutual benefits, such as greater access to fraudulent documents, including passports and customs papers (Beers, R. 2002).

Terrorist groups and drug trafficking organizations increasingly rely on what is known as cell structures to accomplish their respective goals. However, there may certainly be a strong central leadership but day-to-day operations are basically carried out by members of compartmentalized cells (Beers, R. 2002). This structure enhances security by providing a degree of separation between the leadership and the rank-and-file. They use informal transfer systems such as "hawala," and also rely on bulk cash smuggling, multiple accounts, and front organizations to launder money (ibid). Both groups make use of fraud documents, including passports and other identification and documents to smuggle goods and weapons. They both fully exploit their networks to conduct business. In addition, they use multiple cell phones and are careful about what they say on the phone to increase communications security (Beers, R. 2002).

### **The Case of India and Myanmar**

Needless to say, both terrorism and drug trafficking are mainly responsible

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for bringing instability and uncertainty in South East Asia. As an immediate neighbour of South East Asia, India has been suffering from these twin evils. India is the connecting bridge between South Asia and South-East Asia. India's relation with South East Asia lies on two important factors. Firstly, India's strategic location which is the main and only transit route for South Asia to reach South East Asia or vice versa. Secondly, from a security perspective, India is sandwiched in between the Golden Triangle (area where the borders of Thailand, Laos, and Myanmar meet) and Golden Crescent (areas covering Afghanistan, Iran and Pakistan). India becomes a transit hub for transnational activities particularly for drug trafficking (Das, Pushpita: 2012).

Myanmar, which shares a border with India, is rich in natural and mineral resources. This sometimes affects the country negatively. As per the UNODC, World Drug Report, 20005, Myanmar is the second largest producer of illicit opium after Afghanistan. The Shan State, the Kokang, Wa, and Mong-La regions are the major areas of opium cultivation. From there, opium is transported to neighbouring countries, particularly China and India. Another major concern in Myanmar is the production of Amphetamine-Type Stimulants (ATS), primarily of methamphetamine. Though Myanmar has a limited chemical industry and does not domestically produce the precursor chemicals required for the production of ATS, it depends on China and India for chemicals. Drug trafficking gives ample opportunities to other related crimes such as money laundering and corruption, human trafficking both internal and external are major concerns for Myanmar (UNODC: 2005). The ongoing political, ethnic and economic instability in Myanmar further aggravates the volatile situation.

In fact, in the case of South-East Asia, the main source of funding for militant and insurgent groups comes from 'illicit money'. That is, it becomes a safe haven for insurgent groups who completely depend on drug business for their survival. Money coming from drug trafficking is used by such groups. Thus it is necessary to break the nexus.

It needs to be underlined that in recent years it is the ethnic minorities in Myanmar who have become the easy victims of the menace drug trafficking, which in turn provides fertile ground for them in militant activities, for example, the Qaida branches in the islands surrounding Myanmar have allegedly been training the Rohingyas to resort into

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“Jihad”. Apparently, the Quida terrorist groups of Myanmar publicly called for the support of the Rohingyas Muslims from jihadists based in Bangladesh, India, Pakistan and the Philippines (South East Asia: 2017). Needless to say, the Ethnic Rohingya Muslims from Myanmar are easy victims of trafficking of all kinds. Added to this, they are also rendered stateless now as the Myanmar government is not granting them citizenship status. This helplessness has made it easy for the militant groups’ active in different parts of the world to enlist the hapless Rohingya Muslims into narco-terrorist activities. To put it in other words, through these helpless migrants, the traffickers have been smuggling drugs to neighbouring countries illegally. In most of the cases, the migrants take the help of the smugglers, while in others, the smugglers recruit the migrants. Due to difficult paperwork, they largely depend on smugglers, who engage them in drug trafficking.

The nexus between terrorism and narco-terrorism is mainly responsible for instability in Myanmar and its neighbouring countries. India and Myanmar are victims of both terrorism and narco-terrorism. India is a habitual consumer of opium and other varieties of drugs like bhang, marijuana/ganja and hashish. India gets it from Myanmar which is the main supplier of drugs to India due to its geographical proximity. Political instability and lawlessness in Myanmar also aggravate the situation by giving ample scope to traffickers and criminals. The growing demand for drugs among the young local population in the Northeastern states of India (Assam, Manipur, Meghalaya, Mizoram and Nagaland), political instability and insecurity created by insurgencies in the border areas of the region of South and South-East Asia as well as poorly guarded border provided a fertile environment for traffickers to smuggle heroin and other drug substances into India through the India-Myanmar border. From the North-Eastern part of India, drugs have been supplied to the other parts of India particularly Bihar, Bombay and Delhi. The Shan state of Myanmar is the largest producer of illegal drugs and from there it enters into the North-Eastern state of India. Opium produced along the Indo-Myanmar border especially in Manipur and Mizoram is reportedly transported to Myanmar for the manufacture of heroin (Das, Pushpita: 2012). In addition, drugs are being trafficked from Myanmar into Tibet via India and Thailand, and from there into other provinces. The greater availability of cheap and high-purity heroin, along with limited access to drug treatment, combined with ineffective

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counternarcotics policies, have resulted in greater rates of addiction along with other public health problems (ibid).

Drug trafficking facilitates other organized criminal activities such as human trafficking, sex trafficking, and weapon running, all of which use the same networks and routes to smuggle people, arms and contraband. Precursor chemicals such as ephedrine, pseudoephedrine and acetic anhydride from India are trafficked into Myanmar to cater to the demands of numerous mobile laboratories manufacturing heroin and amphetamine type stimulants (ATS). Seizures of ephedrine and pseudoephedrine indicate an increasing trend of trafficking of these chemicals from India to Myanmar. The most important route is the one which starts from Mandalay, continues to Monya and Kalewa and then bifurcates to enter India at two points. The first moves northwards, enters Moreh in Manipur through Tamu and travels thence to Imphal and Kohima via National Highway-39. The second branch moves southwards and enters Champai in Mizoram through Rihkhwadar (ibid).

However, drug trafficking in the region was slow during the initial phase of COVID-19 due to the restriction of movement of people. However, the traffickers quickly changed their style of distribution. They adopted contactless methods like online delivery and service. In fact, they took advantage of the COVID-19 crisis where millions lost their jobs and income. As a result of which, particularly, young and children became addicted to phones and became victims of this online drug business (UNODC: 2021).

### **Role of BIMSTEC**

These non-traditional security threats can be better addressed through different international and inter-regional organizations. Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) is one such inter-regional organization which has been playing a crucial role, which cannot be ignored. BIMSTEC is a unique regional organization which basically connects South Asia with South East Asia. It also brings SAARC and ASEAN nations under one platform. The BIMSTEC was established in 1997 with the purpose of peaceful and progressive development in the region of both South Asia and South-East Asia. It consists of five South Asian countries viz. Bangladesh, Bhutan, India, Nepal, Sri Lanka, with two South East Asian countries of Myanmar and Thailand (BIMSTEC: Online

Access). Both Counter Terrorism and Transnational Crime (CTTC) as one of the priority sectors of BIMSTEC was added in the Eighth BIMSTEC Ministerial Meeting held in Dhaka, Bangladesh on 18-19 December 2005. The Joint Working Group on CTTC is the major sector of BIMSTEC which addresses the problems of terrorism and transnational crimes. There are six sub-groups which work on specific aspects of CTTC cooperation (Counter Terrorism and Transnational Crime: Online Access).

- 1) Sub-Group on Narcotic Drugs, Psychotropic Substances and Precursor Chemicals.
- 2) Sub-Group on Intelligence Sharing.
- 3) Sub-Group on Legal and Law Enforcement Issues.
- 4) Sub-Group on Anti- Money Laundering and Combating the Financing of Terrorism.
- 5) Sub-Group on Human Trafficking and Illegal Migration.
- 6) Sub-Group on the Cooperation on Countering Radicalization and Terrorism.

Many productive summits have been conducted through BIMSTEC to address the problem of terrorism and drug trafficking since its formation. In the Kathmandu declaration held 30-31 August 2018, member countries strongly condemned terrorism in all its forms and manifestations wherever and by whomsoever committed that there can be no justification whatsoever for any act of terrorism. The summit also addressed that the fight against terrorism should target not only terrorists, terror organizations and networks but also identifies and hold accountable States and non-State entities that encourage, finance terrorism, provide sanctuaries to terrorists and terror groups and falsely extol their virtues (Fourth BIMSTEC Summit: 2018). The BIMSTEC Convention on Cooperation in Combating International Terrorism, Transnational Organized Crime and Illicit Drug Trafficking was come into force on 16 March 2021 (Ministry of External Affairs, 2021).

The 9th Meeting of the BIMSTEC Joint Working Group on Counter Terrorism and Transnational Crime (JWG-CTTC) was hosted by Bhutan virtually on 25th November 2021 due to COVID. The meeting focussed on the emerging traditional and non-traditional security threats within



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the BIMSTEC region. In this meeting, India played a prominent role by highlighting the threats emanating from cross-border terrorism from terrorist groups such as LeT, JeM, HM etc. and transnational organized crime such as drug trafficking, illegal weapons smuggling etc. (ibid). The meeting made valuable suggestions and recommendations on wide ranging issues to enhance collective cooperation and collaboration in countering terrorism and transnational crimes in the region.

Despite the effort to address the above issues, BIMSTEC needs to work and improve its strategies more religiously. There are certain grey areas where BIMSTEC has failed to address. The first and foremost is that the member countries need to take the organization seriously. Because the BIMSTEC summit has taken place only five times since its birth in 1997 the first held in Bangkok 2004, the second and third summits were held in New Delhi in 2008 and Nay Pyi Taw in 2014. The fourth was held in 2018 in Kathmandu. The last one was held in Sri Lanka in March of 2022 (BIMSTEC: 2022). It has failed to address the problems of Rohingya Muslims of Myanmar. This problem has created a chaotic condition not only in Myanmar, but also in both South and South East Asia. The constant conflict among the member countries does not augur well for tackling the menaces of drug trafficking and terrorism.

## **Conclusion**

The problem of transnational crime, particularly narco-terrorism in Southeast Asia is severe. India has been directly affected due to its geographical proximity. Illegal migration, specifically Rohingya Muslims from Myanmar to Bangladesh and India, refugee issues, porous border, mistreatment and mismanagement by state authorities provides fuel to the conflict. It is beyond the control of an individual country to take any action. Hence, active cooperation and collective efforts are required to address it. It can be said in this context that a coordination of anti-drug and anti-terror policy can be used, and is necessary, to effectively deal with both threats. There is a triangular relationship here among drug production, drug trafficking and terrorism. Therefore, to reduce the militant activities, the government needs to check the drug trafficking, and again to tackle the drug trafficking, there is a need to destroy the drug production particularly cultivation of poppy and production of opium itself which is the root of the whole problem. Thus both drug traffickers and militants should be treated as criminals.

The governments of both India and Myanmar should adopt an inclusive approach. State, non-state actors, civil society, local leaders or representatives, international and regional organizations need to work together in order to get rid of the menace. International cooperation is also required in the countries of origin, transit and destination of drug trade. Awareness should be created among the local people about the hazardous effects of drug uses and its nexus with terrorism.

Thus, the root cause of drug trafficking and sustenance of terrorism in Myanmar is drug cultivation. Therefore, what is necessary is the destruction of the poppy crop to prevent the Cocaine or heroin from entering into the market. Nevertheless, while destroying the crop, it should always be kept in mind about the alternative livelihood of the farmers who are dependent on drug cultivation. It also needs to study the extent to which the illicit economy provides employment for the local population. Without taking care of the whole scenario, any kind of harsh steps would backfire or may have dangerous consequences. It simply means that more and more people may join in insurgent activities. Lastly, in order to tackle the twin evils of terrorism and narco-terrorism, we need to innovate and adopt new strategies. International cooperation is urgently required. The border areas which provide fertile ground for such illegal and criminal activities need to be guarded seriously. Here the international and national government should take the help of local people who are well aware of the whole situation.

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# POETIC DECONSTRUCTIONS OF ARMED CONFLICT: WOMEN VOICES FROM SRI LANKA

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## **Abstract**

In this article I begin by addressing stereotypes associated with the bodies of women in traditional south Asian societies. My focus is Sri Lanka and chronologically the civil war therein. While traditional societies such as the Sri Lankan have deified the reproductive body of the woman, extolling it in religion and celebrating its sensuousness in poetry, these strictures changed drastically with the formation of the Illavar – the women’s brigade of the LTTE. The need of the hour was to enlist women fighters for the cause of the imaginary homeland of Tamil Eelam. This move had to be successful not just through the arduous physical training undertaken by young women training to be cadres but sociologically there had to be acceptable for women forfeiting their roles as sacrificing wives and mothers. This societal acceptance is accomplished through discourse as facilitated by the LTTE wherein reverence otherwise bestowed on women in their self-sacrificial role is transferred to function duty as suicide bombers for the cause of the motherland in the offing thereby the violence of the act is extolled as the ultimate sacrifice of martyrdom performed for the greater communal good. I compare this with the act of poetry-writing by women showing this an exercise of female autonomy and resistance.

**Keywords:** Woman, Resistance, Body, LTTE, Poetry, Martyrdom.

Theorisations of the civil war in Sri Lanka often classify it as either LTTE (Lankan Tigers of Tamil Eelam) terrorism or an ethnic conflict. Disparately discreet as these understandings do appear, and this is mainly on account of media coverage of the war carried out under GoSL censorship; analysis shows them as interrelated and as misnomers for a war that blighted thousands. To read this neo-colonial war purely

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from a right-wing perspective of warring ethnicities means ignoring the pitfalls of majoritarian governance or for that matter the inter-racial cohabitation and *bonhomie* as had existed on the island of Ceylon prior to independence; while to simplistically slot non-state violence as terrorism amounts to a failure of perception regarding the naturalisation of colonial structural violence within the post-colony. While colonial discourses of civilising the heathen or dark regions of the earth's surface served to obfuscate their deployment of violence (physical and psychic) as an essential mode of governance in the colony, it also naturalised the very idea of violence as an essential part of governance. This extended to patriarchal ideas of the exercise of violence as a chastening and corrective force by a benevolent authority. Added to this is the explaining away of violence on the bodies of women through religious texts that deem it righteous and legitimate. This article is concerned with women's voices regarding the turn their lives have taken with the all-pervasive presence of conflict on their homestead. How do they deal with the violence? Do they embrace it, do they reject it or do they resist it? How then is resistance articulated when performing violence on the other is deemed as noble and honourable? My contention is that resistance in this scenario is embodied in the speech-acts of women which are indictments of patriarchal administrative and social structures and are now manifest as violent and unrelenting conflict.

Following self-rule in Sri Lanka as in the subcontinent at large, assertions of national identity began with prescriptive dress codes. The ideological weightage of this sartorial fashioning being the construction of an exclusive and ideal Sinhala-Buddhist womanhood wherein ideas of modesty, purity, chastity and respectability were paramount. Women from the Burgher, Tamil and any other community residing on the island were marked by their absence of these very qualities. As Malati de Alwis shows in her essay "Sexuality in the Field of Vision: The Discursive Clothing of the Sigiriya Frescoes", the nudity of the Sigiriya frescoes caused immense discomfiture amidst this new breed of nationalists.<sup>1</sup> The fact that women from the Burgher and Tamil communities, for instance, had been among the foremost doctors and educators on the island did nothing to alter the racial profiling at work.<sup>2</sup> What was being silenced or erased at this historical juncture was the enabling coexistence and cross-cultural symbiosis as had existed on the island and the empowerment that the conviviality and cosmopolitanism thus generated had created in Ceylonese society. In the quest for an

exclusive national (majoritarian) identity hybridity came to be decried as contamination. Theorising the political and economic foundations of this phenomenon across a wider sociological spectrum, Yuval-Davis in *Gender and Nation* shows how “purity” plays out in the lives of women as and when ethnic collectives embark upon setting-up exclusive boundaries marking off their ethnic selves from the other:

The central importance of women’s reproductive roles in ethnic and national discourses becomes apparent when one considers that, given the central role the myth (or reality) of ‘common origins’ plays in the construction of most national and ethnic collectivities, one usually joins the collective by being born into it. (Davis 1997, 27)

Expanding on the theme, Amrita Chhachhi, in *Forced Identities: The State, Communalism Fundamentalism and Women in India*, points out how modes of behaviour, dress codes and discourses of chastity and modesty among other traditions are deemed ethnically/culturally appropriate, creating the boundaries needed to exercise control over the female reproductive body in the interests of the collective and define “our” women as opposed to “their” women (Chhachhi, 1991, pp. 144, 175) thus in Sri Lanka the Kandyan style of sari became the national mode of dress and was hardly accepted as such by the Tamil or Burgher communities.

However, with the onset of the civil war, gender demarcations on the island, particularly regarding labour and space underwent a rapid redefinition, particularly on the Jaffna peninsula. To begin with, the stereotype of the heroic male warrior versus women as victims and more often as “silent” sufferers of the war was being rapidly replaced with women-headed households and more radically with women soldiers who were now needed to be enlisted as cadres for guerrilla outfits on the peninsula and had to be combat hardy. This subversion of gender roles was rendered acceptable as it was being performed in the interests of Tamil Eelam - the nation in the making. Eelam too had to be represented by its women and in this case, the representations ranged from images of women as traditional sari-clad, thali and kumkum sporting images of feminine auspiciousness to a radically different idea of womanhood - the new, combat-hardy, militant women-fighters trained to perform deadly acts of suicide bombing as had been carried out by Illavar - the women’s brigade of the LTTE. However, as Sitralega Maunagur points out, these differing representations were viscerally

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connected through the age-old notion of self-sacrificial womanhood. She has drawn attention to traditionally idealised notions of Tamil womanhood and the desexualised body by drawing from an anthology of Tamil heroic poetry from the 1st century A.D. entitled *Puranaanuru* wherein are elaborated on the qualities that women, particularly mothers, must cultivate. Modesty and chastity have pride of place here. As Maunaguru points out, the LTTE literally created as iconic and exemplary the image of the dutiful woman, first as a mother and then as a dutiful warrior for the motherland, (even if in the making). Women were required to actively and dutifully offer their bodies for the service for both causes. (Maunaguru 1995, p. 158, 175).<sup>3</sup> To show the continuation of this strain of exemplary womanhood, a more recent example could be drawn from the World Tamil Movement conference held in Toronto in 2001, wherein the Tamil poet R. Cheran explicates the valorised position of women in Tamil culture thus:

Mere words or poetry fall short of remotely expressing the place of women in Tamil culture. Women are regarded with the utmost respect and reverence, as they are the keepers of wisdom, the connection to the divine and the teachers of life.<sup>4</sup> (2001, p. 21)

While the poet Cheran may sincerely believe that he is according honour to womankind by his words, they are in effect a reiteration of patriarchal discourses attributed to the female body as has also been deployed by Sinhala nationalist discourse wherein also women (although exclusively of Sinhala-Buddhist origins) are repositories of spirituality and culture. As for the Sri Lankan Tamil community, these notions held sway despite witnessing the lived experience of women on the Jaffna peninsula wherein when they were not enlisted as soldiers, or suicide bombers they functioned as breadwinners for their families needing to protect their offspring from forced inscription into the “baby-brigade” of the LTTE.<sup>5</sup>

With militarisation becoming the order of the day on the Jaffna peninsula, women’s lives acquired a new and violent normal particularly since every male of Tamil ethnicity was targeted by the authorities as a terrorist and by the guerrilla outfits operating on the peninsula as a potential soldier. This led to widespread “disappearances”, as sons and husbands never returned home after the ubiquitous “questioning” by state authorities or were recruited by the LTTE. In this scenario,

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women-centric protest movements such as the “Mother’s Front” took centre stage on the peninsula.<sup>6</sup> While to protest in times such as these is in itself an act of bravery, we must also bear in mind that traditionally in south Asian societies, the body of the grieving mother, particularly for a warrior son, commands a space of formidable respect. This undoubtedly enabled mothers who were staging protests against the state machinery at a time when extreme forms of terror had paralysed civil society networks on the island. So now, a discourse decried by feminists as patriarchal and stereotypical was being effectively deployed by mothers grieving the violence of the times. The mothers were speaking out not only against the state, as is commonly believed, but also the war machinery of the LTTE and against the violence that had become such a normative part of their lives. With the moral weight of motherhood behind them, the Front attracted tremendous mass support. As a performative speech act, the movement subverted the traditional injunctions of isolation imposed on women during mourning and by bringing the body of the grieving mother out into the public realm not only did they perform grief but more so staged resistance to violence. By doing this, the movement redefined the practice of motherhood, making it more of an active, public experience, whereby mothers assuaged their grief instead of keeping it in the realm of the private (Schriver 1989, pp.185, 209). The means of protest used by the members of the Front to express their grief and demand redress were customary cultural practices such as, heaping of curses, invoking of superstitions and folk-rituals of black magic, fasts undertaken at the temple of Kaliaamma seeking divine vengeance as justice for their murdered kin. The movement was attacked by the state for encouraging stereotypes of irrationality, gullibility and superstition associated with women and for hysteria - often blamed on their bodily cycle and finally, they were accused of politicising grief by making it such a public affair.<sup>7</sup> As a spokesperson for the state, the Defence Minister for the UNP, Ranjan Wijeratne, chastised the protesting mothers for: “having failed their duty by their children and the nation” (De Mel 2001, p.244) thus once again resorting to age-old patriarchal injunctions to keep the woman’s voice and her body within the private space of the homestead. Gauging the tremendous political currency of the movement, the UNP government in the South formed its own Mother’s Front, in opposition to what they termed was the SLFP’s Mother’s Front of the North. This propagandist politicisation and bifurcation led to the eventual dissolution of the movement in the South while in the North, the movement ultimately



dissipated under LTTE pressure. Pointing to the social effectiveness of the “Mother’s Front”, Niloufer De Mel points out that the movement created the much-needed empathetic space wherein women, often the silent sufferers of conflict and the silenced bearers of its brutalising effects could reach out to one another, swap stories and expect to be understood and supported in a humane manner. The members of the Front, as Mel points out, were: “as much in dialogue with each other as they were with the nation” (De Mel 2001, p.247; De Alwis, 1999).

As speech acts of resistance, the Protest poetry written by women protesting the war interrogates the patriarchy that bolsters this violence. These poetic enunciations radically broke class barriers along with ethnic barricades. The common thread binding women together at this time was the oppression they faced on account of violence, as has been stated by the editors of the Trilingual Anthology, a collection of poetry by women from different strata, ethnicities and walks of life:

As women who write in different languages, belong to different ethnic groups, religious communities, regions and cultures, we are divided. Yet, we share the experiences of oppression that are rooted in the patriarchal norms that rigidly control and constrain our lives. It is this same-ness and this difference that make our coming together all the more complex, and rich.

(Sanmarga 2002,n.p)

‘A Mother’s Lament’ penned by Sanmarga, (the pseudonym used by Sarvamangalam Kailasapathy) is part of the above-quoted anthology compiled by the Women & MediaCollective. The speaker’s words bear witness to the psychic disempowerment engendered by war, apart from its material losses.

A Mother’s Lament  
 You lie on the road dust  
 Your body soaked in blood  
 I bend down to see your face  
 Yes son it is you  
 “Why do you cry mother?”  
 The gathered crowd inquires  
 “Do you know the boy”  
 Threatens the man with the gun  
 “No I don’t.” I shake my head  
 Denying you my first born

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In Kurukshetra, when Karna falls Kunti runs and takes him in her arms  
 And cries "Oh my son"  
 I am a sinner to be born now for I cannot even claim you as my son

If only I had some strength  
 I will take you in the night  
 And cremate you in Chemmani  
 This hand which fed you rice  
 Two nights ago, would have courageously  
 Done this duty as well

You went away for six months  
 Unable to bear the oppression of Ravana  
 .... Why did you return my son?

If I claimed you as my son,  
 They will come home and take away  
 your brothers and set fire to my hut  
 will load my cow on their lorry  
 and drive away to Palaly

who is there to question them?  
 I am just a poor woman  
 ....  
 .... My grief will one day destroy those  
 Who have been so cruel.  
 While those who advocate a separate state  
 On platforms endlessly  
 Are guests in neighbouring country safe and secure,  
 You who gave your life for the country  
 Are dead on the road-side

My heart breaks to leave you  
 On the road-side  
 I am a sinner who cannot even claim  
 my son as my own. (Women in Wartime 2002, p. 24, 26).<sup>8</sup>

My analysis of Sanmarga's text shows the violence of authoritarianism whereby patriarchy is not simplistically located in binaries of men versus women. As the text shows, it is economic marginalisation and not ethnicity that is accountable for the speaker's anguish. She cannot

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bury or even publicly claim the lifeless and mutilated body of her son for now the carcass is intended to serve as a spectacle deterring future offenders to the cause. Her predicament is two-fold, for while on the one hand, it shows her vulnerability and helplessness in the face of power structures, particularly the violence with which they control lives, on the other, it is her need to articulate the injustice of the act, the authoritarianism that has spurred it and as a mother to vent her grief and call out to the ones responsible that rises as an anti-war, anti-violence cry. In this, her subject position as a mother has proven to be the most enabling. Her words draw attention to her economic situation rather than her ethnicity and with this, she touches on the silenced dynamic of this (or for that matter most) conflict. As a speaker, Sanmarga attributes her helplessness to being “just a poor woman” and her duress is not on account of being a Tamil in a Tamil-dominated area but the self-alienation and psychic violence she experiences as a mother for having to undergo the unnatural act of denying the lifeless body of her child. Again, it is as a mother that she also needs to protect her other children from the war machinery. Her predicament, as she pronounces it, accrues on account of her economic powerlessness and ethnic identity appears immaterial throughout this speech-act.

Moreover, it is “the man with the gun”, that the mother perceives as threatening - whether he be of the Sinhalese armed forces or the Tamil-Tigers. Neither does she clarify for the readers whether her son’s death was ‘punishment’ as meted out to those deemed deserters/traitors by the LTTE as per their ideas of justice or was it a staged terrorist encounter by the armed forces acting under the aegis of the Prevention of Terrorist Activities leeway?<sup>9</sup> While neither case justifies this spectacle of cold-blooded murder in broad daylight in the marketplace and intended to spread paranoia, the ambiguity regarding is an enabling speech act as it creates the scenario of the theatre of war which had become a living reality for Sri Lankans such as herself. Adding to this, her lament that her son had “returned” to the peninsula raises the question of forced recruitment by the Tigers?<sup>10</sup> His murder then shows the shrinking space for non-violence and for individualistic choices when the violence of war is the order of the day. Furthermore, is the mother’s reference to “Ravana”, the mythical demon-king of the epic Ramayana, a reference to the head of the Tigers – Vellupillai Prabhakaran or the President of the elected Democratic Party, or to both – for as perpetrators of violence should not both be indicted? The power of the text as articulated by

the lamenting and desexualised body of the mother lies in its exposure of patriarchy.

Adding to the subversion of the normative order wherein she must disavow her son's body, now an abandoned carcass lying in the dust by the roadside is the belief that a son will further a mother's sense of agency, particularly within traditional and conservative communities.<sup>11;12</sup> Nationalist ideologies too glorify women's bodies as producers of sons who would be future soldiers and protectors of the motherland. Jyotsana Agnihotri Gupta in *New Freedoms, New Dependencies* states:

The internalisation of this so-called ideal that nationalism put up for women simply reinforced the traditional notion that the fruition of women's lives lay in producing heroic sons. The nationalist ideology, therefore, simply appropriated this orthodox bind on women's lives by glorifying it. (Gupta 1996, p. 60)

Sanmarga's speech-act, however, is a rare enunciation for poetic texts written in Sri Lanka around this time usually extolling nationalist sentiment whereby veneration for the body of the mother in the household is extended to the nation as motherland, and protecting the motherland, even at the cost of one's life, is equated with the service rendered by a dutiful son towards his mother. This is usually the case with families of personnel from the armed forces as this poem entitled *To My Son on the Battlefield*, written by the mother of a soldier stationed on the front shows:

To my Son on the Battlefield  
 When her son Dutugemunu went to battle  
 The venerable queen did not shed tears  
 I cannot do likewise my son  
 For warm tears are cascading down my face  
 Even if you die in the battlefield, beloved son  
 Lay not your rifle upon the earth, hand it over to another  
 This is the way I know you are my eldest son for sure  
 Tomorrow I'll send my heroic younger son to battle (De Alwis 1998, p. 262)

One can make a strong argument that the above verse extols war to the extent that the mother even seems to propagate its continuation by vowing to send her "younger son to battle". The legend of King

Dutugemunu, the founder of the Sinhala race and his mother Vihara Maha Devi as recounted in *The Mahavamasa* has been foundational for this post-independence phase of militant Sinhala nationalism. The circulation of this myth of the young king's desire to wage war against the Tamils worked towards legitimising the idea of Ceylon as Sinhala-Buddhist land. Gananath Obeyesekere in his study entitled *Dutthagamini and the Buddhist Conscience: Religious and Political Conflict in South Asia* presents his version of this dialogue between the queen and her son, the young Dutugemnu:

The queen came and caressing Gamini spoke thus: why dost thou not lie easily upon thy bed with limbs stretched out my son? The son replies "over there beyond the Gange (the river Mahaveli) are the Damilas (Tamils), here on this side is the Gotha (ocean), how can I lie with outstretched limbs? (Obeyesekera 1993, p. 92)

The propagation of this myth by Sinhala nationalism is especially evident in the speech-acts by wives and mothers of the armed forces personnel as the cited text shows. While she expresses her distraught state of mind over the possible death that could await her son, at no point does she question the legitimacy of the battle as the Sanmarga mother had done or imply that it is a waste of human life. Her speech-act shows her internalisation of the myth of the courageous mother as exemplified by the legendary queen-mother Vihara Maha Devi and so the glory earned by her son-as-soldier overrides the grief of his possible death. Women/mothers with sentiments such as this were the need of the hour for both, the Sinhala and Tamil nationalisms and they provide ample illustration of the discourse at work. As war machinery the body politic needs at this time is just the reproductive capacities of women but for them to extol the right sentiments. It is these "Moral Mothers" and their "Stalwart Sons", as indicated by the title of Malati's essay who show the effects of coercion through discourse and its poetic representation.<sup>13</sup> Noting the cultural import of images such as: "'warm tears' and the dispatching of another son to take the place of the first", Malati de Alwis notes how these images became familiar tropes during the armed conflict and even found their way into popular forms of public discourse such as: "war songs, political speeches and statements to the press by bereaved parents ..." (De Alwis, p.262). She adds:

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The nation-state, i.e., the motherland conceptualises the citizen subject through a particular configuration of ‘motherhood’: nurturing and caring for her citizens in exchange for a similar reciprocity. In times of crisis such as war or an uprising such symbiotic relationships are especially highlighted: the heroism required of her male citizens foregrounded against the sacrifices of her female citizens. In addition, the female citizen is often perceived to embody the Motherland (they are both nurturant yet vulnerable); her rape or capture symbolizes the very desecration of the community/nation/land.

(De Alwis 1998, p. 254)

According to this equation, while the male body as protector, is duty-bound to defend the motherland; the woman-as-mother must order her sons to battle and not mourn their death/martyrdom if such be the case. This deification of motherhood at the national level however, much like the mother goddesses of the Indian pantheon did little to alter the lives of real women as the text by Sanmarga shows. Moreover, since this so-called power was exercised within the confines of and in the service of a nationalism which very clearly is patriarchal it didn’t do much to improve the gender equilibrium either within society as a whole, or individual households. It was only in the absence of the male head, which is not an uncommon occurrence for a conflict zone that women were in-charge of their household economies. In most cases, this ascendancy in the power hierarchy was not a matter of choice but an enforced reality.

This trope of valorised motherhood is predominant in discourse propagated by Tamil-Tigers as well and actually shows the cultural similarities between the two warring ethnicities despite their avowal of difference. The only difference is that with the Tigers women needed to serve as armed combatants and suicide bombers as well. Explaining the popular acceptance of this new phenomenon whereby the death of a loved one, on the battlefield is equated or elevated to the gifting of one’s life for the motherland, Cheran, in his book entitled *The Sixth Genre: Memory, History and the Tamil Diaspora* links it to an ancient Tamil practice called *Maanam* and explains it thus:

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Another concept that receives wider articulation in the Dravidian-Chola-Tiger discourse is the concept of Maanam. The concept of Maanam, coupled with pride and valour constitutes a self-image of Tamils as proud and valiant people who would not tolerate any infringement of their honour and who would, if need be, redeem it by courting death. In the current dominant Tamil nationalist discourse, the Tigers are treated not only as a symbol of pride and honour but as the warriors, who reclaimed these qualities for the Tamil “race”. It is not surprising then, that the motto of the Muzhakkum is pulikalum innaa illaiyel elikathaana thinnam thamilalai (if it were not for the Tigers the rats would have devoured the Tamils). (p. 21)

Clearly, when communities take to arms, discourse must comply. Discursive construction is thus geared towards the deification of the sacrifice of self and body in the service of the nation/community. This sentiment rendered acceptable the idea of the armed virgin and legitimised, as far as Tamil society was concerned, the formation of the Women’s Wing of the LTTE - the Illavar - which translates as “birds of freedom”. This title appears ironic in view of the fact that while the women’s cadre endured training in armed combat similar to that undertaken by men, it was the women who were entrusted with suicide missions which they carried out successfully. Also, while in the subcontinent images of the Goddesses Durga and Kali in their avatars as fierce warriors, riding lions, wielding weapons and vanquishing demons are iconic; “real” women in combatant roles, as the Illavar typifies, are far from being commonplace occurrence.<sup>14</sup> So while the patriarchal discursivity of this new role cannot be denied, on no count does it render women into passive agents of patriarchy.

The following poem *She, the Woman of Tamililam*, issued by the cultural unit of the Tigers has been attributed to Captain Vanati, martyred at age twenty-seven in the battle of Elephant Pass on 11/07/91. While it shows what it meant for women on the peninsula to don battle fatigues, it was also intended to serve the cause of female enlistment.<sup>15</sup> The women cadres of Illavar, as the poem illustrates, were held up as models to be emulated by all Tamil women;

*She, the Woman of Tamililam*

Her forehead shall be adorned not with kumkum but with red blood  
 All that is seen in her eyes is not the sweetness of youth (but) the tombs  
 of the dead

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Her lips shall utter not useless sentences but firm declarations of those  
 Who have fallen down  
 On her neck will lay no tali, but a Cyanide capsule!  
 She has embraced not men but weapons!  
 Her legs are going and searching,  
 Not for searching a relationship with relatives  
 But looking towards the liberation of  
 the soil of Tamililam

Her gun will fire shots  
 No failure will cause the enemy to fall  
 It will break the fetters of Tamiilam!!  
 Then from our people's lips a national anthem will tone up!!

(De Mel 2001, p.207)

On the surface of it the above text reads like and is a repudiation of feminine stereotypes of respectable domesticity as deemed ideal for women during the course of their natural lives. In the above text, the familial love and nurture of the homestead is supplanted by violence and the possibility of death which in this instance is the nobler – martyrdom for “then from our people’s lips a national anthem will tone up” (ibid). While sacrifice finds no literal mention in the sentiments of honour and warrior-glory being extolled in the above quoted text but is the vital thread connecting the old and new roles for women. What is being repudiated in the process is what earlier was extolled as the softness of the female body and temperament, the tenderness of female hearts, the nurturing body of the mother and so forth. This new avatar of femininity also demanded a new dress code. Cadres of the women’s brigade dressed, at all times, in belted trousers, loose shirts, rifle holsters and a gun slung over the shoulder. This was a complete change from the earlier strictures put in place by the LTTE demanding Tamil women in Jaffna wear the sari and not ride bicycles (De Mel, 2001).

The lines attributed to the martyred Captain Vanati moreover were issued by the cultural unit of the Tigers thereby rendering authorship into a collective expression rather than an individual and subjective one. Captain Vanathi’s delineation of the woman fighter is intended to accommodate the widest possible denominator of LTTE female cadre,



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martyred or otherwise. Their bodies, as the propensity of women chosen to perform the act of suicide-bombing shows, were as much property of the LTTE as the body of the reproductive woman is for her husband/community/nation.<sup>16</sup> Feminists such as Francine D'Amico have raised this question as the article entitled *Feminist Perspectives on Woman Warriors* shows:

. . . . the woman warrior image subjects women to greater manipulation by those controlling military institutions, thus allowing women to be militarized but not empowered. . . . women's militarization provides no substantive 'feminization' of the military as a social institution. Military institutions and their needs (not women's needs) determine women's role in the armed forces. Women's military participation reinforces rather than undermines the gender structures of the military and the broader society.

(D'Amico, p.120)

Women as LTTE fighters then was not much of a repudiation of ossified gender norms. Since this role too, implied a storming of the male bastion even if it appeared glamorous on the surface, it was still couched in entrenched notions of sacrificial womanhood and loyal womanhood which were effectively deployed by the LTTE to replenish the ranks of fast-depleting male cadre. What the women of the Illavar did blow asunder were notions of tenderness and physical vulnerability essentially associated with the 'weaker' sex. Patriarchy however relies on deeper roots and through discourse, as this article has shown, entrenches itself in psychic spaces. In the final instance then, if patriarchy is to be summed up as control of women and their bodies, this authority was not relinquished by the male command of the LTTE. The soldiers whether man or woman, whether Sinhala or Tamil needed to be equally saturated in the colours of nationalism, the abstractions of which readily lend themselves for much heroic poetry, beginning with the Queen Vihara Maha Devi onwards. In this scenario, true resistance is demonstrated by Sanmarga as the mother who speaks in a voice of her own and in a voice that does not take recourse to nationalist sentiments but draws on the peculiarities of her position of having to live on the Jaffna peninsula and being caught in a violent cross-fire, not of her choosing or making.

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### Endnotes

1. Malati De Alwis and Kumari Jayawardene, 1996.
2. See Neloufer de Mel 2001,57;102; Neluka Silva 2004,97; 137.
3. In this regard, the murder/death of Ranjini Thirangama, a lecturer at Jaffna University and a strident voice speaking out against state and LTTE oppression, is a case in point.
4. Cheran, R, 2001, p. 21.
5. The location of the conference is significant in this regard as it explains the need of the speaker to highlight aspects of Tamil womanhood to a western audience.
6. The initiative of the Mother’s Front was begun by the poet and activist Richard de Zoyza’s mother following his disappearance. Protesting mothers on the Jaffna peninsula demanded to know the whereabouts of their children, taken into police custody for questions and having disappeared ever since.
7. Raka Ray in her study on women-centric protest movements has shown how these often take shape from local problems and are thus heavily influenced by local cultures and traditions. The ‘Mother’s Front’ in Sri Lanka was similar in this aspect being born out of a crisis of state. Moreover, when R. Premadasa met his end at the hands of a suicide bomber, the perception that folk-justice had taken recourse was a strongly prevalent sentiment. (Ray 1999; De Mel 2001)
8. Sanmarga’s poems first began to appear in a magazine called ‘Sollatha Seithigal’ around 1986. The war in Jaffna between the separatists and the GoSL had rapidly escalated during this time. Her poetry articulates a sharp socio-political criticism.
9. A ‘deserter’ refers to a soldier absconding from duty. However, the situation then calls for the military procedure of a court-martial, wherein the soldier will be tried under the military court and law.
10. The LTTE had a reputation for torture and cruelty in order to extract fear and therefore obedience from the cadres and civilian population. Refer to Narain Swamy for details.

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11. The deified status of Queen Vihara Mahadevi, in Sinhala folklore, accrues from her position as king Duttugemunu's mother.
  12. This is particularly the case with labour intensive, agriculture economies of Asia and Africa. Refer to Jyotsana Agnihotri Gupta elaborates in *New Freedoms, New Dependencies*.
  13. The title is also an ironic reference to the line-of-argument resorted to by the state whereby the members of the Mother's Front were upbraided by the state-representatives as "bad mother's" who had failed in their duty towards their family and towards the state and brought up children who were wayward and criminal.
  14. For more information on the women's wing of the LTTE, refer to Adele Balasingham's *Women Fighters of Tamil Eelam*
  15. The First Battle of Elephant Pass (1991): in this epic battle the LTTE cadre engaged with the Sri Lankan armed forces for control of the military base of Elephant Pass – a narrow strait of land connecting Wannai with the rest of the peninsula.
  16. For more on the female cadres of the LTTE, see Balasingham, 1993.

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# RESEARCH ESSAY

## SEX WORK, SEX WORKERS AND INTERSECTIONALITIES

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The discussion about sex work in the Indian Public Sphere often dwindles between an abolitionist and an anti-abolitionist perspective. The debates are fraught between articulations like “sex work is work like any other work” or positions such as that of Madhu Kishwar, who states that “no self-respecting society should legalise the dehumanisation of women who are forced into flesh trade through force, abduction and violence”. What is interesting to note here is what are the connotations attached to the phrase ‘self-respecting society’. The phrase and the position of the likes of Madhu Kishwar is laden with moralistic value judgements, one that devalues the labour entailed in sex-work, one that views sex and sexual as something strictly to be within the bonds of conjugality. Further, in the anti-abolitionist camp, there are differing viewpoints: one that vouches for decriminalisation and other that pushes for legalisation. While, the former implies that all existing legislation be abolished because the law itself operates with a certain moralistic viewpoint, the former implies a call for regulation that seeks to protect the sex-workers. The term ‘protection’ also carries with itself certain connotations, that of the paternalistic state and other institutions that seek to control by care. Feminists have been conscious and cautious about this, and perhaps this is the reason why the decriminalisation faction holds their position. What this layout of the various debates around sex-work points towards is that, at the core of the arguments each faction strives for the well-being of sex-workers, but still there are differences. The question that then arises is that are all sex workers the same? Can sex-workers and sex-work be thought through from the

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perspective of intersectionality? I would argue that to think of sex-work and sex-workers as an analytical and political category, it is crucial to situate them within the framework of intersectionality and engage with the differences arising out owing to the class, caste, gender, racial and other identity markers. As Prabha Kotiswaran (2001, 2008) has also pointed out, sex-work does not exist as a unified category, there are different sex-work practices and regulations on each practice and the different types of sex-workers have varied meanings.

When sex-work is analysed from a labour perspective, the debate proceeds from the point of transcending the victim/agent dichotomy. It then becomes possible to analyse the diverse sex-work practices with the distinct stakeholders involved. The concept of labour positions sex work within a broader category of intimate and gendered labour. But it is equally crucial to remember that sex work is also a unique site of labour involving distinct forms of violence and agency. The economic sphere of work is more than often socio-culturally constructed. The notion of work is rather the conglomeration of the economic ideas (labour, exchange and value) and the sociocultural parameters (caste, religion and gender). Such construction is dependent both on the economic return of a work as well as the social perception related to the work which is to say that there is a relation between the work, its perception and the person who performs it. This paper situates sex-work within the perspective that it is a form of labour like other forms of informal labour. More so, I would situate sex-work in the category of marginal informal labour. Sex workers face gender oppression, sexual violence, discrimination and exploitation in their job. It is informal labour because women in sex work often move in and out of sex work into other informal occupations. This highlights that sex work operates as one form of work within varied and often precarious, labour network.

The case of conflation of caste and sex-work gets complicated owing to the notions of sexuality attached to the lower-caste women by the Brahmanical Patriarchal structures. The sexuality of lower caste women is constructed as transgressive and promiscuous, one that is always available. As pointed out by Meena Gopal, feminists were confronted by this dilemma in the wake of the ban on dance bars in Maharashtra. While a section of savarna feminists from autonomous women collectives opposed the ban from the labour perspective, and because it deprived women the right to livelihood, another section of Dalit-Bahujan feminists

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argued that a lot of the women were part of caste communities where dance was a form of caste practice, and that under the argument of right to livelihood savarna feminists are reinforcing the existence caste-based occupations and stigmas attached to them (Gopal, 2012). When this debate of ban on dance bars is extrapolated into other forms of sexual labour (like Devadasi), a similar set of dilemmas emerge. The practice of Devadasi, where young girls from lower-caste would be dedicated to the temple deity was a caste-segregated profession. The young girls termed as Devadasi meaning the god's servant, would go on to become common prostitutes for the upper-caste men. There have been times when Dalit feminists of Maharashtra vehemently condemned the Devadasi tradition that pushed their ancestors into subjugation, at other times women from the Devadasi communities of Western India have become collectivised as sex workers to battle against police atrocities. The marginalities of caste then open questions about the way forward for feminist politics within the domain of sex-work.

For Transgender women, the path to enter sex-work opens owing to the discrimination they face because of their gender and sexual identity. Most of the transwomen are forced to migrate to unfamiliar places at a very young age due to the abuse faced at their parental homes. They enter sex-work when they are unable to sustain themselves economically in any other labour sector due to gender discrimination. In the process of finding a community for themselves, many trans women find solace in the *Hijra* community, which is linked to cultural and religious dimensions. These earnings are mostly spent in sustaining the chosen family for themselves, gender-affirming surgeries and bribing the police officers. Violence inflicted by police officials is also a common feature of sex work among transgender women.

In this regard, a study by the Peoples' Union for Civil Liberties, Karnataka, concluded that the police's attitude seems to be that since they are engaging in sex-work they are not entitled to any rights of sexual citizenship (PUCL-K, 2003). In addition to the stigma associated with sex work, transgender women face additional violence as they are perceived to be a threat to the gendered social order. Their visibility itself becomes the reason for provocation of anger, rage, and violence from the police and among the general public. Although, people engaged in sex-work largely are at a higher risk of contracting HIV and other Sexually Transmitted Infections, transgender persons involved in sex-

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work are statistically amongst the population group most affected by HIV. Their HIV vulnerability is linked to physical and sexual violence is associated with inconsistent condom use, and increased HIV/sexually transmitted infection (STI) vulnerability among sex workers (Ganju, 2017).

The State, while working through legalities, institutions, and state personnel, hold immense power in constructing and deconstructing the other. The legal binaries of legality versus illegality determine the normal versus the other. The transgenders are deprived of equal participation in social and cultural life, shunned by family and society, and have restricted access to education. They have less access to health services and public spaces as well. They exercise limited civil, political, and economic rights, their life, citizenship, and identity transits between legality and illegality of civil and criminal law (Skylab, 2019). What this does is that it makes them more marginal, in the already existing marginality. This abandonment by the State renders a category of people vulnerable to forms of abuse and violence. The cases of murders of trans women, who engage in sex-work like that of Sweet Maria, go unnoticed and un-investigated because the system considers them to be second-class citizens. These women are more than often murdered out of blatant transphobia, just because of rage caused due to disclosure of their identity. One such case was that of Pravallika in Hyderabad. The man, named Venkat had murdered several transwomen including Pravallika out of the hatred and disgust he had for the community.

The case of Living Smile Vidya, a Dalit trans woman becomes crucial to look at in this regard, as she points out the exclusions and discriminations faced by her owing to her caste and gender identity. In an interview, when asked to compare caste discrimination and transgender discrimination, she points out how transgenders who are working class have no dignity of labour as they have to either beg or resort to sex work. She points out the occupational fixity in both the forms of discrimination due to which “manual scavenging becomes an occupation enforced on Dalits through the exclusion of access to other jobs; in a similar way begging and sex work are forced occupations for transgenders through exclusion from other jobs” (Living, 2013). What Living Smile Vidya has to say about identities and intersectionality also points towards a strategy, a vision for transversal politics where people occupying different identities broaden their viewpoint and stand



in solidarity and unity against various oppressive factors. Particularly, in the domain of sex work, one needs to see it as work, as a form of labour. Although, it is oppressive owing to the violence and stigma that the society holds but so is existence in the form of any marginalised identity. The problem then is not in the identity or the work itself, but the stigmatic notions around it.

Through this discussion on various forms of sex-work and related professions (like bar dancers, devadasi and the workers occupying different identity positions of caste and gender) who are part of this labour network, I have tried to highlight the varied issues that the sex-workers face. In doing so, my attempt has been to point out how an intersectional approach is useful to examine the category of sex-worker as it brings to light the various issues that workers might face owing to their gender, caste, class position in the society. Sex work and Sex workers cannot be conflated into one category, and there is need for more intersectional analysis to highlight the specific issues that sex-workers face. Caste and gender in intersection with sex-work opens various questions and problems, related to visibility, increased vulnerability, and caste-based occupation. As pointed out earlier there are controversies within the Dalit-Bahujan feminists too regarding their position on sex-work and related professions. I think these contests can be points of deliberation for the future of politics of sex-work.

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## BOOK REVIEW

### MCKENZIE, WARK. 2021. PHILOSOPHY FOR SPIDERS: ON THE LOW THEORY OF KATHY ACKER. DUKE UNIVERSITY PRESS, Pp. 216

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Some of the popular images of Kathy Acker in the vignettes of public memory are from her days when she used to don a buzz cut hairstyle, a black leather jacket, a denim skirt, and laced stockings, and was often found mounted on a motorcycle. Kathy Acker, an American writer, and playwright, passed away in late 1997. Acker's works occupy a canonical position in American literature yet are disappointingly designated to the narrow and niche space of what is largely understood as the 'counterculture'. Various scholars have dressed her up in their own imaginings to further multiple discourses on gender, queerness, avant-garde art, punk, and capitalism and have variously reinterpreted her.

Although Acker is a queer icon, her gender identity has always been a matter of obscurity. McKenzie Wark in the book, *Philosophy for Spiders: On Low Theory of Kathy Acker* sees her as a trans individual which is also one of the assumptions about her gender identity. Such positions are not new, but Wark stages her take here by combating the common assumption of Acker's identity as a default cis individual. From a vantage point, this may seem like the crux of the book, but Wark goes on recounting and discussing her interaction and companionship with Acker and drives home the point that the book is neither a biography nor an evaluation of her writings. It is in fact a furthering

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and a remembrance of what is lost and maybe forgotten about Kathy Acker, thus introducing the reader to a side hardly visible before.

Biographies tend to imitate human memory. We reimagine and redesign a person in our mind with the help of pre-existing memories and images, and so does the biography. The measure of the dead usually has been for what they have left behind, and most of the retellings impose a sense of ownership over the dead. Wark provides an interesting take on the conventional understanding of biography through this book and claims that this form of literary work is like a conversation about a person by another person to another person(reader) which renders it into an exercise in fiction. She adds that these forms of communication are only a part of image-making and through various stories of subjectivity and opinions of objectivity, one only creates a subject consumed by others as an object. Often in a biography, controversies, gossip, debates, and the public image of a person determine the way one is offered a peek into a person's life but only to be articulated in the manner of another writer. Here, Wark concentratedly withdraws from such a practice. She does not write for people to be initiated into the life and works of Kathy Acker but in fact to problematize all the ways Acker has been imagined and understood so far. It becomes clear in about the first fifty pages of the introductory chapter that Wark has not embarked on writing a biography in a traditional sense. Throughout her life, Acker despised academic circles and the space of philosophical writings, which have been mostly saturated with men. The male sphere of philosophy has been largely preoccupied with metaphysical questions about life. These writings have come to hold a position of 'high' philosophy in the canon. Thus, Wark proclaims her own book as low theory and titles it so, in contrast to the philosophical work produced by men.

Wark presents the book in accordance with her perception of Acker's spirit. She asserts and makes sure that Kathy Acker is not reduced to a categorical individual but is presented in her multiplicity. The first chapter details Wark's relationship with Acker in the first few years of their meeting. It includes stories of their sexual escapade and the struggles of their queer existence in a heteronormative world. At this point, Wark proceeds to write a low philosophy concerning people like them in society. It is interesting to note that the first chapter in the

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second section of the book is numbered zero. This section is the part of theorizing their philosophy, which reiterates this style by titling a chapter as Null Philosophy. This play on language and structure resembles the core of the book and the struggle both Kathy and McKenzie have felt about writing. For them, language becomes a limiting tool, something that has been created by men and handed down to them only to reduce their identity. Wark provides a semblance of understanding it through gender as for Acker and Wark language is gender. Wark suggests that gender should be imagined as a transitive verb that exists in the language of behaviors. Besides the structure, the writing of the book shares a striking resemblance with the living philosophy of Kathy Acker. The book confounds the reader as it reads like a combined voice of both Acker and Wark, but Wark interestingly uses her (Acker's) words in coherence of her own and makes her appear no less than a co-author of the book.

Acker was exhausted by the literary industry and the oppression of copyright laws that forbid a text to be imitated and therefore stalls its circulation. Acker writes text that breaches these copyright laws. This resembles the culture of creating remixes in the music industry, which has had a tradition of sampling musical pieces to create another track. Acker does the same in literary terms by titling her novels like *Great Expectations* and *Don Quixote*. Her remixes are a reappropriation of classics as she takes them away from the hands of men and bourgeois cliques and gives them to a rebellious transgressive public. Wark performs ethnomethodology from references to Kathy's writings and interviews to carve a complete philosophy that issues from her life. The text is laden with quotations, and throughout the text Wark includes notes, writings, and public speeches of Kathy Acker. Wark creates a web of Acker's words in the book and is able to catch multiple ideas and theories that further form a melange of her ideas on varied topics like punkism, post-capitalism, sexual emancipation, and gender revolution.

The book is a simple read devoid of cliched philosophical ramblings. It shows its readers the zest of Kathy's spirit – a kleptoparasite that envisages a body of work through stealing, borrowing, or imitating. In the second section of the book, Wark derives a philosophical piece which is largely derived from her novels, essays, and interviews and her own companionship with Acker. Acker comes alive in the book

only to be reminded in the academic language of in-text citations that it is a quote from the distant past. It would be appropriate to call this book a remix of Acker's work (which most of her own books were). It presents revolution as an endnote on patriarchy and adds yet another footnote to the understanding of sexuality. It is a debate on structural systems which shall provide insights into everyday philosophy that claims to answer the truth about life but often complicates it.

**Reviewer Bionote:** *Ashutosh Kumar finished his post-graduation in Media and Culture from Tata Institute of Social Sciences, Mumbai. His short film Submission, a group project, has recently been featured at the Madurai International Film festival. His areas of interest include Internet culture, YouTube and Media, Gaming Culture, and Technology. He can be contacted at ashtan721@gmail.com*

## BOOK REVIEW

### RANGANATHAN MURLI. (TRANS.). 2020. THE FIRST WORLD WAR ADVENTURES OF NARIMAN KARKARIA: A MEMOIR. HARPER COLLINS, Pp. 230

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*The First World War Adventures of Nariman Karkaria* is a firecracker of a memoir. On its centenary, this fascinating book (originally titled *Rangbhumi par Rakhad*, 1922) has been translated from Gujarati into English by the keenly perceptive Murali Ranganathan, an independent scholar and researcher. It proves to be a gift to the historian and the academic alike because it is a Parsi man's rare first-hand account of travel, adventure, and soldiering on three fronts during the First World War.

Nariman Karkaria, a restless Parsi youth from Gujarat, whimsically decides to visit China at the age of sixteen and embarks on this incredible journey with barely fifty rupees in his pocket. After returning to India two years later, he revisits Peking (now Beijing) in 1914 from where he travels to London via Siberia, Russia, Finland, Sweden, and Norway. But this is just the beginning of his adventures. In London, he manages to enlist in the British Army as a private soldier in the 24<sup>th</sup> Middlesex Regiment. As a result, fate catapults him to three fronts in the battlefield – the Battle of the Somme on the Western Front, the Battle of Jerusalem on the Middle Eastern Front, and the Balkan Front – which he not only survives but also records on his return to India in May 1920. From 1920 to 1921, he chronicles his mind-boggling exotic experiences through serialised columns in a Gujarati newspaper which later become the source material for *Rangbhumi par Rakhad* (1922).

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This conversational and episodic text is a kaleidoscope of contrasting images. It thrills and terrifies at the same time. If, at one moment, the buoyant and inviting narrative voice takes the readers on a guide-bookish tour through the streets and alleyways of China, in another moment, the reader suddenly finds herself in the riveting Battle of the Somme. This account along with “The Killing Fields of France” is the first description of a full-fledged battle scene in the memoir and it is quite a sensory experience: it is pervaded by the booming sounds of cannon, of soldiers dodging enemy shells, the digging of the trenches, the foul smell of gas which could only be filtered by stifling gas masks, and the sights of either corpses used for cover or soldiers grappling with their mortal combatants in addition to the acute shortage of food, water and medical aid. The entire memoir is interspersed with alternating scenes of war and tourism. The section devoted to the Middle Eastern Front elucidates grit and determination in the face of fierce enemy attacks and the spread of malarial fever. The chapters titled “Desert Battles” and “The Conquest of Jerusalem” provide sneak previews into defence tactics and martial gumption. The portion on the Balkan Front is a cursory account of Karkaria’s services under the 31<sup>st</sup> Casualty Clearing Station (CCS) which enabled him to tend to wounded soldiers without the license to practise medicine.

Certain sections of this book also prove to be quite informative for the layman. The chapter titled “I Become a Tommy” expounds on military hierarchisation and military routine and discipline. On the lighter side, for those who are inclined to recreation, the touristy narrator recounts his humorous experiences in foreign locations and provides the reader with information on budgeted travel-worthy places. His tips include the most affordable stays in expensive cities like London and the true art of drinking Turkish coffee. Moments like these in the text make it more relatable today despite the fact that it was written a century earlier. The breezy and chatty manner of the narrator adds to the appeal of this remarkable part travelogue, part war memoir.

This book is full of potential full-blown stories because instead of containing detailed description of his experiences, Karkaria provides multiple hastily written snippets of his sojourns across the three fronts. Even the translator, Murali Ranganathan, in his introduction has commented on the complete erasure of “individual personalities” as “a disconcerting aspect of the memoir” (p. xxi). Speed, usually a



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beneficial factor in times of war, proves not to be such a useful quality when it comes to writing. It seems as if the narrator is in a haste to say everything at once. Not once does he stop to contemplate or philosophise except on a rare occasion when he visits the sombre tomb of Christ in Jerusalem. This is the only occasion in his long list of expeditions which leaves a lingering sense of profound sorrow in him. Karkaria's temperament on most occasions is otherwise rather detached, touristy, and observational. The following lines from the chapter titled "Constantinople" sum up his trajectory: "The strange customs of strange countries are bound to trip up the traveller, but one has to take it in one's stride" (p. 212). It is precisely his speed, tenacity and emotional distance from his surroundings which enable him to survive the Great War and simultaneously enjoy his rather topsy-turvy peregrinations.

In conclusion, one can't help but wonder whether this rare and rather captivating account of an Indian soldier who fought on the side of the British Army during the First World War will ever be adapted for cinema. Karkaria's story deserves to reach audiences far and wide. After all, it is a veritable account of a man who nurtured a contagious zest for life and who lived a colourful life.

**Reviewer Bionote:** *Enami Chopra is an Assistant Professor in the Department of English at Delhi College of Arts and Commerce, University of Delhi, and Research Scholar at Jawaharlal Nehru University, New Delhi. She recently submitted her PhD thesis in which she studies the novels of E. M. Forster and examines a gradual shift in his authorial vision as he advances into his novelistic career. Her areas of interest include British Modernism and Indian Aesthetics.*

## *Acknowledgements*

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A heartfelt appreciation for all reviewers for their excellent contributions made for Intellectual Resonance: DCAC Journal of Interdisciplinary Studies, December 2022, Volume 5. Intellectual Resonance relies on the efforts and academic rigour of our reviewers on assessing the suitability of a manuscript for publication. Thanks are also due to Dr. Neha Jingala for working tirelessly for the journal design.

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- A short bio-note of the author(s) not exceeding 100 words along with the institutional affiliation and email address.
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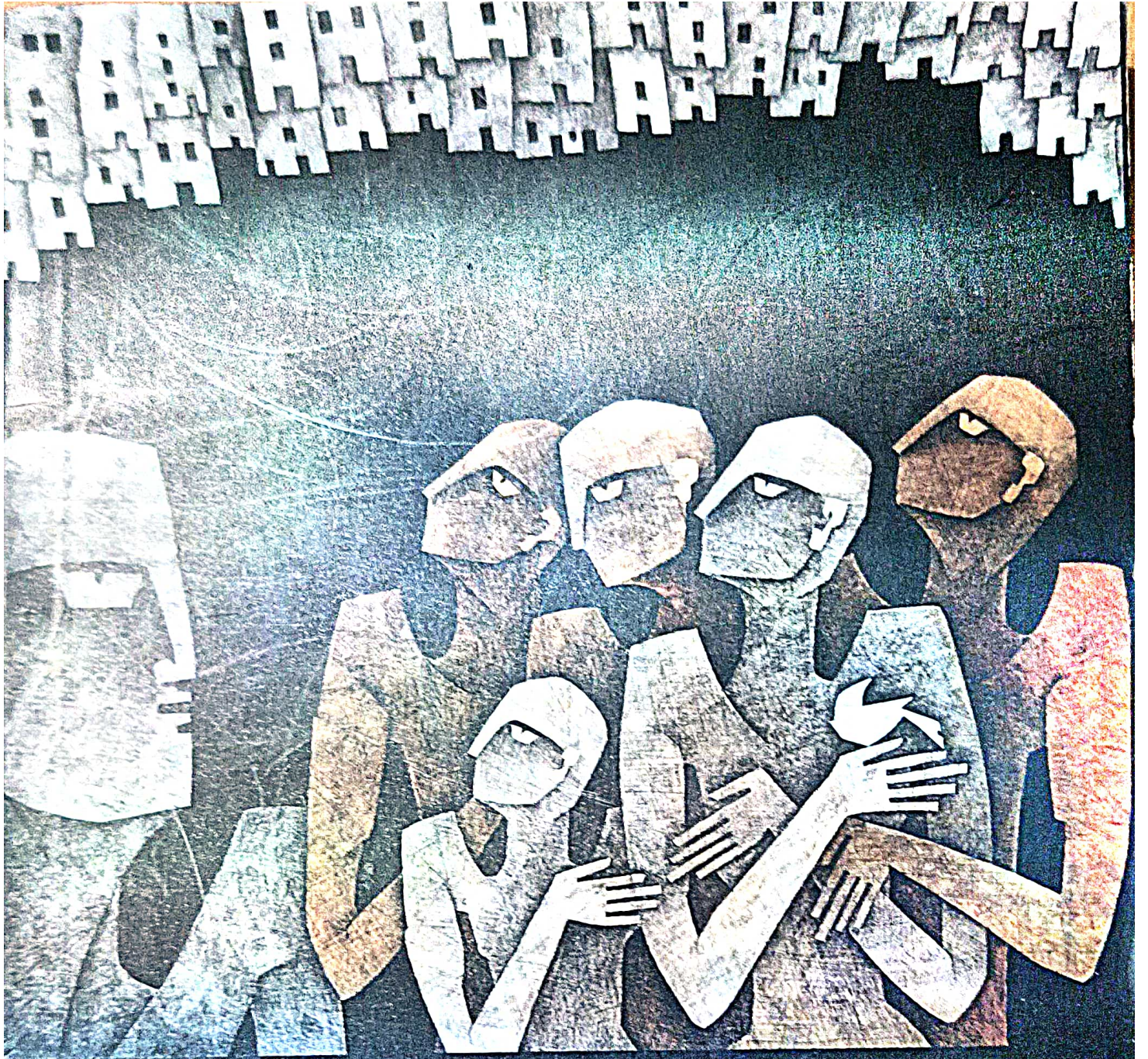
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# हाशिये की आवाजें

स्त्री-अनुभव के आर-पार

रश्मि रावत

# हाशिये की आवाज़ें

(स्त्री-अनुभव के आर-पार)

रश्मि रावत



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# यथार्थ, जो है भी और नहीं भी

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## सृजन-परिक्रमा

पिछले कुछ महीनों में ऐसी अनेक कहानियां सामने आई हैं जिनमें वास्तविकता और विभ्रम या असलियत और आभास के बीच की सीमारेखा धुंधली जान पड़ती है। उनमें वर्णित यथार्थ अनायास 'अयथार्थ' या 'अतियथार्थ' में तब्दील होता दिखता है। हम धीरे-धीरे एक ऐसे समय में चले आए हैं, जहां बहुत कुछ आंखों के ठीक सामने घटते हुए भी अवास्तविक, अविश्वसनीय जान पड़ता है। यथार्थ अब इतनी त्वरित गति से बदलता है कि उसे एक ठहरी, टिकी हुई निगाह से देखकर उसका अवगाहन या विश्लेषण संभव नहीं हो पाता। उसके अवबोध और व्याख्या के लिए पुरानी प्रविधियां और पद्धतियां कहीं न कहीं नाकाफी सावित हो रही हैं। राजनीति से लेकर संस्थाएं, परिवार, चेतना, आकांक्षाएं, स्वप्न और स्मृतियां, सभी कुछ तेज बदलावों के दौर में हैं। जितने समय में एक व्याख्या तक पहुंचा जाता

है, उतने समय में ही यथार्थ बदलकर उस व्याख्या को नाकाफी सावित कर देता है। ऐसे में हमारी कहानियों में भी यथार्थ और आभास के रेशे अधिकाधिक अंतर्गुम्फित हों, यह स्वाभाविक ही है। यथार्थ तो हमेशा बदलता ही है, लेकिन हमारे समय में उसकी प्रकृति या परिभाषा भी बदल रही है। क्या 'वृद्ध पूंजीवाद' (late capitalism) के दौर में 'सत्य' की कोई वस्तुगत सत्ता शेष रही है, अथवा वह भी ग्राहकों के 'ऑर्डर' पर, उनकी इच्छानुसार गढ़ा जाने वाला उत्पाद है? जहां मनुष्यों के बीच व्यावसायिक लेन-देन और सौदेबाजी का भावनाशून्य रिश्ता बांकी बचा हो, वहां क्या यह आश्चर्यजनक है कि सत्य, तर्क और विचारणाएं भी महज विक्रय वस्तु हों और उन्हें क्रेता की मांग के अनुरूप गढ़ा जाए?

विनोद शाही की कहानी 'रंगोली की टूलकिट' (हंस, अक्टूबर 2022) की केंद्रीय चरित्र का तो नाम भी उसका अपना नहीं। उसके द्वारा निर्मित 'टूलकिट्स' ही उसकी पहचान हैं। वह न अपने काम के चरित्र या उद्देश्यों से

वाकिफ है, न अपने ग्राहकों के। तकनीकी कौशल और कल्पना-शक्ति से ग्राहक की मांग और जरूरत के मुताबिक दृश्य-श्रव्य-लिखित सामग्री गढ़ना और पेमेंट हासिल करना, यही उसका काम है। वह किसी भी मुद्दे, मसलन किसान-आंदोलन, नागरिकता कानून या सांप्रदायिकता के पक्ष या विरोध, दोनों के लिए एक जैसे असरदार, समान रूप से तर्क-संगत दिखते 'टूलकिट' बना सकती है। पक्ष-विपक्ष दोनों के लिए वह ऐसे सटीक तर्क गढ़ सकती हैं जो दोनों ओर के लक्षित समुदायों को अंतिम, अकाट्य सत्य जान पड़ें। वह नहीं जानती कि उसके ग्राहक एक-दूसरे के विरोधी क्यों हैं। उसे लगता है जैसे उनके मंसूवों को दिमागों में भरना उसका व्यवसाय है, वैसे ही दुश्मनी उनका व्यवसाय होगी। व्यवसाय ही उसके लिए एकमात्र सत्य है और यही उसे सहज स्वाभाविक लगता है।

उसके काम की प्रकृति ऐसी है कि वह घर वालों को भी उसके बारे में नहीं बता सकती। गुमनामी और गोपनीयता उसके काम की शर्त है,

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## ठहरे हुए सच की कथा

रश्मि रावत

### सृजन-परिक्रमा

वह क्या है जो किसी साहित्यिक कृति को 'कालजयी' बनाता है और किसी को 'सालजयी' भी नहीं? संभवतः यह तथ्य कि उनमें कोई सदा-सर्वदा के लिए निश्चित, अंतिम रूप से तयशुदा, स्थिर, जड़ीभूत मायने नहीं होते और वे बदले हुए वक्तों में नए संदर्भों से जुड़कर बार-बार नए मायने अख्तियार करती हैं। इस तरह वे अपने को चिर-नवीन और 'सतत समकालीन' बनाए रखती हैं। ऐसी रचनाओं के 'पुनःसृजन' या 'पुनर्कथन' की भी एक सुदीर्घ परंपरा हिंदी सहित सभी भाषाओं में है। फणीश्वरनाथ रेणु के जन्मशती वर्ष (2021) में पांच महत्वपूर्ण कहानीकारों द्वारा उनकी पांच कहानियों का समसामयिक संदर्भों में पुनर्लेखन किया गया था जो 'कथादेश' में प्रकाशित हुई थीं। इसी क्रम में राकेश बिहारी ने रेणु जी की एक प्रसिद्ध कहानी 'संवदिया' को वर्ष 2020 की जमीन पर दोबारा रचा है। रेणु जी की कहानियां निरंतर पुनर्नवा होती हुई आधी शताब्दी से भी अधिक समय से हमारे साथ हैं। वे अपना 'अनश्वर' होना साबित कर चुकी हैं और एक मायने में चिर-समकालीन हैं। उन मूल कहानियों के आईने में ही हमारे समय के कितने ही द्वंद, अंतर्विरोध और तनाव और 'क्राइसिस' देखे जा सकते हैं। इसलिए मन में यह सवाल

आना स्वाभाविक था कि उन कहानियों के पुनःसृजन की आवश्यकता क्यों महसूस की गई। यह कहना अनावश्यक है कि यह नाजुक प्रयोग आसान नहीं है। किसी लेखक के लिए यह एक माहिर कलम के साथ एक तनी हुई रस्सी पर चलने के सतर्क कौशल की दरकार करता है। दो अलग समयों में समानांतर तने तारों को एक साथ साधते हुए उसे यह सुनिश्चित करना होता है कि रचना वर्तमान समय की विसंगतियों पर अचूक तरीके से उंगली रख सके, साथ ही मूल रचना से उसकी 'अन्विति' भी कहीं भंग न हो। इसके साथ यह भी कि उसकी रचना मूल को विकृत न करे, न ही उसका कोरा अनुसरण जान पड़े।

हंस, अप्रैल 2022 में छपी राकेश बिहारी की कहानी 'मैसेंजर' की शुरुआत कालजयी कथाकार रेणु जी के पैतृक गांव औराही हिंगना में मनाए जा रहे उनके जन्मोत्सव से होती है। रेणु जी को दिवंगत हुए दशकों बीत चुके हैं, फिर भी हर साल उनके जन्मदिन पर कहां-कहां से लोग वहां चुंबक की तरह खिंचे आते हैं। फिर यह तो उनका जन्म-शताब्दी वर्ष है। रेणु-स्मृति समारोह में पंडाल के गेट को मुट्टियों में थामे खड़े-खड़े रेणु जी की कहानी 'संवदिया' पर बनी फिल्म में 'बड़ी बहुरिया' को देखती, अपने जीवन में भी वैसा ही दुःख भोगती सियादुलारी उसकी 'रचना-संतति' है। वह नितांत एकाकी है और उस पूरे परिवेश में उसका मन समझने वाला कोई नहीं। हर

साल 'छठ' और 'तिला सकरात' में मां के भेजे गए ढेंकी के कुटे बासमती के चूड़े की खुशबू और मां अब बस यादों में हैं। कभी बहन की खूब फिक्र और लाड़ करने वाले भाई का स्नेह-रस बाद में न जाने किन कारणों से सूख चुका है। अब वह सिर्फ 'फेसबुक' पर उसका आभासी, बेजान, बेमालूम फ्रेंड है। सियादुलारी अपने पति की गुमशुदगी के बाद दुनिया में नितांत अकेली है। सिर्फ उसके पति की लैब के एक कर्मचारी बैजू को उसकी परवाह है और वह उसके जीवन-संघर्ष में उसके साथ है। पति को खोजने की उसकी हर कोशिश निष्फल साबित होती है। फेसबुक में इस बाबत पोस्ट लिखने पर उसे सहानुभूति के खोखले, रस्मी शब्द मिलते हैं या महज छलावे। फेसबुक पर वह 'अगले जन्म मोहे विटिया ही कीजो' जैसा अपारंपरिक पोस्टर लगाने वाले सार्थक के संपर्क में आती है और महसूस करती है कि कोई सहृदय मित्र मिला है जिससे वह अपना मन साझा कर सकती है। 'तीसरी कसम' में हीराबाई की आत्मीय, मीठी बातों से गाड़ीवान हीरामन के मन के नाजुक तारों में संगीत प्रवाहित होने लगता है। ('मन' समझती हैं न आप?) हीरामन का यह भोला सवाल क्या सिर्फ हीराबाई के शब्द-ज्ञान की परख के लिए है? इसी तरह 'संवदिया' में भी बड़ी बहुरिया का सिसकियों में डूबा संवाद हरगोबिन के दिल तक एक सीधी राह बना लेता है। जो पुरुष स्त्री के प्रति इतनी करुणा



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## सृजन-परिक्रमा

हंस के जून 2022 अंक में प्रकाशित, सुप्रसिद्ध कहानीकार अंजली देशपांडे की कहानी 'न्याय की टाई चाल' हमें 'न्याय' के बारे में कितने ही उद्देलित करने वाले सवालों के बर-अक्स ला खड़ा करती है. यहां सोफों में धंसे रहकर मोबाइल स्क्रीन में रमे रहते आम मध्यवर्गीय जन का ऐसा यथार्थ पाठक के सामने प्रकट होता है जो कमोवेश उसके जीवन का भी अंग है. यह यथार्थ कठोर, निष्करुण और भयास्पद है. 'कैडी-क्रश' जैसे गेम्स, ज्ञान का भ्रम रचते सोशल मीडिया के अर्धसत्यों, टीवी की अनवरत खबरों, अहर्निश बहसों और 'क्राइम पेट्रोल' जैसे धारावाहिकों में अपना समय बिताने वाला मध्यवर्ग हर विषय की शब्दावली से मामूली तौर पर परिचित हो ही जाता है. नतीजतन वह जिस सरलता से मनोरंजन, अत्याधुनिक उपकरणों, उत्पादों की बात कर सकता है, उसी सहजता से राजनीति और इतिहास सहित दुनिया के हर विषय पर अपनी 'सुचिंतित', 'सुनिश्चित' राय दे सकता है, न्यायविदों की तरह कानून, अपराध, अदालती प्रक्रिया और दंड-संहिता आदि पर दलीलें रख सकता है. वह प्रबंधन और निवेश के विशेषज्ञों की तरह पैसे

बचाने और कमाने के गुर बता सकता है. एक और दस प्रतिशत कमीशन के अंतर को वह इतनी बारीकी से समझ और समझा सकता है कि यह कार्बोन और सैमसंग के मोबाइलों का फर्क है.

इस तरह अधिकचरी सूचनाओं, निरर्थक, अतार्किक बहसों और इकतरफ़ा खबरों की निरंतर बीछार सचेदना पर क्या असर डालती है, वह हमारे समय का एक जरूरी सवाल है. क्या यह लगातार बारिश समाज और नागरिकों में स्वस्थ मूल्यों और औचित्यबोध की निर्मिति में सहायक होती है? क्या वह व्यक्तियों को सही निर्णयों का विवेक और उन पर अडिग रहने की ताकत देती है? अंजली देशपांडे की इस कहानी को पढ़ते हुए हम इन्हीं सवालों के रू-बरू होते हैं. कहानी में एक कस्बाई, निम्न-मध्यवर्गीय, ठीक-ठीक कहें तो मध्यवर्ग के भी 'हाशिए पर' गुजर करता परिवार है—उस मध्यवर्ग का एक हिस्सा, उसके जीवनमूल्यों का प्रतिदर्श (नमूना)—जो पिछली अर्धशती में, खासतौर पर 1991 के आर्थिक सुधारों के बाद वजूद में आया. यह वह वर्ग है जिसके जीवन और प्रवृत्तियों को समाजशास्त्री कुछ संदेह से ही देखते रहे हैं. मार्क्सवाद में एकीकृत मजदूर वर्ग की ताकत को ही 'इतिहास का इंजन' माना गया. इस इंजन में जो धिंतक और समाज-विज्ञानी

बौद्धिक-वैचारिक ईंधन डालते रहे, अधिकतर मध्यवर्ग के ही हिस्से थे, लेकिन वे, जो 'वर्ग-द्रोह' कर बाहर छिटक आए थे. समग्रतः मध्यवर्ग को दुलमुल और अवसरवादी माना गया, 'कायरता और साहस के बीच' कहीं जीवन बिताता हुआ. यदि वर्ग के रूप में, उससे छिटके असंग व्यक्तियों के रूप में नहीं, सामाजिक रूपांतरण में इसकी कोई भूमिका है तो यह उससे बेखबर है. आमतौर पर वह तात्कालिक हितों तक ही सीमित रहता है और सत्ता का पिछलग्गू है. किसानों और मजदूरों से उसकी कोई सहानुभूति नहीं, न भ्रष्टाचार, पतित राजनीति, मूल्यव्यंस और अपसंस्कृति के प्रसार पर कोई रोष. 'आत्म', 'आत्मान्वेषण' और 'आत्म-निरीक्षण' जैसे शब्द उसके लिए अजनबी हैं. नए विचार और नजरिए देने और समाज का बौद्धिक नेतृत्व करने की काबिलियत और संभावनाओं से गाफिल यह अपने खोल में इस तरह सिमटा हुआ है कि लोकतंत्र पर आए खतरों को भांपने, उसकी रक्षा में मुस्तेद रहने की सजगता तो छोड़ें, सामाजिक गतिकी के साथ स्वतः आने वाली न्याय-चेतना के साथ खड़े होने का हीसला भी उसके पास नहीं. नव-उदारवाद के आगाज के बाद आर्थिक प्रगति के नए मौकों का लाभ लेने के साथ यह अधिकाधिक आत्मकेंद्रित भी

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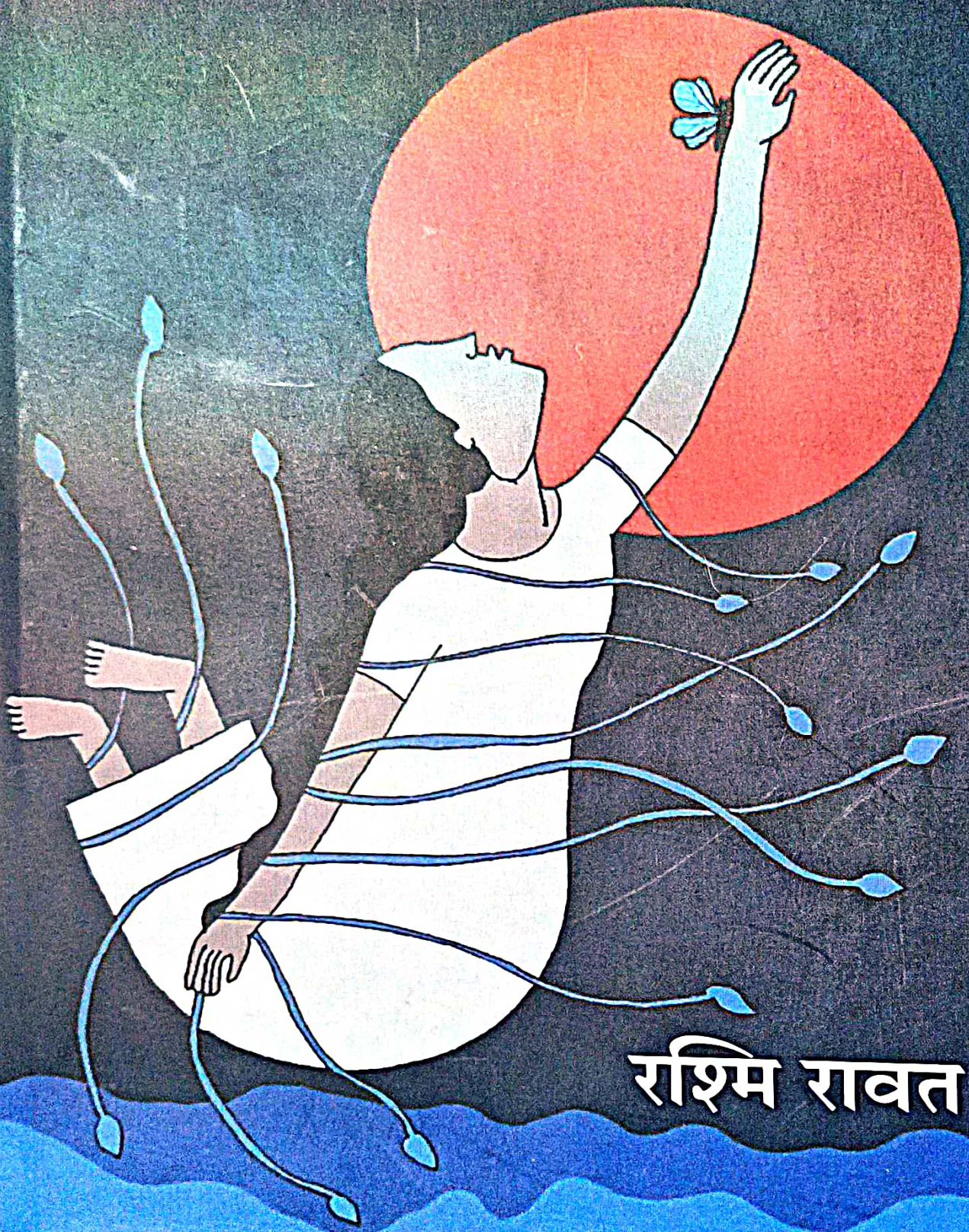
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# स्त्री-लेखन का समकाल



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# 'Reading Women Performers' Lives: Gauhar Jaan And Jaddanbai In A Spirit Of Reinvention Of Their Images And Personas

Dr. Smita Banerjee and Neeru Ailawadi

## Abstract

This article examines the life stories of two women performers Gauhar Jaan and Jaddanbai, who belonged to the tawaif tradition of North India. Their difficult life circumstances and careers as working women were mapped out in the early part of the last century as they navigated the world of music performance and early film industry. We read their life stories as instances of spirited reinventions of their images and personas that enabled them to create selves that can be read as narratives of resistances undertaken by women against patriarchy and circumscribed social conditions.

**Keywords:** Courtesan, patriarchy, performance, resistance, tawaif, women.

## Introduction

The lives and contributions of tawaifs have attracted a lot of scholarly attention in the recent past, both from historical and cultural studies perspectives. Scholars such as Veena Oldenberg (1990), Lata Singh (2010), and Shweta Sachdeva Jha (2009; 2015) have written persuasively on the tradition and culture of women performers belonging to the tawaif lineages of North India. Their path breaking work is significant for an understanding of the multiple traces of resistances that can be mapped onto this performative tradition by reading the archive against the grain. Historically, the decline of the tawaif tradition and lack of patronage coincided with the coming of the British rule. The nationalistic ideology also marginalized this tradition to bolster its politics. It was the arrival of new technology of radio, music and film industry that led to a reinvention of the musical and performing tradition associated with the tawaif. With this, some of them were able to acquire a celebrity status and constructed their personas to straddle this world of possibilities.

In this paper, we seek to recover traces of the tawaifs histories via the life stories of two exceptional women performers, Gauhar Jaan (1873-1930) and Jaddanbai (1892 -1949). We focus on their constructions of selves, their efforts to seek independence, their economic and business acumen and the ability to reinvent themselves according to the changing times. The retelling here is informed by a revisionist frame as we read their lives with our understanding of women's histories from our contemporary insights. We draw on the works of feminist scholars who have mapped the trajectories of these performers and their contributions as well as oral and anecdotal sources to foreground the life stories of these two women. Belonging to the tawaif tradition, these two women created their texts in the fields of music and film industry. Predicated along the axis of radio, music concerts, acting, singing, film production, the story of Gauhar Jaan and Jaddan Bai can be read as narratives of women's lives that attempted and actualized creative reinventions of selves and personas.

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# Dr. Bhimrao Ramji Ambedkar's Contribution to Emancipate Indian Women: Reflections

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**Abstract**—Dalit women, in particular, were a priority for Dr. Bhimrao Ramji Ambedkar as he fought for the autonomy and empowerment of all social strata. Women were among those he fought for. He was also an advocate for women's rights. His humanistic ideals regarding women were not contingent on the women's religion, caste, sect, or other aspects of their social position. The ideas of Dr. Ambedkar made it abundantly evident that it is the responsibility of the state to provide equality for all citizens. The fight for women's emancipation in India was assisted by a variety of constitutional provisions in various forms. Despite the fact that India has been independent for 75 years, it has been a battle for women to completely recognise their rights and achieve equality. In spite of the fact that they continue to be victims of social issues such as sexual harassment, domestic violence, and acid attacks, Indian women have made significant strides forward in a variety of areas of their lives. His beliefs are crucial to the social construction of a society that fosters women's empowerment. Although Dr. Ambedkar's dream of a society concerning gender equality has not yet been realised, his vision of a society that is built on gender equality has. The purpose of this study is to provide light on Dr. Ambedkar's contribution to advance the cause of Indian women's emancipation, both before and after the country's independence.

**Index Terms**—India, Dr. B.R. Ambedkar, Indian Women, Women Empowerment, Dalits, Education

## I. INTRODUCTION

Bharat Ratna Dr. Bhimrao Ramji Ambedkar is admirably known as Babasaheb. Ambedkar was an outstanding scholar, political thinker, editor, empowering social reformer, and dynamic leader of all time. He is considered as a key architect of the Indian constitution and messiah of the depressed classes. (Ghosal, 2015) One of the things that many people remember him for is the mobilization of the anti-caste battle against discrimination, exploitation, and inequality. This is one of the things that he worked to end. However, in comparison to his other achievements, the steps he has undertaken for the emancipation and empowerment of Indian women have received far less public recognition and attention. Even though it had a tremendous impact, his contribution to the growth of the contemporary feminist movement is sometimes overlooked, even though it was important. Dr. Ambedkar was an instrumental figure in the struggle that ultimately resulted in the emancipation of India's female population. He contributed towards the cause of expanding rights for women across our nation by working on a variety of fronts to move the cause ahead. He was one of the few reformers who worked tirelessly for the development of women in India together with the eradication of caste and contributed to the Indian feminist movement. He was also one of the few reformers who campaigned for the abolition of caste. The advancement of women's rights in India would not have been possible without his labour. He led a crusade against the antiquated and authoritarian social norms that are prevalent in our society, such as the devadasi system and child marriage. After conducting research on the challenges that Hindu and Muslim women face in society, he came to the conclusion that these women are denied their fundamental and human rights. In his well-known article titled "*Pakistan or The Partition of India*," he explored a variety of issues that Muslim women face, such as marriage, traditions, and other forms of discrimination. These issues included marriage, customs, and traditions. His publications, such as *Mooknayak* (1920) and *Bahishkrut Bharat* (1927), were released around the beginning of the 1920s. In these works, he constantly emphasized the importance of gender equality in society, the significance of women education, and the difficulties that women were experiencing at the time. Dr. Ambedkar, much like other worldwide feminists, placed a strong focus on the rights of women to education, property, and political representation. (Datta, 2019)

In Bombay's Legislative Council (1928), Dr. Ambedkar presented the Maternity Benefit Bill, which provided paid leaves to women working in factories. He argued "It is in the interest of the country that the mother should get certain comfort during and after the prenatal period, and the essence of the bill is entirely based on that principle." He considered that employers have a duty to financially assist female employees at the very least during the time that they are on maternity leave if they are enjoying earnings that were gained with the efforts of female employees. (Dhara,2022) The Madras Legislative Council and other provinces then approved the same act.1938, as the member of Legislative Assembly of Bombay, he advocated provision of different family planning measures to women. (Bhadaege,2017) He validated this progressive idea by saying that "If men had to bear the pangs which women undergo during childbirth, none of them would ever consent to bear more than a single child in his life." He added that "Many women become invalid for life and some even lose their lives by the birth of children in their deceased condition or in too rapid succession. Birth control is the only sovereign specific remedy that can do away with such calamities. Whenever a woman is disinclined to bear a child for any reason, whatsoever, she must be in a position to prevent conception and bringing forth progeny which should entirely be dependent on the choice of women."

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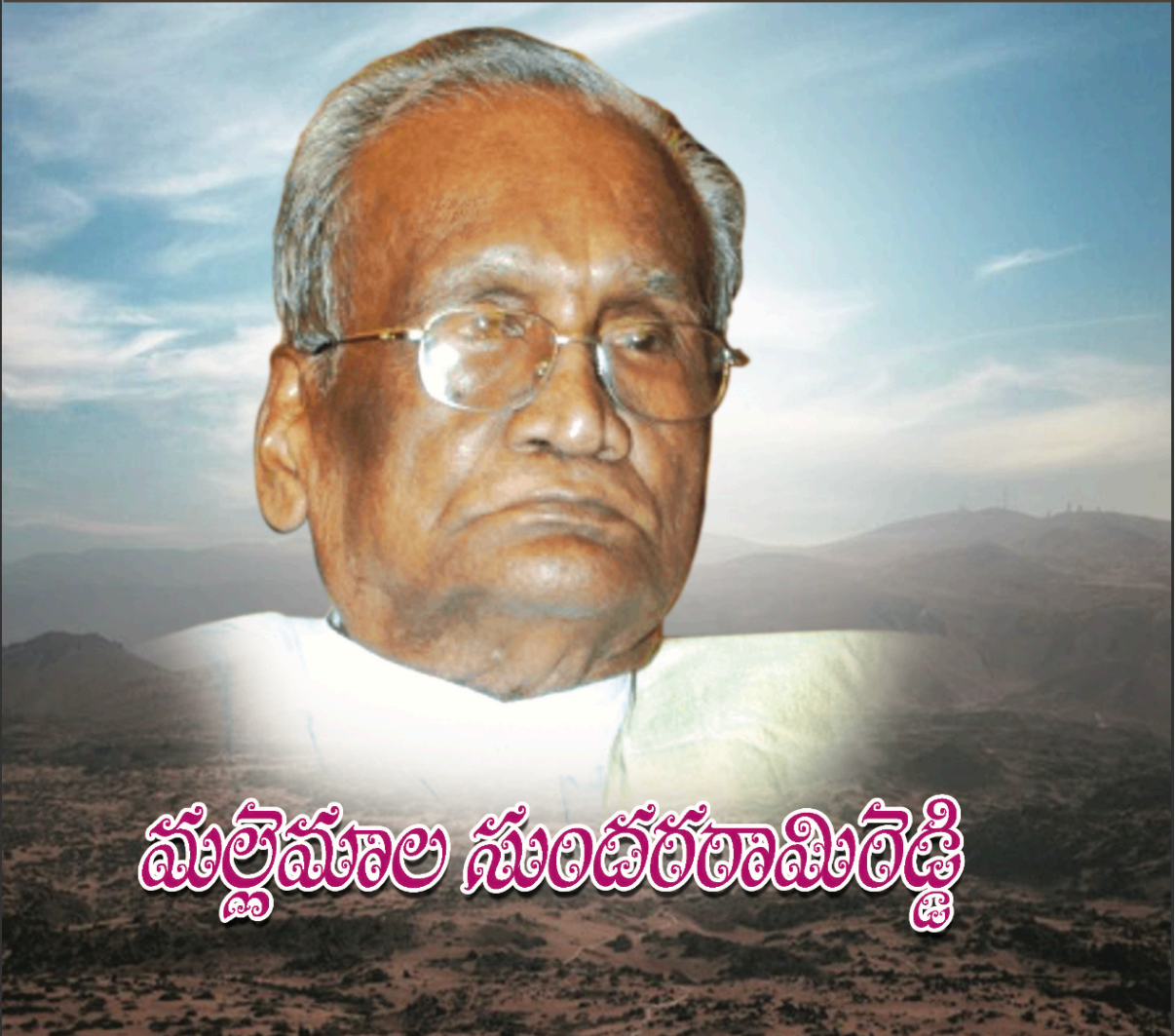
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## Reflections on Climate Change Awareness and Social Media : A Study among Youth in India

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### Abstract :

Climate Change discourse has progressed from being discussed in the scientific community to becoming the most desired public agenda item. According to the United Nations Framework Convention on Climate Change (1992), climate change can be attributed directly or indirectly to various human actions that alter the actual composition and structure of our global atmosphere. This change in the state of the climate is documented alongside natural variability over time. Young people are an important population to include in climate change mitigation efforts. This group is made up of the future leaders of society. Furthermore, if the impact of climate change intensifies in the future, they will be dealing with the consequences of this global problem. In recent years, the communication system has evolved dramatically. Platforms like Instagram, Twitter, and Facebook have made it possible for young people to share their perspectives and engage in climate change issues like never before. Youth use social media as a popular public forum where they have easy and quick access to information. It is a prominent channel for raising awareness about climate change to a larger audience in a shorter period of time. The effectiveness of social media must be determined in terms of how well-informed young boys and girls are about climate change and how they are dealing with

these changes. Therefore, this study provides a comprehensive survey on the role and influence of social media in raising climate change awareness among young people.

**Keywords :** Climate Change, Social Media, Youth, Awareness, Environment, India

### Introduction :

The formulation of strategies and action plans to adapt, mitigate negative consequences, and create capacity to meet the mounting challenge necessitates a thorough understanding of climate change and its implications. (Singh & Singh, 2011) Age, education, media exposure, and the effects of previous Climate Change events on knowledge, preparation, and the severity of CC-triggered events are all important factors in climate change perception.

However, the youth's perspective on climate change has gotten less emphasis. Young people are expected to bear the weight of their country's and the world's growth since they are in a unique position to deal with the repercussions of climate change and are viewed as an important demographic group for the future. The viewpoints of young people on climate change are crucial for developing nations' ownership, capability, and understanding of the issue. (Singh and Singh, 2011). India boasts an enviable young population, with about one in four people between the ages of 15 and 29. They are

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# Cryptocurrency and stock market: Interdependence

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# CRYPTOCURRENCY AND STOCK MARKET: INTERDEPENDENCE

**Prabhjot Kaur\* Mukesh Kumar Meena\*\***

**Purpose:** *Blockchain is used by different industries like banking, healthcare, law enforcement, IOT, online music, digital transfer, and real estate for transaction security purposes. Blockchain is becoming more sustainable day by day. The objective of this study is to determine the interdependence of major stock market indices and cryptocurrencies, offering investors a potential path for diversification.*

**Design/methodology/approach:** *A quantitative study will investigate the interdependency of cryptocurrencies on different stock market indices. These are selected on the basis of high market capitalization. The research will be based on secondary data collection.*

**Findings:** *Strong correlation between crypto and stocks has been seen in developing or emerging market nations, which have been at the forefront of crypto development and adoption. In 2020–21, for example, the correlation between returns of the MSCI emerging markets index and Bitcoin was 0.34, increased 17-fold from the previous years. Stronger correlation indicates that Bitcoin is becoming a risky investment. Its correlation with stocks has risen above than that with other assets such as gold, investment grade bonds, and major currencies, indicating that risk diversification benefits are limited, contrary to prior beliefs.*

**Originality/value:** *Increased crypto-stock interconnectedness increases the risks of spillover of investor sentiment spillovers between asset classes. As a result, a severe drop in Bitcoin prices may encourage investor risk aversion, resulting in a drop in stock market investment. Spillovers from the S&P 500 to Bitcoin are on average of equal magnitude, implying that sentiment in one market is passed.*

**Keywords:** Stock Market; Cryptocurrencies; Blockchain; Investors; Volatility; Crypto-Stock Interconnectedness.

**JEL Classification Codes -** G32; E51; F30; G14; G17; G28; G41

A blockchain is a decentralized peer to peer software network that functions as a digital ledger as well as a platform for safe asset transfer without the use of a middleman. It has facilitated the secure digital exchange of value. On a blockchain network, anything from currency to votes to land titles can be stored, tokenized, and exchanged. In other words, Blockchain is a data format for storing transactional records while maintaining security, transparency, and decentralization. Blockchain in addition to security maintains a permanent record of transaction which is a transparent network state that can be viewed in real time. The blockchain enables all network participants to reach a consensus, often known as agreement. All data saved on a blockchain is digitally recorded, and all members have access to a common history. This eliminates the possibility of any fraudulent behavior or transaction duplication. Regardless of the type of blockchain protocol used, it has the potential to alter old business models and open new possibilities. Blockchain is used by different industries like banking, healthcare, law enforcement, IOT, online music, digital transfer, and real estate for transaction security purposes. Blockchain is becoming more sustainable day by day. There are three type of blockchain: -

**Public:** Public blockchain have visible and accessible ledgers for everyone on the internet.

**Private:** Private blockchain allows everyone to view transactions but gives permission to only specific people in any organization or group for verifying and adding a new block.

**Consortium:** In consortium type of blockchain only a group of people in an organization like bank, are able verify and add new blocks but the ledger is restricted to selected groups.

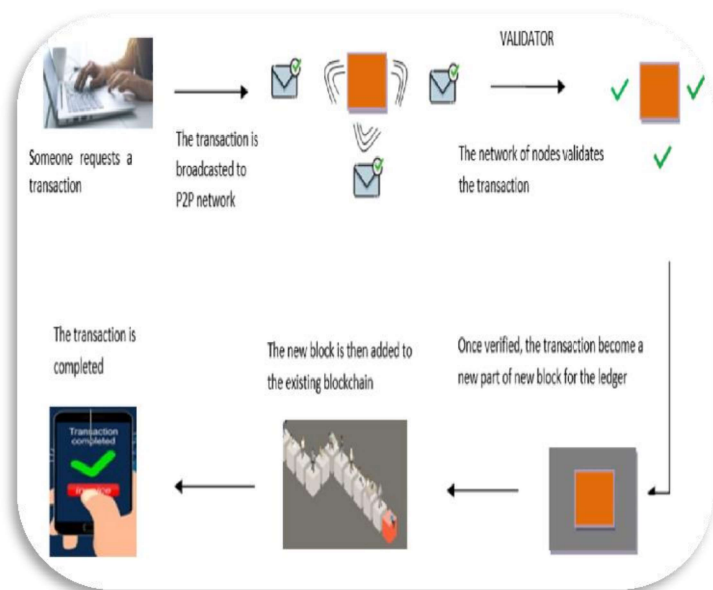
The flow of blockchain starts with an individual requesting a transaction which is further broadcasted to peer to peer network for validation purpose. Once verified by the network, the transaction becomes the part of new block for the ledger. This new block is then added to existing blocks and is called blockchain

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**Figure 1: Flow of blockchain**



A cryptocurrency is a digital asset designed to function as a means of exchange that use encryption to safeguard transactions, limit the creation of new units, and verify asset transfers. Because of this security feature, counterfeiting a cryptocurrency is tough. The organic nature of a cryptocurrency is one of its most appealing features; it is not issued by any central authority, making it potentially impervious to government meddling or manipulation. In simple words, cryptocurrency is defined as a form of digital token or coins that exist on distributed, decentralized and peer to peer ledger called a blockchain. Though some cryptocurrencies have entered the physical world of projects like credit cards, majorly crypto still remain entirely intangible.

Cryptocurrency was invented in the year 2008 with Bitcoin as first cryptocurrency by an unknown group of people in which the owner is named to be Satoshi Nakamoto but till date no one knows the real identity to this name, though many have claimed to be Nakamoto. According to different literature reviews Nakamoto also devised the first blockchain. The word “crypto” in cryptocurrencies signifies complicated cryptography which helps in processing and creation of digital currency and their transaction across decentralized and peer to peer systems.

Cryptocurrencies are made or created as reward for a process known as mining. Mining is a service where record keeping can be done using computer processing power. Digital currencies, alternative currencies (cryptocurrencies modeled

after bitcoin are collectively called altcoin or alternative coins), and virtual currencies are all examples of cryptocurrencies. Unlike centralized electronic money and central banking systems, cryptocurrency uses decentralized control. A blockchain is used to maintain the decentralized peer to peer control of each cryptocurrency. Because of their anonymity, bitcoin transactions are ideal for a variety of criminal activities such as tax evasion and money laundering. Bitcoin was the first cryptocurrency to catch public attention and was officially launched in year 2009 by Satoshi Nakamoto. There were about 14.6 million bitcoins in circulation as of September 2015, with a total market value of \$3.4 billion. The success of Bitcoin has inspired a slew of alternative cryptocurrencies, including Ethereum, Solana, XRP, Cardano, Polygon (Matic), and others. In year 2021, bitcoin was legally accepted for the first time by a country, El Salvador after a legislative assembly that voted in favour. In the same year the government of Cuba came up with a resolution 215 in order to regulate and recognize cryptocurrencies such as bitcoin. Also, china which was the largest market for crypto, made all crypto transactions illegal.

### **Investors in Crypto vs. Shares: A Comparison of Psychological Status and Investment Style**

A study was conducted by Department of Psychiatry, Chung-Ang University Hospital, Seoul, South Korea which investigated the behavioral and psychological reasons of investors choosing between cryptocurrency and stock market. According to the hypothesis of the study bitcoin investors showed differences various characteristics when compared to share investors in terms of personality trait, psychological state and patterns of online behavior and investment. Based on the assumption about these differences the study determined whether investors would invest in crypto or share market. In this study total, 307 people responded to the survey, and they were divided into three groups: Bitcoin investors (n = 101), stock investors (n = 102), and non-investors (n = 104). The Fear of Missing Out (FOMO) scale, Temperament and Character Inventory-Revised-Short (TCIRS), Mood Disorder Questionnaire (MDQ), trait anxiety part of the State-Trait Anxiety Inventory (STAI-T), the Korean version of the Canadian Problem Gambling Index (K-CPGI), demographic data and investment patterns were all administered as a self-report questionnaire. In Demographic characteristic test, the age, marital status, sex, education, and job position of individuals in the three groups did not differ significantly. However, as compared to non-investors, the share investor group reported a larger income. In personality and psychological state test, the investor group belonging to bitcoin showed higher scores in Novelty seeking and low scores in Cooperativeness when compared to the share investor group. In case of online use pattern, the number of posts on social network services in the Bitcoin investor group

was more than that of share investor group. Overall findings of this study suggested that CRYPTO investments are influenced by a variety of characteristics, with personality, psychological states, and investing habits being highly influential. The investing pattern, in particular, is the most significant determinant of CRYPTO investment. BITCOIN investors stood out in terms of novelty seeking, gambling proclivities, and unusual investment patterns. As a result, the considerable investments in CPYPTO could be explained by personality, psychological states, and investment pattern.

### I. Review of Literature

This study will explore the correlation between 5 major cryptocurrencies (i.e., Bitcoin, Ethereum, Ripple, Bitcoin cash, and Matic) and 5 major stock markets (NYSE composite Index, NASDAQ composite index, Shanghai Stock Exchange, Nikkei 225, and Euronext NV). We establish considerable time-varying conditional correlation between the majority of cryptocurrencies and stock market indices using Asymmetric dynamic conditional correlation and wavelet coherence techniques. We will determine how negative shocks play a larger role in generating this connection than positive shocks.

Overall, the objective of this study is to determine of interdependence of major stock market indices and cryptocurrencies, offering investors a potential path for diversification.

### II. Research Design and Methods

A quantitative study will investigate the interdependency of cryptocurrencies on diff stock market indices. These are selected on the basis of high market capitalization. The research will be based on secondary data collection. The closing prices for 5 major cryptocurrencies from website like Coin desk and Coin Market Cap will be obtained and for stock indices the adjusted closing price data will be obtained from Yahoo finance database from 1st Dec 2020 to 30th Nov 2021.

As mentioned In the literature review and depicted by graph above all cryptocurrencies are highly volatile in nature. Whereas, stock market indices have consistent reurns except for NIKKIE, that is stock market index for Japan. The correlation model was applied to find the correlation between the adjusted closing prices of 5 major cryptocurrencies and

stock market indices. The correlation chart has been shown below in the results and discussion section.

### III. Results and Discussion

**Figure 2: Correlation between 5 major Crypto and Stock Indices using Excel**

CORRELATION	NSE	NIKKIE	ENX	NASDAQ	SGX
BTC-USD	0.103704102	0.212069612	0.21206961	0.21206961	0.212069612
ETH-USD	0.135324413	0.740629365	0.74062936	0.74062936	0.740629365
XRP-USD	0.092143023	0.463809454	0.46380945	0.46380945	0.463809454
SOL-USD	0.092143023	0.851870525	0.85187053	0.85187053	0.851870525
SUSHI-USD	0.11187762	0.222835071	0.74062936	0.22283507	0.222835071

we can conclude that there is a mostly very low correlation between these crypto coins and stock market indices. But cryptocurrency, solano has near to high positive correlation with all market indices except for NSE i.e., nifty fifty, market index of Indian stock market. Also, there was a finding that there no negative correlation between any cryptocurrency and stock market indices, that is they don't have any inverse relation if not direct.

**Figure 3: Correlation between 5 major Crypto and Stock Indices using R Language**

```

}
> # display correlation array
> correlation_array
, , CORRELATION BETWEEN STOCK EXCHANGES AND CRYPTOCURRENCIES
      SGX  NASDAQ  EXN  NIKKIE  NSE
BTC-USD 0.2120696 0.2120696 0.2120696 0.2120696 0.10370410
ETH-USD 0.7406294 0.7406294 0.7406294 0.7406294 0.13532441
XRP-USD 0.4638095 0.4638095 0.4638095 0.4638095 0.09214302
SOL-USD 0.8518705 0.8518705 0.8518705 0.8518705 0.11505349
SUSHI-USD 0.2228351 0.2228351 0.2228351 0.2228351 0.11187762

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According to IMF blog by Tobias Adrian, Tara Iyer and Mahvash S. Qureshi, there is a growing interconnectedness between Digital assets and Financial markets. Crypto assets are no longer on the fringe of the financial systems. Despite considerable volatility, the market value of these unconventional assets increased to roughly \$3 trillion in November from \$620 billion in 2017, owing to rising popularity among regular and institutional investors. The



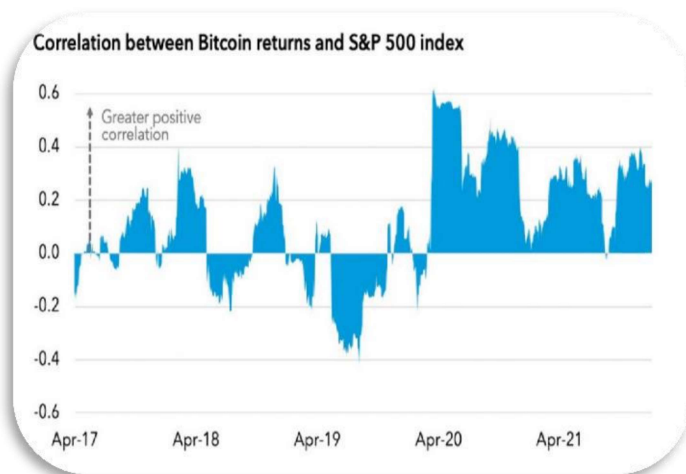
overall market value fell to around \$2 trillion last week, but it still represents a nearly four times gain since 2017.

According to new IMF research, the correlation of crypto assets with traditional holdings like equities has increased substantially as usage has increased, limiting their perceived risk diversification benefits and raising the danger of contagion across financial markets. Crypto assets like Bitcoin and Ether had negligible relation with mainstream market indices prior to the outbreak. They were considered to help diversify risk and function as a hedge against other asset class volatilities. However, after the unprecedented central bank crisis responses of early 2020, this altered. Cryptocurrency prices and stock prices in the United States have both risen amidst global financial conditions and increased investor risk appetite.

**Figure 4: Correlation between Bitcoin Price and S&P 500**



**Figure 5: Correlation between Bitcoin Returns and S&P 500**



For example, in the year 2017-19, Bitcoin returns did not move in synch with the S&P 500, the US stock market's benchmark index. The daily correlation coefficient was only 0.01, but it increased significantly to 0.36 in 2020–21 as the assets moved more in lockstep, increasing or decreasing at the same time.

Strong correlation between crypto and stocks can also be seen in developing or emerging market nations, which have been at the forefront of crypto development and adoption. In 2020–21, for example, the correlation between returns of the MSCI emerging markets index and Bitcoin was 0.34, increased 17-fold from the previous years.

Stronger correlation indicates that Bitcoin is becoming a risky investment. Its correlation with stocks has risen above that with other assets such as gold, investment grade bonds, and major currencies, indicating that risk diversification benefits are limited, contrary to prior beliefs.

Increased crypto-stock interconnectedness increases the risks of spillover of investor sentiment spillovers between asset classes. Indeed, according to our research, which studies the spillover of price and volatility spillovers between crypto and global equity markets, spillovers from SOME MAJOR CRYPTO returns and volatility to stock markets, and vice versa, have risen exponentially in 2020–21 compared to 2017–19. IN WHICH Bitcoin volatility accounts for around one-sixth of S&P 500 volatility and one-tenth of the variation in S&P 500 returns during the pandemic. As a result, a severe drop in Bitcoin prices may encourage investor risk aversion, resulting in a drop in stock market investment. Spillovers from the S&P 500 to Bitcoin are on average of equal magnitude, implying that sentiment in one market is passed on to another market in a significant manner. Stable coins, a type of crypto currency that tries to preserve its value relative to a specific asset or a pool of assets, exhibit similar behavior. During the pandemic, spillovers from the largest stable coin, Tether, to global equities markets increased as well, albeit they remain significantly smaller than those from Bitcoin, accounting for around 4% to 7% of the variation in US stock returns and volatility. This research suggests that crypto-equity market spillovers tend to increase during periods of financial market volatility, such as the market upheaval in March 2020, or during strong price fluctuations in Bitcoin, as seen in early 2021. The rising and significant co-movement and spillovers between crypto and equities markets represent a strong correlation between the two asset classes, allowing transfer of shocks to different markets that will destabilize financial markets globally. Crypto assets, according to the research, are no longer on the peripheral of the financial system. Given their extreme volatility and valuations, their growing co-movement could become a threat to financial

stability, particularly in nations where crypto usage is prevalent. As a result, now is the moment to develop a comprehensive, coordinated global regulatory framework to guide national legislation and supervision, as well as alleviate the financial stability concerns posed by the crypto ecosystem. A framework like this should include laws targeted to the most common uses of crypto assets, as well as clear requirements for regulated financial institutions' exposure to and involvement with these assets.

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Perspectives, stakeholders, and competences

COVID-19 SPECIAL SECTION

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## Teaching-learning process through virtual mode during the pandemic time: Systematic literature review and gap analysis

Ajay Kumar Singh and Mukesh Kumar Meena

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# Teaching-learning process through virtual mode during the pandemic time: Systematic literature review and gap analysis

Ajay Kumar Singh and Mukesh Kumar Meena\*

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## Abstract

**Purpose:** Due to the COVID-19 pandemic, the Higher Education Institutes (HEIs) was closed temporarily. During this historical lockdown, the face-to-face mode classroom was temporarily got replaced by a virtual classroom. The objective of this study was to analyze the impact of nationwide lockdown on the benefits of the virtual classroom for the teaching-learning process for teachers and students due to change in the teaching-learning process in higher education during the COVID-19 pandemic.

**Design:** A total of 893 responses have been used for this study. We have collected data through a structured questionnaire on a Likert scale from 305 teachers and 588 students of Higher Education Institutes (HEIs) from all India levels. Descriptive and frequency statistics, t-test was used in SPSS software to analyze the data collected through the primary source.

**Findings:** The mean difference between expected benefits from the virtual classroom and actual benefits from the classroom is positive for students as well as faculty members. That indicates the overall mean of expected benefits is higher than the overall mean of actual benefits, and that difference value is 0.250055, with a Sig.

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(2-tailed) value of 0.036 which is less than 0.05 for teachers and 0.3872827, with a Sig. (2-tailed) value of 0.000 which is less than 0.05 for students. That indicates the significant difference between means of actual benefits and expected. The mean value of the expected benefit is higher than the mean value of actual benefits for 11 pairs and 08 pairs in the case of teachers and students respectively.

**Discussion:** Technical barriers are the reasons for not being able to attend the expected benefits from virtual classrooms in full capacity by students as well as by faculty members. Poor digital skills of teachers and students, lack of electricity facilities, less availability and accessibility of internet, connection issues, inadequate facilities, training, funding, and unacceptability of technology, etc. were the barriers to online education at the time of closure of colleges due to COVID-19 pandemic Onyema et al. (2020). Students can also have a casual attitude, less attendance, feeling of isolation and less interaction can lead to mental distress, spending more time in front of a computer could be hazardous for health too Surkhali and Garbuja (2020). Higher Education Institutes (HEIs) faculty members, as well as students, were not able to perceive actual benefits in full in comparison to expected benefits due to the presence of challenges in the virtual classroom as moderators. The higher education authorities, colleges/institutes/universities need to fix the above issues to enhance the quality of the teaching-learning process. The higher education authorities, institutes/colleges/universities must work together to resolve the issues and challenges of virtual classrooms to improve their effectiveness of the virtual classroom. Higher Education Institutes (HEIs) may provide technical support, and training to the faculty members as well as students for a better experience in the virtual classroom. Students who are lacking technical infrastructures such as computers/laptops and internet connectivity may be provided by Higher Education Institutes (HEIs) with financial and technical support to these students.

**Keywords:** virtual classroom; COVID-19; pandemic; higher education; teaching-learning process; teachers; students.

## I. Introduction

The world is facing an unprecedented situation that has arisen due to the novel COVID-19 pandemic. Coronavirus which is known as COVID-19 is an infectious disease that was first reported in Wuhan city of Hubei Province of China in early December 2019 after that it started spreading in other countries as well then on 11<sup>th</sup> March 2020 WHO declared it a pandemic. Although various pandemics have been faced by the world in previous decades such as in 1918 Spanish flu was caused by the H1N1 virus, in 1957 Asian flu was caused by the H2N2 virus, in 1968 Hong Kong flu was caused by the H3N2 virus, and in 2009 Swine flu caused by H1N1 virus but the situation which has been created due to COVID-19 is unprecedented. As per the WHO report, the COVID-19 global outbreak in 216 countries with

581,837,714 confirmed cases infected with the virus, and 6,419,151 confirmed deaths till 13<sup>th</sup> July 2022. Although COVID-19 affected all sectors of the economy whether it is the manufacturing and service sectors by distrusting the supply chain and reducing the demand and tourism sector by restricting traveling among countries. But one of the most affected sectors because of COVID-19 has been the Education sector as the lockdown resulted in the closure of schools and colleges across countries.

UNESCO estimated that the pandemic affected 1,576,873,546 learners worldwide which was 90.1% of the total enrolled learners in 190 countries till mid-April 2020 due to the closure of schools but it reduced to 572,324,061 learners which is 32.7% of the total enrolled learners in 30 countries till the 1<sup>st</sup> November 2020. Global Monitoring of School Closure locally and countrywide and School Open during COVID-19 as per UNESCO, Government of India announced a first countrywide lockdown on 25<sup>th</sup> March 2020 for 21 days, as the cases were still increasing, the lockdown further extended till 3<sup>rd</sup> May after that it continued but govt. started giving relaxation regarding economic activities such as open manufacturing sector, various Government offices, and other activities with rules and regulations regarding social distancing, wearing the mask, avoiding unnecessary travel, etc. But schools and colleges remain closed. COVID-19 has disrupted the teaching-learning process of learners and teachers because of the closure of schools and colleges. The examinations were canceled or postponed till uncertain periods, which lead to uncertainties among students, especially for those who were about to complete their schooling and were supposed to take admitted to colleges and among final year students of universities who were likely to take jobs. As per UNESCO total number of 32,07,13,810 learners were affected due by the COVID-19 lockdown in India. Two years into the pandemic, schools have been fully closed for 20 weeks and partially closed for an additional 21 weeks, on average across countries. Data from the UNESCO Global Monitoring of School Closures reveal that about 1 in 10 countries have fully closed their schools for over 40 weeks. School children around the world have missed an estimated 2 trillion hours and counting of in-person learning since the onset of the pandemic and subsequent lockdowns. According to UNESCO at the end of February 2022, while a majority of countries have fully opened schools, 42 countries have opened schools partially and six countries still have their schools fully closed.

Onyema et al. (2020) concluded that COVID-19 disrupted learning, increased student debt, limited access to education facilities, increased job loss in the education sector, and reduced loss of learning among students. Management of schools and colleges encouraged their students and teachers

to continue the learning process through online teaching. In this technology-driven world, with the help of digital platforms such as Zoom, Skype, Google Meet, Microsoft Team, Google Classroom, YouTube, etc., teachers and students can continue their teaching-learning process during this pandemic period. In this period, all the Higher Education Institutes (HEIs)/universities/colleges were closed after instructions from the Ministry of Education (MOE), University Grants Commission (UGC), and All India Council for Technical Education (AICTE). All the teaching-learning practices had been conducted through virtual mode during the lockdown. This was the best time to analyze the actual benefits perceived from the virtual classroom by the teachers and students of higher education in India. The virtual classroom was the best solution available during the lockdown to save the academic year. Students and faculty members were expecting something good with the presence of a virtual classroom in the lockdown time.

## II. Review of literature

Online teaching and learning could be advantageous through which teachers can motivate students, complete syllabus, provide accessibility to learning and teaching from any time and any place, etc. Online learning is more flexible in access as it can provide content and instruction at any time, from any place (Castro and Tumibay 2019). However, technological and infrastructure support is required for the successful implementation of online teaching and learning. Online teaching and learning can be fruitful for students as well as teachers to complete their syllabus and assessment, provide moral support, and reduce stress levels during the COVID-19 pandemic. It would also enable the interaction between the teachers and learners. But for effective learning and teaching, infrastructure and technological support are required. A study by Cheawjindakarn et al. (2012) recognized five critical success factors for online learning such as institutional management which comprises the framework, operation ability, and cost of the program, learning environment which consists of the course management system, technical infrastructure, access and navigation of the program, an instructional design which includes objectives, content quality, learning strategies, the psychology of learning and learning assessment of the course, services support for the course as training, communication tools, help desk, and course evaluation. Kuo et al. (2013) analyzed the interaction between learner and content of the study such as the design of online study material, document layout, use of videos, learner-instructor interaction as a level of communication between learners and instructor, and self-efficacy of the

students on internet measured as the ability of the students to use the internet were the main factors of student's satisfaction in online education programs.

Online teaching can have challenges such as poor internet connectivity, non-availability of appropriate electronic devices, lack of a teaching environment at home, and less ICT knowledge among students and teachers can result in less engagement of students and teachers in the teaching and learning process. Onyema et al. (2020) found that poor digital skills of teachers and students, lack of electricity facilities, less availability and accessibility of internet, connection issues, inadequate facilities, training, funding, and unacceptability of technology, etc. were the barriers to online education at the time of closure of colleges due to COVID-19 pandemic. The success of online learning depends on various factors. Students can also have a casual attitude, less attendance, feeling of isolation and less interaction can lead to mental distress, and spending more time in front of a computer could be hazardous for health too (Baid et al. 2017; Kang and Sindhu 2015; Ran et al. 2020; Surkhali and Garbuja 2020; Trotter 2002; Gilbert 2001; Wahyu et al. 2020) concluded spending more time in front of a computer could result in health problems and it was difficult for the teacher to ensure participation of students due to less in-person conversation and less socialization and less participation can result in mental distress. They also stated the problem of accessibility and affordability of internet connection was the main problem of virtual learning. They also found that low internet bandwidth and technical disturbance, less interaction, and minimum participation led to less engagement and disturbance during online classes. Although online teaching is helpful to maintain the continuity of the teaching and learning process it also requires various technological and infrastructure facilities for the smooth functioning of online learning and the limited availability of these facilities could affect the quality of education. Various research studies have been done to know the challenges faced by teachers in online teaching. Through online teaching students can interaction with the teacher which could be helpful to provide moral support and reduce the stress level of students during the COVID-19 Pandemic. Yulia (2020) concluded that online teaching is effective during this COVID-19 pandemic time for preventing the students from going away from home.

Moore (1991) observed the emergence of the personal computer industry and related technologies during the 1970s and 80s. He noted that technical innovations are adopted by different market segments in sequence. Online teaching-learning has benefits but various challenges and drawbacks are also associated with it. Various infrastructure and logistical facilities are required for the effectiveness of online teaching and learning. Geoffrey Moore's



concept is the Technology Adoption Life Cycle (Moore 1991, 1995, 2002, 2005). Based on Everett Rogers' observations on the diffusion of innovations specifically, adoption or diffusion of innovation occurs as adoption by a sequence of adopter segments. Online learning has been initiated by various schools and colleges without providing the necessary infrastructure and technical assistance and training for usefulness for online teaching and learning.

Various studies have been done to determine the challenges and drawbacks faced by teachers and students during online classes. Students' participation was less due to the lack of in-person conversations with teachers which could result in mental stress for students and teachers (Surkhali and Garbuja 2020). They also reported that an accessible and affordable internet connection was the main problem faced by students and teachers and less participation, interaction, and technical disturbance led to less engagement and disturbance in online classes. Teachers found technical, logistical, and pedagogical problems during online classes because of an unprepared transition from face-to-face teaching to online teaching. More efforts were required from the teachers' side to ensure that students are studying the correct study material and providing information about the assignment. Students opted for online education because it offered greater flexibility but required more self-discipline by students (Daymont 2011; Squire 2021; Jain et al. 2021; Willermark 2021; Neuwirth et al. 2020; Egielewa et al. 2021). Students' perceptions of vocational studies on online mode stated that as vocational studies require not only knowledge but skills as well, at the same time online learning did not improve student's productivity. The students' experience was not up to expectations (Syauqi et al. 2020).

## *II.1. Systematic literature review of COVID-19 and education*

### *II.1.1. Bibliometric search*

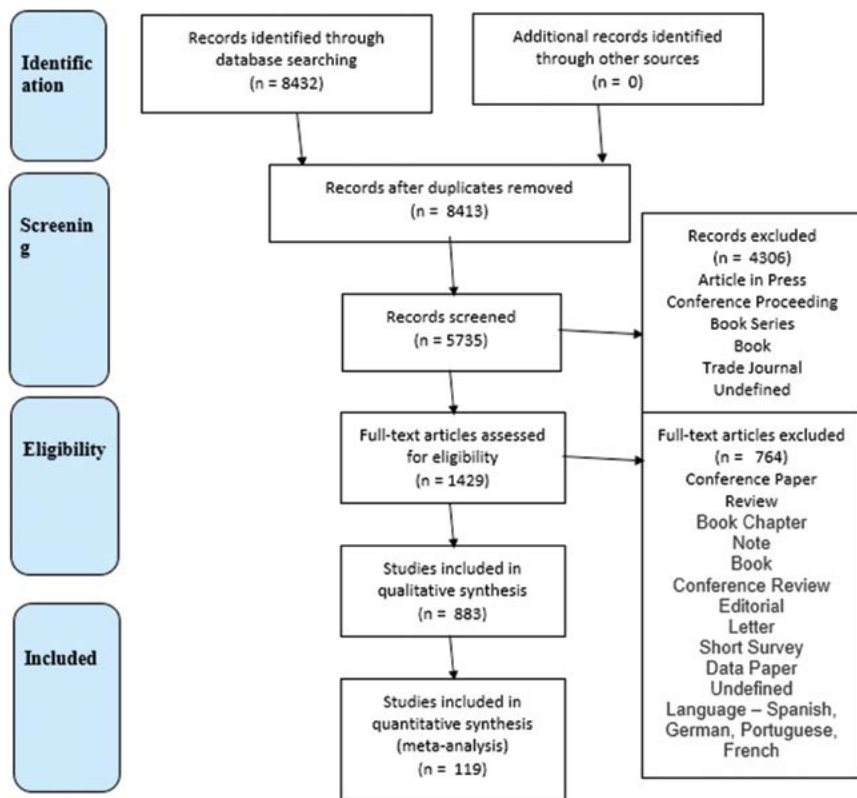
The search for articles to be included in the review was guided by a search strategy that we developed consists of four stages: database search, scholarly filtration, language filtration, and subject filtration (Fig. no. 2).

In the Stage one database search. The Scopus database has been selected due to the following reasons: Its coverage of publications that met a stringent set of requirements for indexing (e.g., scientifically and scholarly relevant), and its comprehensiveness of bibliometric information for publications that it indexes. Indeed, Scopus is suitable for endeavors seeking to curate a large corpus for

review (Paul et al. 2021), and it is a scientific database that is often recommended for bibliometric reviews (Donthu et al. 2021). The Scopus database has been recognized as a high-quality source for bibliometric data (Baas et al. 2020), and the correlation of its measures with those available from alternative scientific databases such as Web of Science is “extremely high” (Archambault et al. 2009), though the latter’s coverage is less than the former (Paul et al. 2021).



**RISMA 2009 Flow Diagram**



**Figure 1**

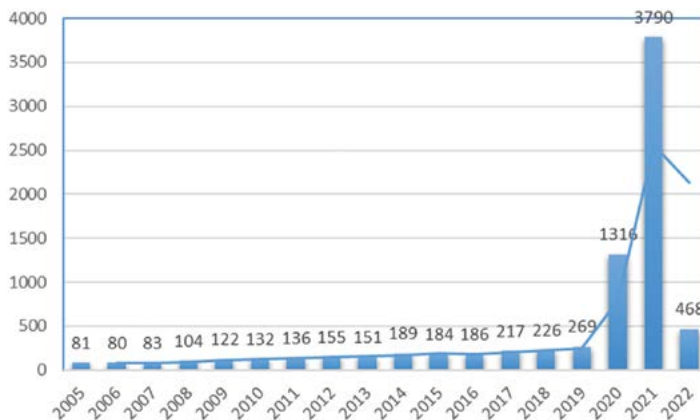
**PRISMA flow chart for bibliometric review**

The second stage is scholarly filtration. We chose to include only journal articles and conference proceedings, as they are usually evaluated on the grounds of novelty, subjected to rigorous peer review, and both. The third stage is language filtration. We chose to include articles written in English that were retained in Stage second only. This filtration was required as we are native English speakers. The Fourth stage is subject filtration. We choose to include articles with keywords. The formula we utilized for it:

Title-Abs-Key ((“COVID-19” OR “Covid” OR “Pandemic” OR “Epidemic” OR “Disease” OR “Sars-Cov-2”) AND (“Education” OR “Teaching” OR “Learning” OR “E-Learning” OR “Virtual Classroom” OR “Virtual” OR “Online” OR “Teaching-Learning”) AND (“Faculty” OR “Teacher” OR “Student” OR “Pupil” OR “Learner”) AND (“Challenges” OR “Drawbacks” OR “Benefits”))

In the first search of literature total of 8432 papers were found on COVID-19 and Education, after that filters were applied for the search. Further, the search was limited to title-abstract-keywords for more close studies. Then 5735 studies were found. Further, the most important keywords were applied, here we excluded 4306 articles. After that, we again applied filters of language, final publication stage, and journal articles. Here we excluded 764 articles. After that final 119 articles were found usable for extensive literature work which is important based on keywords (figure no. 1).

### II.1.2. Publication trend of research paper on pandemic and education



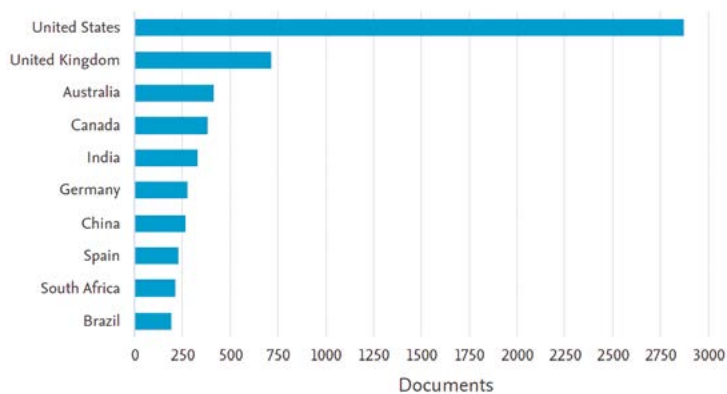
**Figure 2**

Publication trend of pandemic and education

From the bibliometric analysis results for the Scopus database, in 2016 186 research papers were published, then 217 articles in 2017, 226 articles in 2018, 269 articles in 2019, 1316 articles in 2020, 3790 articles in 2021, as on February 26, 2022, 468 articles published in 2022. Now this pandemic and education research has become a trending research area, which is continuously going on (figure no. 2).

### II.1.3. COVID-19 and education research across countries

Figure no. 3 is showing the results from the bibliometric analysis. Figure no. 3 is showing major contributing countries in COVID-19 and education research articles. The United States is at the top position by providing 2993 research articles on COVID-19 and education, which is followed by the United Kingdom with 752 articles, Australia with 436 articles, Canada with 398, India with 354, Germany with 283 articles, China with 276, Spain with 235 and South Africa with 210 articles and so on.



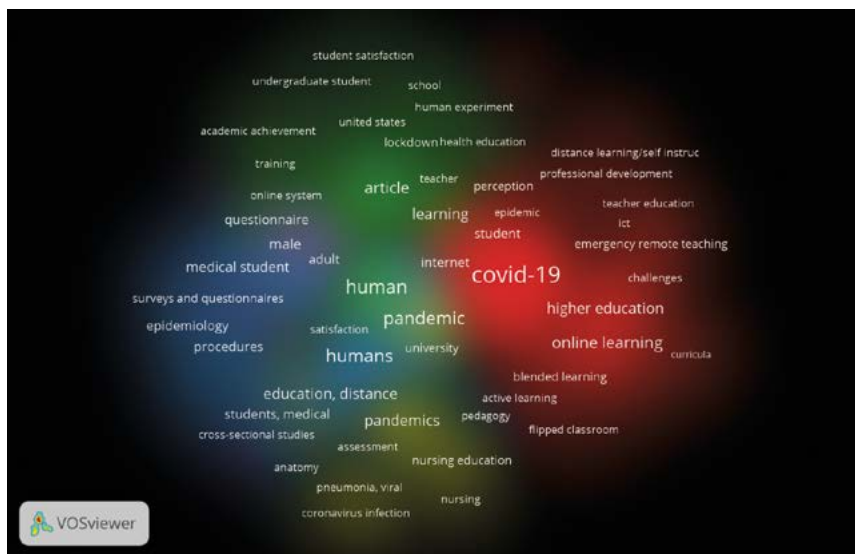
**Figure 3**

Number of articles – COVID-19 and education research across countries.

### II.1.4. COVID-19 and education research paper's keywords

Figure no. 4 is showing the most frequent keywords of COVID-19 and education research. These keywords were provided by the authors in their research papers. Which are as follows: COVID-19, human, education, humans, pandemic, teaching, e-learning, online learning, article, medical education, higher education, learning, pandemics, sars-cov-2, education,

distance, curriculum, medical student, coronavirus disease 2019, students, online teaching, distance learning, male, female, procedures, student, students, medical, online education, adult, COVID-19 pandemic, questionnaire, epidemiology, internet, organization and management, emergency remote teaching, university, psychology, controlled study, computer-assisted instruction, education, medical, education, medical, undergraduate, blended learning, coronavirus, cross-sectional study, medical school, perception, distance education, nursing education, clinical competence, and surveys and questionnaires.



**Figure 4**  
Most frequent authors' keywords

#### II.1.5. Journals contributing to COVID-19 and education research

Table no. 1. is showing the results of bibliometric analysis. Table no. 1 shows the most contributing journals in the field of COVID-19 and education research. sustainability (Switzerland) is the highest contributing journal with 38 papers followed by education sciences journal with 33 papers, bmc medical education with 20 papers, journal of chemical education with 20 papers, and so on.

**Table 1**  
Top 5 Journals contributing to COVID-19 and education research

Sr. No.	Source	Documents	Citations
1	Sustainability (Switzerland)	38	420
2	Education sciences	33	232
3	Bmc medical education	20	361
4	Journal of chemical education	20	178
5	Frontiers in education	15	55

### II.1.6. Most cited papers in COVID-19 and education

Table no. 2. is showing the results of bibliometric analysis for studies with the highest citations. Table no. 3 showing the most cited studies in the field of COVID-19 and education research. Daniel (2020) with 334 highest citations followed by Aristovnik (2020) with 273 citations, König (2020) with 178 citations, Watermeyer (2021) with 143 citations, and so on.

**Table 2**  
Top 6 most cited research papers

Sr. No.	Document	Citations
1	Daniel s.j. (2020)	334
2	Aristovnik a. (2020)	273
3	König j. (2020)	178
4	Watermeyer r. (2021)	143
5	Mailizar (2020)	126
6	Webster c.a. (2015)	126

### II.1.7. Most frequent keywords

The table no. 3 is showing the most frequent keywords of COVID-19 and education research. These keywords were provided by authors in their research paper which are as follows: COVID-19, human, education, humans, pandemic, teaching, e-learning, online learning, article, medical education, higher education, learning, pandemics, sars-cov-2, education, distance, curriculum,

medical student, coronavirus disease 2019, students, online teaching, distance learning, male, female, procedures, student, students, medical, online education, adult, COVID-19 pandemic, questionnaire, epidemiology, internet, organization and management, emergency remote teaching, university, psychology, controlled study, computer-assisted instruction, education, medical, education, medical, undergraduate, blended learning, coronavirus, cross-sectional study, medical school, perception, distance education, nursing education, clinical competence, surveys, and questionnaires.

**Table 3**  
Top 21 most frequent keywords

Sr. No.	Keyword	Occurrences	Total link strength
1	COVID-19	470	2495
2	human	231	2606
3	education	202	1990
4	humans	192	2249
5	pandemic	186	1864
6	teaching	184	1669
7	e-learning	148	1135
8	online learning	144	456
9	article	119	1403
10	medical education	118	1359
11	higher education	107	409
12	learning	106	904
13	pandemics	98	1267
14	sars-cov-2	95	1185
15	education, distance	94	1260
16	curriculum	85	911
17	medical student	85	1170
18	coronavirus disease 2019	83	1082
19	students	80	572
20	online teaching	73	233
21	distance learning	70	386

### II.1.8. Countries with the highest contribution in COVID-19 and education research

Table no. 4 is showing the results from the bibliometric analysis. Table no. 5 is showing major contributing countries to COVID-19 and education research articles. The United States is at the top position by providing 203 research articles on COVID-19 and education, which is followed by the United Kingdom with 85 articles, India with 73, and Australia with 45 articles, and so on.

**Table 4**  
Top 5 contributing countries

Sr. No.	Country	Documents	Citations	Total link strength
1	United States of America	203	1199	15046
2	United Kingdom	85	740	14939
3	India	73	207	9454
4	Australia	45	274	10096
5	South Africa	40	136	5624

### II.2. Research questions

- RQ1. What is the publication trend (number of articles by year) of papers focusing on the teaching-learning process through virtual mode during the pandemic time?
- RQ2. Where are the most influential publications (outlets, articles) of papers focusing on the teaching-learning process through virtual mode during the pandemic time?
- RQ3. Who are the most prolific contributors (authors, countries, and institutions) to a paper focusing on the teaching-learning process through virtual mode during the pandemic time?
- RQ4. What does existing research (themes, topics) inform us about the teaching-learning process through virtual mode during the pandemic time?
- RQ5. What can future research (avenues) explore to enrich our understanding of the teaching-learning process through virtual mode during the pandemic time?



The RQ1 to RQ4 have already been explained with the help of systematic literature review results. Further, we have framed objectives and hypotheses to analyze the RQ5. In this study, we have observed what could be the expected benefits of virtual classrooms. What was expected from the virtual classroom by faculty members and students, and whether the expected outcome of the virtual classroom is achieved or not? If not, what could be the possible reasons for the gap between the expected and actual outcomes? This study is conducted to find out benefits received from the virtual classroom and if any gap exists in expected and perceived benefits from the virtual classroom then what could be possible reasons for this gap at the time of the lockdown implemented due to the COVID-19 pandemic.

### III. Objectives of the study

This study has the main objective to identify the most contributing authors, countries, and most frequently used keywords during the lockdown time period in studies based on virtual classroom teaching-learning practices. Another objective of this study is to analyze any significant gap between expected benefits and actual benefits perceived from virtual classrooms by teachers and students in higher education. On the basis of systematic literature review support, we also want to analyze the effect of the presence of challenges in achieving the expected benefits from virtual classrooms.

### IV. Hypotheses

- $H_A1$ : There are statistically significant differences between expected benefits and actual benefits perceived from virtual classrooms by faculty members in higher education institutions.
- $H_A2$ : There are statistically significant differences between expected benefits and actual benefits perceived from virtual classrooms by students in higher education institutions.

### V. Research methodology

We have collected data from the faculty members and students of higher education institutions at the undergraduate level, postgraduate level during the COVID-19 lockdown period. The class mode shifted from face-to-face mode to a virtual classroom. For this study, we have considered the 893 (305 faculty members + 588 students) total responses from faculty members and students of higher education institutes. Two structured questionnaires were shared through

digital platforms like Gmail, and personal messages on mobile, WhatsApp, and Facebook to the faculty members, and students of higher education respectively. Due to the nationwide lockdown face to face interaction was not possible. The structured questionnaire for students was shared with 4978 students of Higher Education Institutes (HEIs) at all Indian levels, 946 responses were received from students with a response rate of 19.5 percent. After the data cleaning process, and removing incomplete responses, only 867 responses from students were considered for this study. Out of the 867 students, only 588 students were using the virtual classroom, so we have considered 588 students for analyzing the benefits of virtual classrooms and the challenges faced by them during the virtual classroom. We have also asked the rest of the 267 students for their reasons for not joining the virtual classrooms. The structured questionnaire for faculty members was shared with 2392 faculty members of Higher Education Institutes (HEIs) at all India levels, 344 responses were received with a response rate of 14.3 percent. After the data cleaning process, and removing incomplete responses, only 335 responses from faculty members were found usable. Out of 335 responses from faculty members, only 305 faculty members were using the virtual classroom for the teaching-learning process, so we have considered only 305 responses from faculty members to analyze the gap between actual and expected benefits. We asked 30 faculty members to provide reasons for not using virtual classrooms.

To complete the analysis part of the study, SPSS 20 software has been used to compare the mean of actual benefits and expected benefits. AMOS 16 software was used to check the model fit and moderation analyses for perceived benefits from virtual classrooms.

This study has been done with the help of primary data collected through a questionnaire. To measure the actual and expected benefits from the virtual classroom a standardized questionnaire sun, P.C. et al. (2007), Arora and Srinivasan (2020) have been used. The whole questionnaire consisted of five sections consisting of expected benefits, actual benefits, and demographic information consisting one section for each. To check the internal consistency of the structured questionnaire. The Cronbach Alpha Reliability test has been used for the internal consistency of the questionnaire. Data analysis output is showing the results of internal consistency for each factor. The Cronbach's alpha test of internal consistency giving value  $\geq 0.7$  is considered to be good. From the teacher's sample of this study Cronbach's alpha value for expected benefits, the actual benefit is 0.927, and 0.939 for each respectively. From the student's sample of this study Cronbach's alpha value for expected benefits, actual benefits, challenges, and drawbacks are 0.953, and 0.960 for each respectively.

## VI. Data analysis

### VI.1. Demographics of sample data

Data analysis results are showing the demographic results of the faculty members and students. Out of 305 faculty members, 51.34 percent belonged to the age group of “up to 30” years, and 48.65 percent of faculty members were from the age group of “>30” years. Out of the total respondents, 68.65 percent of faculty members were female and only 31.34 were male faculty members. Among the total faculty members, 37.61 percent were with teaching experience of “0-3” years, 40 percent of faculty members had teaching experience of “4-10” years, and 20 percent of faculty members had more than 10 years of teaching experience. That means the majority of respondents were young and working as Assistant professors and Associate professors.

The demographic information of the students, out of 588 students, 99.88 percent belonged to the age group of “up to 30” years, and 0.11 percent of students were from the age group of “>30” years. Out of the total respondents, 65.62 percent of students were female and 34.37 percent were male students. Out of the total respondents, 79.12 percent of students were studying at the undergraduate level and 18.10 percent of students were studying at the postgraduate level.

### VI.2. Adoption rate of virtual classroom among teachers and students

Out of the total 335 faculty members, only 91.04 percent of faculty members were using the virtual classroom to interact with students for the teaching-learning process during the nationwide lockdown due to COVID-19. When this study was conducted, 30 faculty members were not using the virtual classroom to interact with students and out of the total 867 students, only 67.80 percent of students were attending the virtual classroom for the learning process during the nationwide lockdown due to COVID-19, and 32.20 percent of students were not attending the virtual classroom when this study was conducted (Table no. 7). The respondents who were not using the virtual classroom for the teaching-learning process, were also communicated through Gmail to find out reasons for not using the virtual classrooms. Responses were received from 26 faculty members and 254 students, and 17 faculty members have cited the reason that they were thinking that virtual classrooms will not be easy for teaching. so they communicated with students through WhatsApp and Gmail. But after receiving positive reviews from their colleagues, they started using the virtual classrooms. These were conservatives/ late majority who were waiting to adopt until they see a clear

advantage specifically for their own situations and it is easy to use the technology offered (Moore 1991).

9 faculty members have cited the reason that when the lockdown was implemented they were able to complete the major part of the syllabus, and for the remaining part, they were using WhatsApp and Gmail. But in the new semester, there was no option left, so they started using virtual classrooms. These are Skeptics/ laggards who hold out until they have no choice but to adopt. Often they take pride in not adopting. They insist that the “old way” of doing something is good enough (Moore 1991).

103 students have cited the reasons for not attending virtual classrooms as non-availability of better quality internet, network issues, lack of computer/laptop/Smartphone, etc. these students were facing infrastructural issues in the beginning. But after some time the majority of them made the arrangements when they find that the lockdown may go on for a long time, and 151 students cited the reason that the lockdown was just implemented for a month only in the beginning. Then it was continuously extended by one month again and again. When they realized that it is going long, they felt that it may create academic losses for them. There was no other option for them and then they started attending the virtual classroom. These are Skeptics/ laggards who hold out until they have no choice but to adopt. Often they take pride in not adopting. They insist that the “old way” of doing something is good enough (Moore 1991).

In this study, we are considering virtual classrooms as online live classrooms that can be conducted with the help of Microsoft Team, Google Meet, Zoom, and other live platforms. Those faculty members and students were attending classes on the above-mentioned platforms, and we have considered that those students and faculty members have adopted virtual classrooms for the teaching-learning process.

Those Faculty members and students who were not participating in the live online classrooms, we have considered as they have not adopted the virtual classroom for the teaching-learning process, they were just using online material available on the internet, old YouTube videos, etc. because in India when the lockdown was implemented for the first time, many faculty members were just sharing the study material with students through Gmail and WhatsApp. Because at the beginning of the lockdown there was no proper observation of online classes by the university administration, college principals, and heads of the departments.

### *VI.3. Impact of COVID-19 lockdown on virtual classroom*

Out of the total 305 faculty members who were using the virtual classroom for interaction with students, 90.20 percent of faculty members started using

virtual classrooms after the COVID-19 pandemic. Only 30 faculty members were using virtual classrooms before the COVID-19 pandemic. Out of the total of 588 students who were attending a virtual classroom, 87.80 percent of students started using virtual classrooms after the COVID-19 pandemic. Only 12.20 percent of students were using virtual classrooms before the COVID-19 pandemic.

That shows the majority of teachers and students in Higher Education Institutes (HEIs) were not using virtual classrooms before the COVID-19 pandemic. The results are indicating a significant change in the teaching-learning process due to the COVID-19 pandemic in higher education.

#### *VI.4. Paired samples test results*

This study has been conducted based on a comparison of the expected benefits of the virtual classroom before attending with the actual benefits of the virtual classroom after attending. This concept has been used for both faculty members as well as students at the higher education level. Table no. 5 indicates the mean value of expected benefits and actual benefits of all 12 pairs for teachers and students respectively. The mean response value of expected benefits is higher than the actual benefits mean value in all 12 pairs for faculty members. That indicates that the actual benefits perceived from the virtual classroom are less than the expected benefits.

The mean response value of expected benefits is higher than the actual benefits mean value in 08 pairs for students. In one pair of students, expected benefits mean values are equal to actual benefits, and in one pair of students' expected benefits mean values are less than the actual benefits mean value. That indicates the major expected benefits of the virtual classroom are not perceived by students from the virtual classroom.

As we can see from table no. 5, the mean value of expected and actual benefits are more than the 3 on the 1 to 5 Likert scale for 11 pairs out of 12 pairs of expected and actual benefits. The mean value of the expected benefit is higher than the mean value of actual benefits for 11 pairs and 08 pairs in the case of teachers and students respectively. The reason behind this gap is network problems, lack of internet facilities, consistent connectivity issues, availability of infrastructure, and lack of classroom environment at home, and the gap in the mean value of expected benefits and actual benefits is higher in the case of students than in comparison to faculty members. Because teachers are having a monthly income, they can afford the expenditure for the development of online classroom infrastructure, laptops, internet connectivity, etc., and students are not supported by any personal

**Table 5**  
Paired Samples Statistics

		Faculty				Students			
		Mean	N	Std. Deviation	Std. Error Mean	Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Convenient to Use -Expected	3.49	305	1.136	.065	3.47	588	1.146	0.047
	Convenient to Use - Actual	3.42	305	1.109	.064	3.09	588	1.267	0.052
Pair 2	Able to Connect with Teachers/students-Expected	3.54	305	1.181	.068	3.38	588	1.129	0.047
	Able to Connect with Teachers/students-Actual	3.46	305	1.141	.065	2.89	588	1.185	0.049
Pair 3	Able to Cover Syllabus Timely-Expected	3.54	305	1.141	.065	3.14	588	1.191	0.049
	Able to Cover Syllabus Timely- Actual	3.49	305	1.139	.065	2.70	588	1.238	0.051
Pair 4	Enhancing personal learning-Expected	3.49	305	1.159	.066	3.14	588	1.179	0.049
	Enhancing personal learning- Actual	3.46	305	1.106	.063	2.78	588	1.207	0.050
Pair 5	Enhance creativity-Expected	3.48	305	1.112	.064	3.00	588	1.201	0.050
	Enhance creativity- Actual	3.41	305	1.178	.067	2.60	588	1.197	0.049
Pair 6	Class attendance will increase-Expected	3.15	305	1.185	.068	3.10	588	1.284	0.053
	Motivate students (more students will join the class) - Actual	2.94	305	1.221	.070	2.61	588	1.239	0.051

	Faculty				Students			
	Mean	N	Std. Deviation	Std. Error Mean	Mean	N	Std. Deviation	Std. Error Mean
Pair 7	Introduces to education technology-Expected	305	1.071	.061	3.50	588	1.111	0.046
	Introduces to education technology- Actual	305	1.051	.060	3.19	588	1.207	0.050
Pair 8	Sharpened digital skills-Expected	305	1.078	.062	3.42	588	1.091	0.045
	Sharpened digital skills- Actual	305	1.026	.059	3.10	588	1.159	0.048
Pair 9	Schedule Flexibility-Expected	305	1.041	.060	3.35	588	1.131	0.047
	Schedule Flexibility- Actual	305	1.100	.063	2.96	588	1.186	0.049
Pair 10	Less Disturbance From Classmates-Expected	305	1.194	.068	3.15	588	1.228	0.051
	Less Disturbance From Classmates- Actual	305	1.183	.068	2.75	588	1.263	0.052
Pair 11	Able to Cover Practical Subjects Also- Expected	305	1.234	.071	2.68	588	1.300	0.054
	Able to Cover Practical subjects Also- Actual	305	1.345	.077	2.36	588	1.245	0.051
Pair 12	Effective time management-Expected	305	1.147	.066	3.24	588	1.193	0.049
	Effective time management- Actual	305	1.192	.068	2.80	588	1.184	0.049

**Table 6**  
Paired Samples Test - Individual Effect for Faculty

		Paired Differences				t	df	Sig. (2-tailed)	
		Mean	Std. Deviation	Std. error Mean	Std. Error Mean 95% Confidence				
					Lower				Upper
Pair 1	Convenient to Use – Expected Convenient to Use- Actual	-0.125	1.050	0.060	-0.243	-0.006	-2.072	0.039	
Pair 2	Able to connect with Students - Expected Able to Connect with Students- Actual	0.089	1.071	0.061	-0.032	0.209	1.444	0.005	
Pair 3	Able to Cover Syllabus Timely – Expected Able to Cover Syllabus Timely- Actual	-0.075	0.898	0.051	-0.177	0.026	-1.466	0.144	
Pair 4	Enhancing Personal Learning – Expected Enhancing Personal Learning- Actual	-0.131	0.951	0.054	-0.238	-0.024	-2.409	0.017	
Pair 5	Enhance Creativity – Expected Enhance Creativity- Actual	-0.043	0.926	0.053	-0.147	0.062	-0.804	0.422	
Pair 6	Class Attendance Will Increase – Expected Class Attendance Will Increase - Actual	0.210	1.193	0.068	0.075	0.344	3.072	0.002	
Pair 7	Introduces to Education Technology – Expected Introduces to Education- Actual	0.013	0.899	0.052	-0.088	0.114	0.255	0.799	
Pair 8	Sharpened My Digital Skills – Expected Sharpened Digital Skills- Actual	0.007	0.874	0.050	-0.092	0.105	0.131	0.896	



	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. error Mean	Std. Error Mean 95% Confidence				
				Lower	Upper			
Pair 9	0.082	0.912	0.052	-0.021	0.185	1.569	304	0.118
Pair 10	0.023	1.212	0.069	-0.114	0.160	0.331	304	0.023
Pair 11	-0.052	1.025	0.059	-0.168	0.063	-0.894	304	0.012
Pair 12	0.046	1.053	0.060	-0.073	0.165	0.761	304	0.042

**Table 07**  
Paired Samples Test - Individual Effect for Students

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. error Mean	Std. Error Mean 95% Confidence				
				Lower	Upper			
Pair 1	0.381	1.165	0.048	0.287	0.475	7.929	587	0.000

		Paired Differences				t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. error Mean	Std. Error Mean 95% Confidence Lower Upper			
Pair 2	Able to connect with Students - Expected Able to Connect with Students- Actual	0.488	1.178	0.049	0.393 0.584	10.045	587	0.000
Pair 3	Able to Cover Syllabus Timely – Expected Able to Cover Syllabus Timely- Actual	0.447	1.276	0.053	0.344 0.551	8.502	587	0.000
Pair 4	Enhancing Personal Learning – Expected Enhancing Personal Learning- Actual	0.357	1.215	0.05	0.259 0.456	7.126	587	0.000
Pair 5	Enhance Creativity – Expected Enhance Creativity- Actual	0.401	1.196	0.049	0.305 0.498	8.139	587	0.000
Pair 6	Class Attendance Will Increase – Expected Class Attendance Will Increase - Actual	0.495	1.383	0.057	0.383 0.607	8.676	587	0.000
Pair 7	Introduces to Education Technology – Expected Introduces to Education- Actual	0.308	1.029	0.042	0.224 0.391	7.255	587	0.000
Pair 8	Sharpened My Digital Skills – Expected Sharpened Digital Skills- Actual	0.323	1.03	0.042	0.24 0.407	7.608	587	0.000
Pair 9	Schedule Flexibility – Expected Schedule Flexibility- Actual	0.388	1.138	0.047	0.296 0.48	8.266	587	0.000
Pair 10	Less Disturbance From Students – Expected Less Disturbance From Students- Actual	0.405	1.221	0.05	0.306 0.504	8.036	587	0.000

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. error Mean	Std. Error Mean 95% Confidence				
				Lower	Upper			
Pair 11	Able to Cover Practical Subjects Also – Expected Able to Cover Practical subjects- Actual	0.318	1.256	0.052	0.216	0.42	587	0.000
Pair 12	Effective Time Management - Expected Effective Time Management- Actual	0.439	1.214	0.05	0.34	0.537	587	0.000

**Table 08**  
Paired Samples Test - Total Effect

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Faculty	Expected Benefits – Actual Benefits	0.250055	1.490276	0.028073	-0.005188	0.105297	304	0.036
Students	Expected Benefits – Actual Benefits	0.3872827	0.8126641	0.0335137	0.3214613	0.4531041	587	0.000

income. They were dependent on the family income only. During the pandemic time, even the university and colleges have not launched any financial support for students to develop the infrastructure for virtual classrooms.

Table no. 6. is showing individual statistics of the teacher's expected benefits and actual benefits differences for all 12 pairs. The difference between expected benefits and actual benefits is significant ( $<0.05$ ) for 7 pairs out of 12 pairs, and the difference is not significant for 5 pairs.

From table no. 07, we can conclude that the student's expected benefits and actual benefits pair differences are significant ( $<0.05$ ) for all 12 pairs.

In this study, the paired sample t-test has been conducted in SPSS software to know whether there is any significant difference between expected benefit and actual benefits from the adoption of the virtual classroom during the COVID-19 pandemic to interact with students. The results of the paired-sample t-test have shown in tables no. 6, 7, and 8.

The mean difference between expected benefits from the virtual classroom and actual benefits from the classroom is positive for faculty members. That indicates the overall mean of expected benefits is higher than the overall mean of actual benefits, and that difference value is 0.250055, with a Sig. (2-tailed) value of 0.036 which is less than 0.05. That indicates the statistically significant difference between means of actual benefits and expected benefits. (Table no. 8)

So here we reject the null hypothesis " $H_0$ : There are not any statistically significant differences between expected benefits and actual benefits perceived from virtual classrooms by faculty members in higher education institutions", that is the true mean difference is equal to zero. We have sufficient evidence to reject the null hypothesis and accept the alternative hypothesis " $H_A$ : There are statistically significant differences between expected benefits and actual benefits perceived from virtual classrooms by faculty members in higher education institutions". From the above results, we can conclude that there is a significant difference between the means of expected benefits and actual benefits.

The common reason for this can be less attendance among students, the casual attitude among students, the possibility of proxy attendance, no strict monitoring of students in a virtual classroom, network connectivity, and lack of a professional environment at home. Network connectivity was the major challenge faced by the faculty members (mean value of 3.68) followed by 3.17 mean value for lack of professional environment at home, 3.03 for lack of teaching material at home, 2.92 for lack of personal computer/laptop (Singh and Meena 2022).

To know exactly out of 12 pairs of individuals which pair has a significant difference, further we have conducted t statistics for individual pairs. As per the output results shown in table no. 11, out of 12 pairs of benefits, seven pairs have a statistically significant difference in the mean score of expected benefits and actual benefits. The seven pairs of expected benefits are as follows: convenient to use, connect with students, increase in class strength, effective time management, less disturbance from the student, ability to cover practical subjects, and effective time management. We do not find any significant differences in the mean score of expected benefits and actual benefits for the remaining five pairs.

The mean difference between the expected benefit of attending the virtual classroom and actual benefits from the virtual classroom is positive for students. That indicates the overall mean of expected benefit is higher than the overall mean of actual benefits, and that difference value is 0.3872827, with a Sig. (2-tailed) value of 0.000 which is less than 0.05. That indicates the statistically significant difference between means of actual benefits and expected benefits. (Table no. 8)

So here we reject the null hypothesis “ $H_{02}$ : There are not any statistically significant differences between expected benefits and actual benefits perceived from virtual classrooms by students in higher education institutions.”, that is the true mean difference is equal to zero. We have sufficient evidence to reject the null hypothesis and accept the alternative hypothesis “ $H_{A2}$ : There are statistically significant differences between expected benefits and actual benefits perceived from virtual classrooms by students in higher education institutions.” From the above results, we can conclude that there is a significant difference between the means of expected benefits and actual benefits.

The common reason for this may be less attendance among students, the casual attitude among students, the possibility of proxy attendance, no strict monitoring of students in a virtual classroom, network connectivity, and lack of a professional environment at home. Lack of professional environment at home (mean value of 3.59) was the major challenge faced by the students followed by 3.57 for lack of teaching material at home, 3.35 for network connectivity, and 3.31 for lack of personal computer/laptop (Singh and Meena 2022).

To know exactly out of 12 pairs individually which pair has a significant difference, further, we have conducted t statistics for individual pairs. As per the output results shown in table 8, out of 12 pairs of benefits, all 12 pairs have a statistically significant difference in the mean score of expected benefits and actual benefits.

## VII. Conclusions, discussion, and recommendations

The difference between the mean value of expected benefits and actual benefits is found to be statistically significant in the case of faculty members as well as students. For the faculty members, the mean difference between expected benefits from the virtual classroom and actual benefits from the classroom is positive. That indicates the overall mean of expected benefits is higher than the overall mean of actual benefits, and that difference value is 0.250055, with a Sig. (2-tailed) value of 0.036 which is less than 0.05. That indicates the statistically significant difference between means of actual benefits and expected benefits. The mean difference between the expected benefit of attending the virtual classroom and actual benefits from the virtual classroom is positive for students. That indicates the overall mean of expected benefit is higher than the overall mean of actual benefits, and that difference value is 0.3872827, with a Sig. (2-tailed) value of 0.000 which is less than 0.05. That indicates the statistically significant difference between means of actual benefits and expected benefits.

Virtual classroom teaching and learning can be fruitful for students as well as teachers to complete their syllabus and assessment, provide moral support, and reduce stress levels during the COVID-19 pandemic. It would also enable the interaction between the teachers and learners. But for effective learning and teaching, infrastructure and technological support are required. Online teaching and learning could be advantageous as through which teachers can motivate students, complete syllabus, provide accessibility to learning and teaching from any time and any place, etc. Stated that Online learning is more flexible in access as it can provide content and instruction at any time, from any place. However, technological and infrastructure support is required for the successful implementation of online teaching and learning through virtual classrooms (Castro and Tumibay 2019). Through virtual classroom teaching students can interact with the teacher which could be helpful to provide moral support and reduce the stress level of students during the COVID-19 Pandemic. Online teaching is effective during this COVID-19 pandemic time for preventing the students from going away from home. Online teaching can have challenges such as poor internet connectivity, non-availability of appropriate electronic devices, lack of a teaching environment at home, and less ICT knowledge among students and teachers can result in less engagement of students and teachers in the teaching and learning process (Yulia 2020).

The mean value of the expected benefit is higher than the mean value of actual benefits for 11 pairs and 08 pairs in the case of teachers and students respectively. Technical barriers are the reasons for not being able to attend

the expected benefits from virtual classrooms in full capacity by students as well as by faculty members. poor digital skills of teachers and students, lack of electricity facilities, less availability and accessibility of internet, connection issues, inadequate facilities, training, funding, and unacceptability of technology, etc. were the barriers to online education at the time of closure of colleges due to COVID-19 pandemic (Onyema et al. 2020). Students can also have a casual attitude, less attendance, feeling of isolation and less interaction can lead to mental distress, spending more time in front of a computer could be hazardous for health too (Surkhali and Garbuja 2020).

The reasons behind this gap in perceived benefits are network problems, lack of internet facilities, consistent connectivity issues, availability of infrastructure, and lack of classroom environment at home. The gap in the mean value of expected benefits and actual benefits is higher in the case of students than the faculty members. Because teachers are having a monthly income, they can afford the expenditure for the development of online classroom infrastructure, laptops, internet connectivity, etc., and students are not supported by any personal income. During the pandemic time, even the university and colleges have not launched any financial support for students to develop the infrastructure for virtual classrooms.

Higher Education Institutes (HEIs) faculty members, as well as students, were not able to perceive actual benefits in full in comparison to expected benefits due to the presence of challenges in the virtual classroom as moderators. Network connectivity was the major challenge faced by the faculty members with a mean value of 3.68 followed by a 3.17 mean value for lack of professional environment at home, 3.03 for lack of teaching material at home, and 2.92 for lack of personal computer/laptop. Lack of professional environment at home with a mean value of 3.59 was the major challenge faced by the students followed by 3.57 for lack of teaching material at home, 3.35 for network connectivity, and 3.31 for lack of personal computer/laptop. Virtual classrooms have challenges such as poor internet connectivity, non-availability of appropriate electronic devices, lack of a teaching environment at home, and less ICT knowledge among students and teachers can result in less engagement of students and teachers in the teaching and learning process. The findings of this study will help Higher Education Institutes (HEIs), the Ministry of Education, the University Grant Commission, and the teacher in effectively implementing the virtual classrooms during this pandemic. This study will help Higher Education Institutes to reduce the challenges of the virtual classroom. Students' participation was less due to the lack of in-person conversations with teachers which could result in mental stress for students and teachers

(Surkhali and Garbuja 2020). They also reported that an accessible and affordable internet connection was the main problem faced by students and teachers and less participation, interaction, and technical disturbance led to less engagement and disturbance in online classes. Teachers found technical, logistical, and pedagogical problems during online classes because of an unprepared transition from face-to-face teaching to online teaching. More efforts were required from the teachers' side to ensure that students are studying the correct study material and providing information about the assignment. Students opted for online education because it offered greater flexibility but required more self-discipline by students (Daymont 2011). Students' perceptions of vocational studies in online mode stated that as vocational studies require not only knowledge but skills as well, online learning did not improve student's productivity, and also the experience was not up to expectation (Syauqi et al. 2020).

The common reasons for the difference in expected benefits and actual benefits of the virtual classroom may be less attendance among students, the casual attitude among students, the possibility of proxy attendance, no strict monitoring of students in a virtual classroom, network connectivity, and lack of a professional environment at home. Network connectivity was the major challenge faced by the faculty members (mean value of 3.68) followed by 3.17 mean value for lack of professional environment at home, 3.03 for lack of teaching material at home, and 2.92 for lack of personal computer/laptop. Lack of professional environment at home (mean value of 3.59) was the major challenge faced by the students followed by 3.57 for lack of teaching material at home, 3.35 for network connectivity, and 3.31 for lack of personal computer/laptop. Virtual classrooms have challenges such as poor internet connectivity, non-availability of appropriate electronic devices, lack of a teaching environment at home, and less information and communication technology (ICT) knowledge among students and teachers. It implied less engagement of students and teachers in the teaching and learning process (Singh and Meena 2022).

The higher education authorities, colleges/institutes/universities need to fix the above issues to enhance the teaching-learning process. The higher education authorities, institutes/colleges/universities must work together to resolve the issues and challenges of virtual classrooms to improve their effectiveness of the virtual classroom. Higher Education Institutes (HEIs) may provide technical support, and training to the faculty members as well as students for a better experience in the virtual classroom. Students who are lacking technical infrastructures like computers/laptops, and internet connectivity. Higher education institutes (HEIs) may provide financial and



technical support to students, so the students can use the infrastructure for learning. Higher education institutes (HEIs) can also provide digital libraries, and journals access to the students at home, so they can improve their learning in the lockdown.

Whenever the higher education authorities are introducing new technology in ICT, the student and faculty members must be provided with practical training for the better implementation of that technology. Because as per the cycle of the technology adoption life cycle there are conservatives/late majority and ladders/ Skeptics (Moore 1991). The delayed adoption of technology is going to affect the consistent implementation of the technology.

### VIII. Limitations further scope of the study

This study has been conducted taking teachers and students of higher education institutes (HEIs) as the target population. The semi-urban and rural higher education institutes (HEIs) may have faced a higher impact of COVID-19 than urban Higher Education Institutes (HEIs) due to infrastructure limitations. This will provide a more in-depth analysis of the impact of COVID-19 on the higher education teaching-learning process. The higher education institutes (HEIs) having good IT infrastructure have faced less impact of COVID-19 on the teaching-learning process. Possible reasons for high expectations are not fulfilled either for teachers or students, answers could be analyzed further. Further studies can also focus on higher education institutes (HEIs) operating in rural and semi-urban areas. Further studies can also include school-level students and teachers. A comparative study can be presented in the context of comparing the situation in another developing country.

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## Guru Ghasidas University Campus Greenery for off setting Carbon Dioxide and Improving Students' Academic Performance

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### Abstract

The greenery in academic institution reduces CO<sub>2</sub> and creates stress free environment to the students' learning. Guru Ghasidas Central University, Bilaspur, India, spread in 262 ha with ample green space, is an education hub for over 9000 students. The land use pattern, greenery, and tree CO<sub>2</sub> stock were assessed by laying out 54 sample plots (0.1 ha) across the university. Students' likelihood of greenery and its effects on students' behavior and academic performance were evaluated during 2019-20. The university has 2/3 green space, 10.64% area under water bodies, and a total built-up area restricted to 15.22%. A total of 61 tree species were identified with a population of 124662 trees on the campus with the highest abundance of *Peltophorum ferrugineum* (17.31%), *Eucalyptus globulus* (13.69%) among planted tree species. In naturally occurring tree species, *Acacia nilotica* occupied highest (88.35%) followed by *Butea monosperma* (10.04%). The trees of the university campus stocked 10942.6 tons of CO<sub>2</sub>. Analysis showed that students rated higher preference to campus greenery with 2.71 points in 0-4 points Likert scale, and improved student's academic performance.



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### Introduction


University is a student-centric place where teaching-learning practices take place for producing future generations.<sup>1-3</sup> Students spend most of the time in a university environment to attend class, sit in

examinations, and do other extra curricular activities. All these tasks demand direct attention and raise mental fatigue and stress in students.<sup>4-6</sup> The green campus allows a place as a pedagogy and enhances the environmental awareness among students

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## Isometries of the product of composition operators on weighted Bergman space

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In this paper, the necessary and sufficient conditions for the product of composition operators to be isometry are obtained on weighted Bergman space. With the help of a counter example we also proved that unlike on  $\mathcal{H}^2(\mathbb{D})$  and  $\mathcal{A}_\alpha^2(\mathbb{D})$ , the composition operator on  $\mathcal{S}^2(\mathbb{D})$  induced by an analytic self-map on  $\mathbb{D}$  with fixed origin need not be of norm one. We have generalized the Schwartz's [Composition operators on  $H^p$ , thesis, University of Toledo (1969)] well-known result on  $\mathcal{A}_\alpha^2(\mathbb{D})$  which characterizes the almost multiplicative operator on  $\mathcal{H}^2(\mathbb{D})$ .

*Keywords:* Adjoint composition operator; almost multiplicative operator; composition operator; invertible; isometry; unitary.

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### 1. Introduction and Preliminaries

Let  $\mathbb{D} = \{z \in \mathbb{C} : |z| < 1\}$  denote the open unit disk in the complex plane  $\mathbb{C}$  and  $H(\mathbb{D})$  denote the space of all analytic complex valued functions on  $\mathbb{D}$ . Let  $\mathcal{H}^2(\mathbb{D}) := \mathcal{H}^2$  denote the Hardy space defined by

$$\mathcal{H}^2(\mathbb{D}) = \left\{ f(z) = \sum_{n=0}^{\infty} a_n z^n \in H(\mathbb{D}) : \|f\|_{\mathcal{H}^2}^2 = \sum_{n=0}^{\infty} |a_n|^2 < \infty \right\},$$

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the derivative Hardy space denoted by  $\mathcal{S}^2(\mathbb{D}) := \mathcal{S}^2$  is defined by

$$\begin{aligned} \mathcal{S}^2(\mathbb{D}) &= \{f \in H(\mathbb{D}) : f' \in \mathcal{H}^2(\mathbb{D})\} \\ &= \left\{ f(z) = \sum_{n=0}^{\infty} a_n z^n \in H(\mathbb{D}) : \|f\|_{\mathcal{S}^2}^2 = |a_0|^2 + \sum_{n=1}^{\infty} n^2 |a_n|^2 < \infty \right\}. \end{aligned}$$

For  $\alpha > -1$ , let  $\mathcal{A}_\alpha^2(\mathbb{D}) := \mathcal{A}_\alpha^2$  denote the weighted Bergman space defined by

$$\mathcal{A}_\alpha^2(\mathbb{D}) = \left\{ f \in H(\mathbb{D}) : \|f\|_\alpha^2 = \int_{\mathbb{D}} |f(z)|^2 dA_\alpha(z) < \infty \right\},$$

where  $dA_\alpha(z) = (\alpha+1)(1-|z|^2)^\alpha dA(z)$  and  $dA$  denote the normalized area measure on  $\mathbb{D}$ . For  $\alpha = 0$ ,  $\mathcal{A}_\alpha^2(\mathbb{D})$  is called the Bergman space and it is denoted by  $\mathcal{A}^2(\mathbb{D}) := \mathcal{A}^2$ . It is well known that  $e_n(z) = \sqrt{\frac{\Gamma(n+2+\alpha)}{n! \Gamma(2+\alpha)}} z^n$  for  $n = 0, 1, \dots$ , where  $\Gamma$  is gamma function, forms an orthonormal basis for  $\mathcal{A}_\alpha^2$ . Clearly,  $e_0 = 1$ . By  $\mathbb{Z}_+$ , we denote the set of nonnegative integers.

The reproducing kernel denoted by  $K_w \in \mathcal{A}_\alpha^2$  for point evaluation at  $w$  in  $\mathbb{D}$  which satisfies  $f(w) = \langle f, K_w \rangle$  for each  $f \in \mathcal{A}_\alpha^2(\mathbb{D})$  is

$$K_w(z) = \frac{1}{(1 - \bar{w}z)^{(\alpha+2)}} \tag{1.1}$$

and

$$\|K_w\|_\alpha^2 = \frac{1}{(1 - |w|^2)^{(\alpha+2)}}. \tag{1.2}$$

By  $\text{Aut}(\mathbb{D})$  we denote the set of all disc automorphism, that is, the set of all maps in  $H(\mathbb{D})$  which maps  $\mathbb{D}$  into  $\mathbb{D}$  and are bijective. Equivalently,  $\Phi \in \text{Aut}(\mathbb{D})$  if and only if there exist  $b \in \mathbb{D}$ ,  $\gamma \in \mathbb{C}$  such that  $|\gamma| = 1$  and

$$\Phi(w) = \gamma \frac{b - w}{1 - \bar{b}w}, \quad w \in \mathbb{D}.$$

Let  $\mathcal{H}^\infty(\mathbb{D}) := \mathcal{H}^\infty$  denote the space of all bounded analytic functions on the open unit disk with the supremum norm.

Let  $\Phi \in H(\mathbb{D})$  and  $\Phi$  be a self-map on  $\mathbb{D}$ , that is,  $\Phi : \mathbb{D} \rightarrow \mathbb{D}$ . Then the composition operator induced by  $\Phi$  on  $H(\mathbb{D})$  is defined as

$$C_\Phi f = f \circ \Phi \quad \text{for } f \in H(\mathbb{D}).$$

Let  $\Phi, u \in H(\mathbb{D})$  and  $\Phi$  be a self-map on  $\mathbb{D}$ . Then the weighted composition operator on  $H(\mathbb{D})$  is defined as

$$C_{u, \Phi} f = u \cdot (f \circ \Phi) \quad \text{for } f \in H(\mathbb{D}).$$

If  $u \equiv 1$  on  $\mathbb{D}$  then the weighted composition operator is the composition operator  $C_\Phi$  induced by  $\Phi$ .

Throughout the paper, we assume that  $\Phi, \Psi \in H(\mathbb{D})$  and are self-maps on  $\mathbb{D}$ . Carswell and Hammond gave the characterization for isometric composition operator on weighted Bergman space. From [1, Propostion 3.1] it follows that

$C_\Phi : \mathcal{A}_\alpha^2 \rightarrow \mathcal{A}_\alpha^2$  is an isometry if and only if  $\Phi$  is a rotation. One can easily prove that if  $\Phi : \mathbb{D} \rightarrow \mathbb{D}$  is a rotation, that is, there exists  $\lambda \in \mathbb{C}$  with  $|\lambda| = 1$  such that  $\Phi(z) = \lambda z$  for  $z \in \mathbb{D}$ , then  $C_\Phi^* = C_\Psi$  where  $\Psi(z) = \bar{\lambda}z$  for  $z \in \mathbb{D}$ . In fact,  $C_\Phi^* C_\Phi = I$  and  $C_\Phi C_\Phi^* = I$  where  $I$  is identity operator on  $\mathcal{A}_\alpha^2$ . Consequently,  $C_\Phi^{-1} = C_\Phi^*$ ,  $C_\Phi$  is unitary and we have the following result.

**Theorem 1.1.** *A composition operator  $C_\Phi$  on  $\mathcal{A}_\alpha^2$  is an isometry if and only if it is unitary.*

A function  $g$  with domain  $X$  is said to be bounded away from zero on  $X$  if there exists a positive constant  $c$  which satisfy  $|g(z)| \geq c$  for each  $z$  in domain  $X$ .

In [5], Shaabani gave the following characterization for invertibility of weighted composition operator on the weighted Bergman space which is instrumental in proving the results in the subsequent sections.

**Theorem 1.2.** *Let  $\Psi$  be an analytic map on  $\mathbb{D}$ , and let  $\Phi$  be an analytic self-map on  $\mathbb{D}$ . The weighted composition operator  $C_{\Psi, \Phi}$  is invertible on  $\mathcal{H}^2$  or  $\mathcal{A}_\alpha^2$  if and only if  $\Phi \in \text{Aut}(\mathbb{D})$  and  $\Psi \in \mathcal{H}^\infty$  is bounded away from zero on  $\mathbb{D}$ .*

One can easily note that if  $\Psi \equiv 1$  on  $\mathbb{D}$  then the composition operator  $C_\Phi$  is invertible on  $\mathcal{A}_\alpha^2$  if and only if  $\Phi \in \text{Aut}(\mathbb{D})$ .

Recently, Shaabani [6] discussed the necessary and sufficient condition for the product  $C_{u_1, \Phi_1} C_{u_2, \Phi_2}^*$  and  $C_{u_1, \Phi_1}^* C_{u_2, \Phi_2}$  to be invertible on  $\mathcal{A}_\alpha^2$ . In Sec. 2, we characterize the isometry operators  $C_\Phi C_\Psi^*$  and discuss the necessary condition for operators  $C_\Phi^* C_\Psi$  to be isometry. With the help of a counter example we proved that unlike  $\mathcal{H}^2$  and  $\mathcal{A}_\alpha^2$  if an analytic self-map  $\Phi$  on  $\mathbb{D}$  with  $\Phi(0) = 0$  induces the composition operator  $C_\Phi$  on  $\mathcal{S}^2$  then the norm of  $C_\Phi$  may not be one. In Sec. 3, we generalize the Schwartz's [4] well-known result on  $\mathcal{A}_\alpha^2$  which characterizes the almost multiplicative operators on  $\mathcal{H}^2$ . This result helps us in characterizing the isometry operators  $C_\Phi^* C_\Psi$ .

## 2. The Products $C_\Phi C_\Psi^*$ and $C_\Phi^* C_\Psi$

We begin this section with the definition of adjoint of composition operator on  $\mathcal{A}_\alpha^2$  which will be used repeatedly.

**Definition 2.1.** The adjoint operator of a composition operator  $C_\Phi$  on  $\mathcal{A}_\alpha^2$  denoted by  $C_\Phi^*$  is the operator which satisfies

$$\langle C_\Phi f, g \rangle = \langle f, C_\Phi^* g \rangle$$

for  $f, g \in \mathcal{A}_\alpha^2$ . Also,

$$\langle f, C_\Phi^* K_w \rangle = \langle C_\Phi f, K_w \rangle = (f \circ \Phi)(w) = f(\Phi(w)) = \langle f, K_{\Phi(w)} \rangle$$

for  $f \in \mathcal{A}_\alpha^2$ . Thus,

$$C_\Phi^* K_w = K_{\Phi(w)}. \tag{2.1}$$

Next, we will generalize the Carswell and Hammond result for  $C_\Phi C_\Psi^*$  to be an isometry.

**Theorem 2.1.** *The product  $C_\Phi C_\Psi^*$  is an isometry if and only if both the composition operators  $C_\Phi$  and  $C_\Psi$  are isometries, equivalently, the inducing maps  $\Phi$  and  $\Psi$  are rotations.*

**Proof.** Let  $C_\Phi C_\Psi^*$  be an isometry. From the equivalent conditions of isometry on Hilbert space it follows that

$$C_\Psi(C_\Phi^* C_\Phi C_\Psi^*) = (C_\Phi C_\Psi^*)^*(C_\Phi C_\Psi^*) = I. \quad (2.2)$$

Thus,  $C_\Psi$  is surjective. Hence,  $C_\Psi$  is injective because  $\Psi$  is nonconstant. Therefore,  $C_\Psi$  is invertible and  $\Psi$  is disc automorphism. So there exists  $w \in \mathbb{D}$  such that  $\Psi(w) = 0$ . From Eq. (1.1)  $K_0 = 1$  on  $\mathbb{D}$ . Clearly,  $C_\Phi K_0 = K_0$ . From Eqs. (1.2) and (2.1) we get

$$\|C_\Phi C_\Psi^* K_w\|_\alpha^2 = \|C_\Phi K_0\|_\alpha^2 = 1.$$

Since  $C_\Phi C_\Psi^*$  is an isometry we have

$$1 = \|C_\Phi C_\Psi^* K_w\|_\alpha^2 = \|K_w\|_\alpha^2 = \frac{1}{(1 - |w|^2)^{(\alpha+2)}}.$$

Thus,  $w = 0$ . This implies  $\Psi$  is a rotation because it is a disc automorphism and  $\Psi(0) = 0$ . Hence,  $C_\Psi$  is an isometry and unitary as well. Now by pre and post multiplying Eq. (2.2) with  $C_\Psi^*$  and  $C_\Psi$ , respectively, we get  $C_\Phi^* C_\Phi = I$ , that is,  $C_\Phi$  is an isometry.

For the converse part, let  $C_\Phi$  and  $C_\Psi$  be isometries. Then both  $C_\Phi$  and  $C_\Psi^*$  are unitary. Since the product of two unitary operators is unitary we get  $C_\Phi C_\Psi^*$  is unitary and hence isometry.  $\square$

The following result is a direct consequence of Theorem 2.1

**Corollary 2.1.** *The product  $C_\Phi C_\Psi^*$  is unitary if and only if  $C_\Phi$  and  $C_\Psi$  are isometry.*

**Theorem 2.2.** *The product  $C_\Phi^* C_\Psi$  has norm one if and only if  $\Phi(0) = 0 = \Psi(0)$ .*

**Proof.** Let  $\|C_\Phi^* C_\Psi\| = 1$ . Clearly, applying Eq. (2.1) with the fact that  $C_\Psi K_0 = K_0$  we get

$$C_\Phi^* C_\Psi K_0 = C_\Phi^* K_0 = K_{\Phi(0)}.$$

Then

$$\frac{1}{(1 - |\Phi(0)|^2)^{(\alpha+2)}} = \|C_\Phi^* C_\Psi K_0\|_\alpha \leq \|C_\Phi^* C_\Psi\| \|K_0\|_\alpha = 1,$$

so  $\Phi(0) = 0$  and  $\|C_\Psi^* C_\Phi\| = \|C_\Phi^* C_\Psi\| = 1$ . Similarly,  $\|C_\Psi^* C_\Phi\| = 1$  gives  $\Psi(0) = 0$ .

For the converse part, let  $\Phi(0) = 0$  and  $\Psi(0) = 0$ . Then using the upper bound on the norm of a composition operator by [8 Theorem 11.6] (with  $p = 2$ ) we have

$$\|C_{\Phi}^* C_{\Psi}\| \leq \|C_{\Phi}\| \|C_{\Psi}\| \leq \left(\frac{1 + |\Phi(0)|}{1 - |\Phi(0)|}\right)^{(\alpha+2)/2} \left(\frac{1 + |\Psi(0)|}{1 - |\Psi(0)|}\right)^{(\alpha+2)/2} = 1. \quad \square$$

For reverse inequality, consider

$$\|C_{\Phi}^* C_{\Psi}\| \geq \frac{\|C_{\Phi}^* C_{\Psi} K_0\|_{\alpha}}{\|K_0\|_{\alpha}} = \frac{\|K_{\Phi(0)}\|_{\alpha}}{\|K_0\|_{\alpha}} = \frac{\|K_0\|_{\alpha}}{\|K_0\|_{\alpha}} = 1.$$

As it is well known that the norm of an isometry operator on any Hilbert space is one but the converse is not true so the above theorem leads to the following result.

**Corollary 2.2.** *If the product  $C_{\Phi}^* C_{\Psi}$  is an isometry then  $\Phi(0) = 0$  and  $\Psi(0) = 0$ .*

Unlike  $\mathcal{H}^2$  and  $\mathcal{A}_{\alpha}^2$ , if an analytic self-map  $\Phi$  on  $\mathbb{D}$  that induces the composition operator on  $\mathcal{S}^2$  and fixes the origin, then this does not imply that the norm of the composition operator induced by  $\Phi$  on  $\mathcal{S}^2$  is one. This can be verified from the following example.

**Example 2.1.** Let  $\Psi$  be an analytic, self-map defined by  $\Psi(z) = z^3$ ,  $\forall z \in \mathbb{D}$  so that  $\Psi(0) = 0$ . Clearly,  $\Psi' \in \mathcal{H}^{\infty}$  and this implies that  $C_{\Psi}$  is a composition operator on  $\mathcal{S}^2$  (see [3]). Define  $f(z) = z$ ,  $z \in \mathbb{D}$  so that  $f \in \mathcal{S}^2$ .

Then

$$\begin{aligned} \|C_{\Psi}\| &\geq \frac{\|C_{\Psi} f\|_{\mathcal{S}^2}}{\|f\|_{\mathcal{S}^2}} \\ &= \frac{\|\Psi\|_{\mathcal{S}^2}}{\|f\|_{\mathcal{S}^2}} = \frac{3}{1} = 3 \end{aligned}$$

Thus, we have proved that  $\Psi(0) = 0$  but  $\|C_{\Psi}\| \neq 1$ .

The above example is instrumental in showing that unlike  $\mathcal{A}_{\alpha}^2$  the converse part of the statement in Theorem 2.2 does not hold on  $\mathcal{S}^2$  in the following example.

**Example 2.2.** Let  $\Psi$  be as defined in Example 2.1 and  $\Phi$  be defined by  $\Phi(z) = z \forall z \in \mathbb{D}$ . Then  $\Phi$  is analytic, self-map on  $\mathbb{D}$  with  $\Phi(0) = 0$  and  $\Phi' \in \mathcal{H}^{\infty}$ . So  $C_{\Phi}$  and  $C_{\Psi}$  are composition operators on  $\mathcal{S}^2$  (see [3]). Clearly,  $C_{\Phi} f = f$  for  $f \in \mathcal{S}^2$  and this gives

$$\langle C_{\Phi} f, g \rangle = \langle f, g \rangle = \langle f, C_{\Phi} g \rangle \quad \text{for } f, g \in \mathcal{S}^2.$$

Thus,  $C_\Phi$  is an isometry and  $C_\Phi^* = C_\Phi$ . Consequently, for  $f \in \mathcal{S}^2$ ,

$$\|C_\Phi^* C_\Psi f\|_{\mathcal{S}^2} = \|C_\Psi f\|_{\mathcal{S}^2}.$$

Using Example [2.1](#) we get

$$\begin{aligned} \|C_\Phi^* C_\Psi\| &= \text{Sup}_{f \neq 0 \in \mathcal{S}^2} \frac{\|C_\Phi^* C_\Psi f\|_{\mathcal{S}^2}}{\|f\|_{\mathcal{S}^2}} \\ &= \text{Sup}_{f \neq 0 \in \mathcal{S}^2} \frac{\|C_\Psi f\|_{\mathcal{S}^2}}{\|f\|_{\mathcal{S}^2}} \\ &= \|C_\Psi\| \\ &\geq 3. \end{aligned}$$

Thus, we have proved that  $\Phi(0) = 0$  and  $\Psi(0) = 0$  but  $\|C_\Phi^* C_\Psi\| \neq 1$ .

### 3. Almost Multiplicative

In this section, we will discuss the necessary and sufficient condition for operators  $C_\Phi^* C_\Psi$  to be isometry on  $\mathcal{A}_\alpha^2$ .

**Definition 3.1.** An operator  $T$  on a Hilbert space  $\mathcal{H}$  is said to be almost multiplicative if

$$T(f_1 \cdot f_2) = T f_1 \cdot T f_2,$$

whenever  $f_1, f_2 \in \mathcal{H}$  satisfy  $f_1 \cdot f_2 \in \mathcal{H}$ .

For our convenience we will write  $f_1 f_2$  to denote  $f_1 \cdot f_2$ . In the following result on the weighted Bergman space we will generalize the Schwartz's [4](#) result which shows the relation between almost multiplicative and composition operator on the Hardy space.

**Theorem 3.1.** *Let  $T$  be a nonzero bounded linear operator on  $\mathcal{A}_\alpha^2$ . Then  $T$  is almost multiplicative if and only if  $T$  is a composition operator i.e.  $T = C_\Phi$  for some analytic function  $\Phi : \mathbb{D} \rightarrow \mathbb{D}$ .*

**Proof.** Let  $T$  be almost multiplicative. First, we will prove that

$$T e_n = \sqrt{\frac{\Gamma(n+2+\alpha)}{n! \Gamma(2+\alpha)}} (Tz)^n \quad \text{for } n \in \mathbb{Z}_+.$$

As  $T$  is nonzero operator and for  $n \in \mathbb{Z}_+$ ,

$$T e_n = T(e_n e_0) = (T e_n)(T e_0),$$

so  $T e_0$  cannot be a zero function. Since

$$T e_0 = T(e_0 e_0) = (T e_0)(T e_0),$$

therefore,  $Te_0 = e_0$ . Now for  $n \geq 1$ ,

$$\begin{aligned}
 Te_n &= T \left( \sqrt{\frac{\Gamma(n+2+\alpha)}{n! \Gamma(2+\alpha)}} z^n \right) \\
 &= \sqrt{\frac{\Gamma(n+2+\alpha)}{n! \Gamma(2+\alpha)}} (Tz)^n \\
 &= \sqrt{\frac{\Gamma(n+2+\alpha)}{n! \Gamma(2+\alpha)}} \Phi^n, \quad \text{where } \Phi = Tz.
 \end{aligned} \tag{3.1}$$

This gives  $\Phi^n = \sqrt{\frac{n! \Gamma(2+\alpha)}{\Gamma(n+2+\alpha)}} (Te_n)$  for  $n \in \mathbb{Z}_+$ . Further

$$\begin{aligned}
 \|\Phi^n\|_\alpha &= \sqrt{\frac{n! \Gamma(2+\alpha)}{\Gamma(n+2+\alpha)}} \|(Te_n)\|_\alpha \\
 &\leq \sqrt{\frac{n! \Gamma(2+\alpha)}{\Gamma(n+2+\alpha)}} \|T\| \|e_n\|_\alpha \\
 &= \sqrt{\frac{n! \Gamma(2+\alpha)}{\Gamma(n+2+\alpha)}} \|T\|.
 \end{aligned}$$

Since  $\sqrt{\frac{n! \Gamma(2+\alpha)}{\Gamma(n+2+\alpha)}} \leq 1$  for  $n \in \mathbb{Z}_+$ , therefore, for  $n \in \mathbb{Z}_+$ ,

$$\|\Phi^n\|_\alpha \leq \|T\|.$$

Thus,  $\{\|\Phi^n\|_\alpha\}$  is a bounded sequence. Since  $\Phi = Tz \in \mathcal{A}_\alpha^2$  and any analytic self-map on  $\mathbb{D}$  induces a composition operator on  $\mathcal{A}_\alpha^2$ , therefore, it is sufficient to prove that  $\Phi$  is a self-map on  $\mathbb{D}$ . Now, we will prove that  $|\Phi(z)| < 1 \forall z \in \mathbb{D}$ .

Let  $\delta > 0$  be any real number and let  $E = \{z \in \mathbb{D} : |\Phi(z)| \geq 1 + \delta\}$ . Consider

$$\begin{aligned}
 \|\Phi^n\|_\alpha^2 &= \int_{\mathbb{D}} |\Phi(z)|^{2n} dA_\alpha(z) \\
 &\geq \int_E |\Phi(z)|^{2n} dA_\alpha(z) \\
 &\geq \int_E (1 + \delta)^{2n} dA_\alpha(z) \\
 &= (1 + \delta)^{2n} A_\alpha(E).
 \end{aligned}$$

Since  $1 + \delta > 1$ , from the above, it follows that measure of set  $E$  is zero, i.e.  $A_\alpha(E) = 0$  otherwise

$$\lim_{n \rightarrow \infty} \|\Phi^n\|_\alpha = \infty$$

and this is a contradiction to the fact that  $\{\|\Phi^n\|_\alpha\}$  is a bounded sequence. So,  $|\Phi(z)| \leq 1$  a.e. on  $\mathbb{D}$ . By combining ([7] Corollary 1.29) for  $n = 1$ ) with ([7] Corollary

1.30] for  $p = 2, n = 1$ ) and applying for analytic function  $\Phi$  on  $\mathbb{D}$  we get that for all  $b \in \mathbb{D}$  and  $0 \leq r < 1 - |b|$ ,

$$\begin{aligned} |\Phi(b)|^2 &\leq \int_{\mathbb{D}} |\Phi(b + rz)|^2 dA_{\alpha}(z) \\ &\leq \int_{\mathbb{D}} dA_{\alpha}(z) \\ &= 1. \end{aligned}$$

Thus,  $|\Phi(z)| \leq 1 \forall z \in \mathbb{D}$ . Now prove that  $|\Phi(z)| \neq 1$  for any  $z \in \mathbb{D}$ .

We will prove this by contradiction. Let  $|\Phi(z')| = 1$  for some  $z' \in \mathbb{D}$  then by the Maximum Modulus Principle there exists some  $\beta$  with  $|\beta| = 1$  such that  $\Phi(z) = \beta$  for all  $z \in \mathbb{D}$ , that is,  $\Phi$  is a constant function. Now using this along with Eq. (3.1) we have

$$\langle T^*e_0, e_n \rangle = \langle e_0, Te_n \rangle = \langle e_0, \sqrt{\frac{\Gamma(n+2+\alpha)}{n!\Gamma(2+\alpha)}} \beta^n \rangle = \sqrt{\frac{\Gamma(n+2+\alpha)}{n!\Gamma(2+\alpha)}} \bar{\beta}^n.$$

Since  $\{e_n\}_{n=0}^{\infty}$  is an orthonormal basis of  $\mathcal{A}_{\alpha}^2$ , we can write

$$\begin{aligned} T^*e_0 &= \sum_{n=0}^{\infty} c_n e_n \quad \text{for some scalars } c_n \\ &= \sum_{n=0}^{\infty} \langle T^*e_0, e_n \rangle e_n, \quad \text{where } c_n = \langle T^*e_0, e_n \rangle. \end{aligned}$$

Now consider

$$\begin{aligned} \|T^*e_0\|_{\alpha}^2 &= \langle T^*e_0, T^*e_0 \rangle \\ &= \left\langle \sum_{n=0}^{\infty} \langle T^*e_0, e_n \rangle e_n, \sum_{n=0}^{\infty} \langle T^*e_0, e_n \rangle e_n \right\rangle \\ &= \sum_{n=0}^{\infty} \langle T^*e_0, e_n \rangle \overline{\langle T^*e_0, e_n \rangle} \\ &= \sum_{n=0}^{\infty} |\langle T^*e_0, e_n \rangle|^2 \\ &= \sum_{n=0}^{\infty} \frac{\Gamma(n+2+\alpha)}{n!\Gamma(2+\alpha)} |\beta|^{2n} \\ &= \infty. \end{aligned}$$

This contradicts the fact that the norm of  $T^*e_0 \in \mathcal{A}_{\alpha}^2$  is finite. Hence,  $|\Phi(z)| < 1, z \in \mathbb{D}$ . From Eq. (3.1) we have

$$Te_n = \sqrt{\frac{\Gamma(n+2+\alpha)}{n!\Gamma(2+\alpha)}} \Phi^n = e_n \circ \Phi = C_{\Phi} e_n$$



and it gives by linearity and continuity that  $T = C_\Phi$ . Hence, we have proved that  $T$  is a composition operator.

Conversely, let  $T$  be a composition operator, i.e.  $T = C_\Phi$ . Then for  $f_1, f_2 \in \mathcal{A}_\alpha^2$  such that  $f_1 f_2 \in \mathcal{A}_\alpha^2$  and for  $z \in \mathbb{D}$  we have

$$\begin{aligned} (C_\Phi(f_1 f_2))(z) &= ((f_1 f_2) \circ \Phi)(z) = (f_1 f_2)(\Phi(z)) \\ &= f_1(\Phi(z)) f_2(\Phi(z)) = ((C_\Phi f_1)(C_\Phi f_2))(z). \end{aligned}$$

Thus,  $C_\Phi(f_1 f_2) = (C_\Phi f_1)(C_\Phi f_2)$  and  $T$  is almost multiplicative. □

The following result is motivated by Clifford *et al.* [2, Lemma 4.4] and the proof follows on similar lines using Theorem 3.1

**Lemma 3.1.** *Let  $C_\Psi = C_\Phi S$ ,  $\Psi$  be a nonconstant function and let  $S$  be a bounded linear operator on  $\mathcal{A}_\alpha^2$ . Then  $S = C_\beta$  for some  $\beta \in H(\mathbb{D})$  which is a self-map on  $\mathbb{D}$  and  $\Psi = \beta \circ \Phi$ .*

**Theorem 3.2.** *The product  $C_\Phi^* C_\Psi$  of operators  $C_\Phi^*$  and  $C_\Psi$  is an isometry if and only if  $\Phi$  and  $\Psi$  are rotations on  $\mathbb{D}$ .*

**Proof.** Let  $C_\Phi^* C_\Psi$  be an isometry. It follows from Corollary 2.2 that  $\Phi(0) = 0$  and  $\Psi(0) = 0$ . Thus,  $\|C_\Phi\| \leq 1$  and  $\|C_\Psi\| \leq 1$ . Then, by [2, Proposition 4.3] it follows that  $C_\Psi$  is an isometry and  $C_\Psi = C_\Phi C_\Phi^* C_\Psi$ . Since  $C_\Psi$  is an isometry, therefore,  $\Psi$  is a rotation and hence, nonconstant. Applying Lemma 3.1 with  $S$  as  $C_\Phi^* C_\Psi$  we get that  $C_\Phi^* C_\Psi = C_\beta$  for some  $\beta \in H(\mathbb{D})$  which is a self-map on  $\mathbb{D}$  with  $\Psi = \beta \circ \Phi$ . Combining the fact that  $C_\Phi^* C_\Psi$  is an isometry and  $C_\Phi^* C_\Psi = C_\beta$  we get that  $\beta$  is a rotation. Since  $\Psi$  and  $\beta$  are rotations on  $\mathbb{D}$  and  $\Psi = \beta \circ \Phi$ , therefore,  $\Phi$  is a rotation.

Conversely, let  $\Phi$  and  $\Psi$  are rotations on  $\mathbb{D}$ . Then  $C_\Phi$  and  $C_\Psi$  are isometry and unitary as well. This implies that  $C_\Phi^* C_\Psi$  is unitary and hence an isometry. □

The following result is a direct consequence of Theorem 3.2

**Corollary 3.1.** *The product  $C_\Phi^* C_\Psi$  of operators  $C_\Phi^*$  and  $C_\Psi$  is unitary if and only if  $\Phi$  and  $\Psi$  are rotations on  $\mathbb{D}$ .*

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**FINTECH REVOLUTION DURING COVID-19 AND BEYOND**

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**ABSTRACT**

Financial technology means the use of technology to make products and services of finance more innovative. India is a country where a major chunk of the population is still unbanked, introduction of fintech has changed the dimensions of the finance industry. "Like every coin has two sides" Fintech also has good and bad repercussions on fintech entrepreneurs and users of fintech products in India. In this paper, we have used a systematic literature review methodology to identify factors affecting the adoption rate of fintech products during the Covid pandemic. The study also identified the opportunities and challenges faced by fintech users and service providers. This study would be relevant for researchers, start-up companies, and the government as they can make policies and schemes accordingly.

**Keywords:** FinTech Adoption, Covid 19, Challenges, Opportunities

**I. INTRODUCTION**

Fintech generally means the application of digital technology in the field of finance. The term 'Fintech' is the short form of the phrase financial technology which denotes those companies which are using technology for the delivery and use of financial services. This term has redefined the working of financial services these days. According to (Zavolokina, Dolata, & Schwabe, 2016), the term 'Fintech' represents the "marriage between Finance and Information Technology and this financial technology is gradually changing our lives". Fintech is evolving day by day as more and more technology entrepreneurs are entering the market these days and are transforming financial services according to the social needs of the market. This service industry is emerging now in the 21<sup>st</sup> century, wherein new technology-based startups are now trying to replace the traditional financial system by applying technology in financial sector services by using "mobile payments, money transfers, and asset management".

Fintech has been receiving great attention these days and many researchers believe that financial technology will change the shape of the financial service industry in the future (Chuen & Teo, 2015). The financial service industry is progressing with the advent of technology in finance like, "peer-to-peer lending, digital wallets, blockchain, mobile banking", etc. With the advancement in the internet and technology these days, consumers' expectations are also changing which is helping to achieve high efficiency in delivering financial services. Many financial institutions have started working on Fintech-related products to satisfy the demand of their customers. Moreover, financial technology is bringing new opportunities for the empowerment of individuals by allowing for transparency, information accessibility, and reducing the cost of getting these financial services (Zavolokina, Dolata, & Schwabe, 2016).

The landscape of financial services is changing rapidly in India due to the advancement of Fintech firms in the country. According to (Ernest & Young, 2019), the adoption of fintech services globally has reached 64% in 2019 and 96% of the customer these days know at least one fintech service to help them transfer money and make online payments. This research also shows that the overall adoption rate of fintech services in India is about 87% and this adoption of fintech is growing faster



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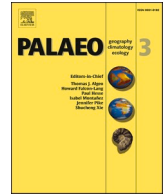
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## Last 10 millennial history of Indian summer monsoon in the Bengal region – a multi-proxy reconstruction from a lacustrine archive

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## ABSTRACT

We combine phytoliths, non-pollen palynomorphs, stable carbon isotopes of sediment organic matter, environmental magnetic parameters and sediment texture data of a lacustrine sedimentary archive from the Bengal region to understand the ecosystem response to past hydroclimatic changes. The region experienced a high Indian summer monsoon (ISM) rainfall during c.10.2–5.6 ka corresponding to the Holocene Climatic Optimum (HCO) when the lake level was high. Our study reveals that ISM weakened at c.4.3 ka with a decline in lake level, became strong between c.3.7 and 2.1 ka and then shifted towards a drier mode. However, this weakened phase was punctuated by a stable phase between c.1–0.8 ka, and a comparatively stronger phase between c.0.2–0.1 ka corresponding to the Medieval Warm Period (MWP) and Little Ice Age (LIA), respectively. An eutrophication of the lake began at c.3.7 ka which was completely in-filled during c.0.2–0.1 ka. A comparison of the present results with published records suggests millennial-scale coherence in the Holocene ISM variability across the Bay of Bengal (BoB) moisture source regions while, the finer-scale incongruities are attributable to differential proxy response and dating uncertainty. Our proxy-based observations are also compared with a few palaeo-model outputs for selected time-spans [such as, 1550–1850 CE (0.4–0.1 ka), 900–1300 CE (1–0.6 ka), 2100–2000 BCE (4.1 – 4 ka), and 4050–3350 BCE (6–5.3 ka)] from the Palaeo Modeling Intercomparison Project Phase 3–4 (PMIP3/PMIP4) experiments which support the assumption that changes in lake ecosystem may be strongly influenced by ISM rainfall, and the region surrounding northern BoB received higher precipitation than the other parts of India since the past 10.2 ka. The millennial-scale variations in the ISM rainfall may largely be attributed to gradual decline in orbital insolation and dynamics of Inter tropical Convergence Zone (ITCZ). However, centennial scale variations may be collectively triggered by forcings like NAO, ENSO and IOD.

## 1. Introduction

Indian summer monsoon (ISM), considered as a large-scale coupled ocean-land-atmosphere phenomenon and associated with seasonal precipitation and circulation patterns, helps in sustaining livelihood of millions of people of the Indian subcontinent by accounting for about 80% of the total annual rainfall (Meehl, 1994; Hu et al., 2000; Wang,

2006; Hernandez et al., 2015; Hrudya et al., 2020). Variability in the ISM rainfall has often been linked to the rise and fall of civilizations across southern Asia over the last ten thousand years (Sandweiss et al., 1999; Weiss and Bradley, 2001; Staubwasser and Weiss, 2006; Dixit et al., 2014a, 2014b, 2018; Sarkar et al., 2016, 2020), where long-term or abrupt weakening in the ISM rainfall have led to drought, crop failure, soil aridification, expansion of grass/scrublands and shrinkage in forests

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# Risk assessment and adaptation strategies for irrigated and rainfed cotton crop production under climate change

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Predicting the impacts of future climate on food and fibre production are essential for devising suitable adaptations strategy. This study aims to understand the impact of climate change on cotton crop change using Regional Climate Model (RCM) in the near and far future. The RCM model considered for the study is RegCM4 from CORDEX-SA experiment for the two RCP scenarios at RCP4.5 and RCP8.5. To refine these projections, we have bias-corrected the data using quantile mapping approach. This study is based on two locations: one in Hisar (mostly irrigated) and the other in Akola (mostly rainfed), located in the northern and central agro-climatic zones for cotton. The daily projected data have been summarised as 1971–2005(1990), 2006–2035(2020), 2036–2065(2050) and 2066–2095(2080). The RCM projections show good agreement with the observed climatology, but still bias exists, which is fine-tuned by bias-correction. The RCM model showed reduced diurnal temperature and night warming as it highly underestimates maximum temperature and slightly the minimum temperature. It also predicts rise in temperature at higher rates in northern than central zones. Also, the amount of rainfall is increasing in the northern region and decreasing in the central region at RCP8.5. The spatial variability is observed as the amount of rainfall is increasing in the northern irrigated region and decreasing in the central rainfed region. The rainfall intensity in Hisar is projected to increase till 2050 and a further decline in 2080. And in the central zone, it is presently higher than the northern region, but projected to decrease further from 1990 to 2080. These daily weather data were then employed in the cotton-CROPGRO model under DSSAT-CSM (v4.6) to assess its impact on future climate. The crop model has been simulated with these weather projections for the three sowing dates under rainfed, irrigated, and potential conditions. It is observed that the simulated crop yields and LAI in Akola are higher at RCP8.5 than RCP4.5, whereas in Hisar, it is lower at RCP8.5 than RCP4.5. So, in the cooler and wetter central zone, temperature may slightly rise at RCP8.5 along with increased rainfall and CO<sub>2</sub>, favouring the cotton crop. This shows the suitability of crops in this region even at RCP8.5 and far future. Whereas in the hot and dry northern agro-climatic cotton zone, it is projected that the temperature slightly increases from present at RCP4.5 and further at RCP8.5, and the amount of rainfall increases at RCP4.5 and reduces at RCP8.5. So, the crop here could stand the increased temperature at RCP4.5 and is also favoured due to increased CO<sub>2</sub> and precipitation. But, at RCP8.5, the comparatively higher rate of increase in temperature and decreasing amount of rainfall may affect cotton crops adversely, with its maximum effects in the far future. Also, in future climate with temporal variability in the amount of precipitation and increasing temperature, late

Supplementary material pertaining to this article is available on the *Journal of Earth System Science* website ([http://www.ias.ac.in/Journals/Journal\\_of\\_Earth\\_System\\_Science](http://www.ias.ac.in/Journals/Journal_of_Earth_System_Science)).

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## RESEARCH ARTICLE

# Climate change over Indonesia and its impact on nutmeg production: An analysis under high-resolution CORDEX-CORE regional simulation framework

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## Abstract

Nutmeg is an important spice and contributes significantly to the gross domestic product of Indonesia. The study examines the impact of climate change on Indonesia and the production of nutmeg over Banda Neira Island. For this, the outputs from high-resolution regional climate models under different representative concentration pathways (RCP2.6, RCP4.5 and RCP8.5), within the framework of Coupled Model Intercomparison Project 5/Coordinated Regional Climate Down-scaling Experiment-Coordinated Output for Regional Evaluations (CMIP5/CORDEX-CORE) over southeast Asia domain are employed. The representation of the spatial structure of rainfall and temperature climatology is found to be much better in ensembles as compared to individual model experiments. The behaviour of simulated rainfall and temperature from the model experiments is examined to check whether the projected climate favours an increase in nutmeg production. The study found that projected changes in the number of wet days (ideal 100–160 wet days), heavy rainfall events, rising mean temperature above the optimum temperature range (25–26°C), increasing heatwave spells, and prolongation of the warm period led to an unfavourable climate for nutmeg production. Based on the analysis of dynamically produced (model simulated) climate variables, the study rejects the forecasted increase in nutmeg production using a statistical regression model due to the unfavourable climatic conditions that are likely to affect the growth, production and quality of nutmeg. The changing climate not only reduces regional agricultural production but also impacts the socio-economic condition of the people of Indonesia. Therefore, the study emphasizes implementing stringent climate laws and policies at global, regional and local levels to curb greenhouse gas emissions and reduce the negative impact of climate change.

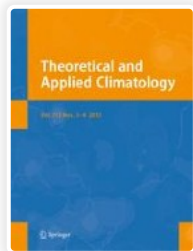
## KEYWORDS

climate change, nutmeg, production, rainfall, temperature

## 1 | INTRODUCTION

The Intergovernmental Panel on Climate Change (IPCC) defines climate change as an identifiable form of change

in climatic conditions with a change in the average and/or variability of its components over a long period of time, generally a decade or more (IPCC, 2007). It was formally defined in 1992 by the United Nations Framework



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# Diagnostic of the massive flood event and flood hazard mapping in Tons River basin

P. Maharana<sup>1</sup> · Dharendra Kumar<sup>2</sup> · Rajesh Kumar<sup>3</sup> · Rupendra Singh<sup>4</sup> · A. P. Dimri<sup>5</sup>

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## Abstract

This study diagnoses the Satna flood event in the Tons River basin. The occurrence of this intense flood is attributed to the rainfall associated with the movement of the monsoon depression during the peak monsoon season. The study uses Weather Research Forecast (WRF) model to examine the origin, movement, and dissipation of the monsoon depression over India. The study also incorporates remote sensing techniques and field campaigns to better understand the impact on the areas. The model captures the origin of the monsoon depression and the highest precipitating days fairly well. However, it underestimates the rainfall magnitude with respect to different observations due to the limited ability of the model to capture the rainfall maxima spatially. Moreover, the conditional instability of the second kind (CISK) mechanism seems to drive the monsoon depression. A positive feedback mechanism is observed along the track of the depression between rainfall and convective activity leading to excess rainfall over the Tons basin. The remote-sensing-based analysis using Landsat 8 products shows that around 1309 km<sup>2</sup> area of the Tons basin was inundated during the event. Based on the computed Flood Hazard Index values, the entire basin has been divided into the low, medium, high, and very high flood hazard zones with several affected hamlets 19, 178, 155, and 91, respectively. The flood hazard values are important for the planners to adopt appropriate adaptation and mitigation to minimize the impact of future flooding in the basin.

**Keywords** Floods · FHI · Monsoon depression · Convection · MSE

## 1 Introduction

The Indian summer monsoon (ISM henceforth) is a very complex phenomenon that primarily fulfills the water demand of the Indian subcontinent during summer and contributes approximately 80% of the total annual rainfall (Maharana and Dimri 2016; Parthasarathy et al., 1994). The ISM is associated with multiple rain-bearing synoptic

systems occurring at different places across the Indian landmass. This is also a reason for multiple rainfall maxima such as the northeast, western ghats, and central India during the ISM (Sørland and Sorteberg, 2015). The major rainfall maximum over Western Ghats (Northeast) is due to the activity of the Arabian Sea (Bay of Bengal; BoB hereafter) branch of the ISM (Maharana and Dimri, 2014). However, the rainfall peak over central India is due to the activity of depressions originating from the BoB and their movement towards the west and northwestward (Mooley, 1973; Verma et al., 2001; Jadhav and Munot, 2009; Krishnamurthy and Ajayamohan, 2010). In a few cases, as the depression reaches north-western India, their maximum cyclonic vorticity shifts from 850 to 500 hPa leading to the formation of mid-tropospheric cyclone on the west coast and hence influencing the rainfall over the west coast of India (Francis and Gadgil 2006; Roxy et al., 2017). Sometimes, these depressions intensify and lead to heavy precipitation during their course. The Indian states such as Assam, Maharashtra, Odisha, Madhya Pradesh, Bihar, Jharkhand, Uttar Pradesh, and West Bengal experience frequent floods due to the activity

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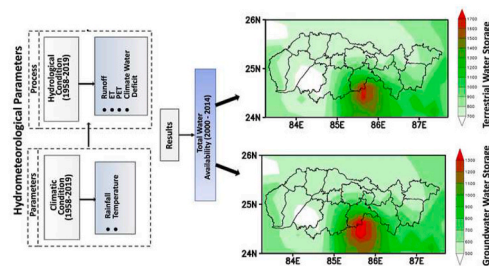
## Environmental change and groundwater variability in South Bihar, India

Aviram Sharma<sup>a</sup>, Pyarimohan Maharana<sup>a</sup>, Satiprasad Sahoo<sup>b</sup>, Prabhakar Sharma<sup>a,\*</sup><sup>a</sup> School of Ecology and Environment Studies, Nalanda University, Rajgir, Nalanda, Bihar, 803116, India<sup>b</sup> International Institute of Geospatial Science and Technology (IIGST), South Asian Institute for Advanced Research and Development, (SAIARD), Ganguly Bagan, Kolkata, West Bengal, 700047, India

## HIGHLIGHTS

- Historical climatic data is a tool to connect climatic and environmental change.
- Surface and groundwater deficit across South Bihar is quite high (above 600 mm).
- Farmers narrated the climatic variations in terms of deficit and erratic rainfall.
- Erratic rainfall pattern has increased in recent decades.

## GRAPHICAL ABSTRACT



## ARTICLE INFO

## Keywords:

Climatic variations  
 Environmental change  
 Hydrological conditions  
 Groundwater fluctuation  
 Public perception  
 South Bihar  
 India

## ABSTRACT

In the last decade, researchers have underscored the need for carrying out climate change analysis at regional and sub-regional levels. Against this backdrop, we analyzed the climatic variability and environmental changes that occurred during the last seven decades (1958–2019) and their impact on groundwater variability in South Bihar, India. We employed a mixed-method approach and analyzed both the quantitative scientific data and qualitative ethnographic data collected from the local farmers. The scientific data was compiled for the climatic parameters (rainfall and temperature), hydrological parameters (runoff, actual evapotranspiration, potential evapotranspiration, and climate water deficit), terrestrial water storage, and groundwater storage capacity using TerraClimate model and Global Land Data Assimilation System. The public perception of climatic variability and environmental change was analyzed using farmers' understanding of environmental variability in selected villages of South Bihar. In terms of climatic variations, the historical climatic data showed rainfall variability over the last seven decades. Higher unpredictability in monsoon rainfall is evident from the 1990s onwards. The average temperature had gone up by 0.5 °C over the study period. The surface and groundwater deficit across South Bihar was relatively high (above 600 mm) with a significant sub-regional variation. From the public understanding perspective, the climatic variations were mostly narrated in terms of deficit and erratic rainfall, which increased in recent decades. Farmers explained the groundwater scarcity and associated environmental changes based on their lived experience. Both scientific and farmers' understanding of environmental variability explains the high climatic variability during the last three decades.

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## Resources Policy

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# What do the AI methods tell us about predicting price volatility of key natural resources: Evidence from hyperparameter tuning

Mrinalini Srivastava <sup>a</sup> , Amar Rao <sup>b</sup>  , Jaya Singh Parihar <sup>c</sup> , Shubham Chavriya <sup>d</sup> , Surendar Singh <sup>e</sup> 

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### Abstract

Volatility plays a significant role in pricing derivatives, managing portfolio risk, and using hedging strategies in the financial markets. As a result, it is imperative to precisely estimate the volatility of key natural resources, including crude oil, gold, copper, natural gas, and silver. The likelihood of some countries' budget deficits exceeding permissible levels increased due to recent uncertainties brought on by geo-political threats. This article employs a hybrid model of LSTM-GJR-GARCH (1,1) with hyperparameter tuning to forecast the volatility of the prices of significant natural resources using daily closing prices for crude oil, natural gas, silver, copper, and gold from January 2012 to July 2022. Our results demonstrate that, compared to utilising standard LSTM-GJR-GARCH, employing hyperparameter adjustment increases volatility predictions by an average of 40%–70%. We also looked at the connection between the geo-political risk index and the overall connectedness of natural resources. Our findings suggest that geo-political risk uncertainty does not account for the overall interconnectedness of natural resources' prices. Because they may better understand future volatility and manage their portfolios and budgets by estimating the price volatility of natural resources, our findings are important for politicians, governments, and investors.

### Introduction

In asset markets like the stock market, volatility refers to how much asset prices vary and gauges how uncertain or risky a situation is. Risk is measured by investment companies and individual investors using the volatility of underlying asset prices (Markowitz, 1952). The volatility of the underlying assets can be used to calculate a derivative good's price, whereas the volatility of its component assets is the only way to calculate portfolio risk (Kim and Won, 2018a). Understanding the dynamics of commodity markets, especially natural resources, including those for energy, precious metals, industrial metals, and agriculture, has significant importance for investors, policymakers, and risk managers as a result of the financialisation of commodities (Creti et al., 2013). Financialisation and enhanced global market integration have increased market transmission (Creti et al., 2013; Jhunjunwala and Suresh, 2020). It is essential to comprehend the

type and extent of connections among different financial marketplaces. Further, geo-political risk has increased and eclipsed financial markets, particularly the prices of natural resources, as a result of the military operations that began on February 24, 2022, and the increasing crisis between Russia and Ukraine (Wang et al., 2022; Ahmed, 2010). Commodity prices spiralled due to increased geo-political risk, which was already jarred by pandemic-related supply disruptions (C. W. Su et al., 2021; Wang et al., 2022).

The availability of natural resources, particularly crude oil and precious metals, is a key macro factor for economic expansion (Naeem et al., 2021). Crude oil is employed throughout a number of sectors, including industry, transportation, and the production of goods and services. Gold plays a significant role in the development of the monetary policy that central banks establish as a store of value. One industrial usage for metals is the manufacture of automobiles, electrical conductors, and medical devices (palladium, platinum, and silver). Mensi et al. (2021) opine precious metals are considered investments that can be utilised as a buffer against economic downturns and as a safe haven during periods of substantial political and economic turmoil, in addition to serving as industrial commodities. Even if the rise and fall in the prices of these two groups of commodities may act as economic indicators, more research is still needed to determine the relationship between the price fluctuations of crude oil and precious metals. Crude oil and precious metal prices have historically moved in the same direction over protracted periods of time, which can be traced to two fronts (Mensi et al., 2021; Yıldırım et al., 2020a). Therefore, investments in other assets or hedging tools like precious metals may be prompted by the volatility in the crude oil markets. It is noted that an increase in the price of crude oil is typically accompanied by a rise in gold investment. The connections between crude oil and precious metals like gold could be explained by the common inclusion of gold in the reserve portfolios of oil-exporting nations. Some oil-importing nations make payments in gold; as a result, there is a connection between crude oil and gold through import routes (Bhatia et al., 2018).

Volatility forecasting uses Shah et al., 2021a, Shah et al., 2021b the time-domain Diebold and Yilmaz-2 and frequency-domain Baruník and Křehlík-18 to understand the dynamics of relationships across crude oil, precious metals, and exchange rate Shah et al., 2021a, Shah et al., 2021b. Mahajan et al. (2022) have studied the Indian stock market volatility and evaluated the forecasting ability of GARCH-and RNN-based LSTM models using India VIX. Another study by Kim and Won (2018c) evaluated the use of hybrid models that combine long short-term memory (LSTM) in combination with GARCH-type models for forecasting stock price volatility.

Natural resources like crude oil and precious metals are two essential macro variables for economic growth. Economic growth is impacted by oil price volatility and uncertainty, particularly in economies that depend on it. As a result, the volatility of natural resource commodity prices drives up production costs and lowers output, endangering economic growth (Dogan et al., 2021; Duc Huynh et al., 2020; Guan et al., 2021b; Kumar et al., 2022). Globalisation in this context improves access to several affordable markets, which enhances economies of scale and lowers price variations. Market barriers are also removed, which also promotes competitive commerce and stabilises market pricing. Globalisation and natural resources, however, operate in quite different ways (Jhunjunwala and Suresh, 2020; H. Liu et al., 2022a; Mahajan et al., 2022). Guan et al., 2021a, Guan et al., 2021b, Guan et al., 2021c opine that natural resources like oil and gas are crucial inputs for physical, capital, and services sectors and impact the volume of international trade as well as the economic and geo-political ties between suppliers of natural resources and recipient nations. Oil and natural resource prices are the stabilising aid in putting the economy on a course for long-term expansion.

Geo-political risks are rising because of numerous geo-political occurrences, including terrorism, local/regional instability, political unrest, energy crises, political violence, territorial conflicts, and other geo-political events worldwide. These dangers have an impact on the global economy in addition to directly

affecting human lives. Currently, oil-exporting nations are also reacting to these shocks (Dogan et al., 2021). The question of whether geo-political unpredictability affects asset market valuations has been explored in a growing corpus of quality academic research on macroeconomics, especially concentrating on financial markets. To further carry out these estimations, the Geopolitical Risk Index has been developed by Caldara and Iacoviell (2022) and is a statistical measure that is largely representative of geo-political risk on a worldwide basis. Entrepreneurs, industry participants, and central bank officials view geo-political concerns as significant influences on investment decisions and stock market dynamics. Caldara & Iacoviell (p. 2, 2022) maintain-

... [geo-political risk as the threat, realization, and escalation of adverse events associated with wars, terrorism, and any tensions among states and political actors that affect the peaceful course of international relations] ...

According to various economic models (Intertemporal Capital Asset Pricing Model (ICAPM) (C.-W. Su et al., 2020), economic policy uncertainty (Adedoyin et al., 2022), unprecedented geo-political developments and threats can have an effect on macroeconomic variables in a variety of ways, including increased military spending, capital stock damage, human life loss, or increased precautionary behaviour (Caldara and Iacoviell, 2022; Sohag et al., 2022). Additionally, due to higher production costs and substitution effects during the current global crises, the financialisation of commodities may have an impact on the price of other commodities, ultimately increasing volatility and causing aggressive volatility spillovers.

The spillover effects may have an impact on commodity portfolios, hedging techniques, prospective divarication opportunities, and pricing of derivatives, thereby triggering price instability and food threat. This represents an alarming situation for policymakers due to the increased level of inflation, consumption expenditure, and economic activity. Therefore, it becomes pertinent to comprehend the cascading nature of risk spillovers in commodity markets by investors and policymakers during the unprecedented events of war and pandemics. However, despite the current conflict in Ukraine and the heightened geo-political tensions between Russia and western countries, the scholarly literature lacks evidence of the dynamics of the interconnection of individual commodities belonging to distinct groups (Naeem et al., 2021; Wang et al., 2022). The literature falls short of studies on the impact of global factors on the transmission link between oil and commodity markets, despite a wealth of research on the impact of global factors on commodities and other financial markets in distinct settings. This study intends to analyse the spillover connection due to financialisation among commodities in order to address this gap. The study also aims to investigate how global geo-political issues affect uncertainty spillovers into the oil and commodity markets. Poncela et al. (2014) investigate how uncertainty affects the short-term co-movements of pricing for non-energy commodities and identifies the increased raw material spillovers. Subsequently, Prokopczuk et al. (2019) report a bidirectional link between commodity market volatility and economic and financial uncertainty during the recession.

Thus, a large body of literature has developed and investigated the multidimensional effects of natural resource price volatility on various economic variables. However, the current literature has viewed volatility as an exogenous variation and used the volatility in natural resource prices to assess the influence on economic growth, the environment, and other important variables (Guan et al., 2021c; Hansen and Gross, 2018; H. Liu et al., 2022b). Price volatility for natural resources and economic performance nexus has established new standards for academics and decision-makers. Natural resource volatility could have a negative effect on a nation's or region's economic performance. Wen et al. (2022) identified the connection between the BRICS countries' economic performance and the volatility of natural resource prices and analysed the excessive natural resource fluctuation would have a negative effect on the economic growth of a nation. W. Liu and Chen (2022) assess the performance of the economy and the volatility of natural resource commodity prices and report the detrimental impact of price volatility on economic performance,

which can be explained by an irreversible investment theory of price volatility in natural resource commodities. Ma et al. (2021) have studied the causal linkage between natural resource prices and economic performance for China during the pre- and post-Covid-19 period. The findings suggest a bidirectional association between commodity prices and economic growth. Hu et al. (2020) analysed copper market volatility due to heavy industrial use and found the employment of the LSTM approach stands better than the BLSTM approach in predictive modelling of the volatility of copper prices. Few studies have used volatility as a key proxy indicator for market risk and to gauge the risk associated with the commodity market (García and Kristjanpoller, 2019; Kristjanpoller et al., 2014; Kristjanpoller and Minutolo, 2015, 2016). Despite having extant literature, volatility prediction is still a problem that has to be resolved, and therefore, this article intends to use a hybrid volatility prediction model to address the problem by combining the LSTM-GJR-GARCH with hyper-parameter tuning.

It is of prime importance to understand the price of natural resources for macroeconomic growth, and crude oil remains an important variable in the supply chain; hence, the rapid and extreme volatility in crude oil prices frequently results in shocks to the productive capacity and further economic swings (Zhang et al., 2019). The resulting shifts in purchasing power caused economic instability in both oil-exporting and -importing nations. Furthermore, crude oil is a strange commodity with clear political and financial characteristics, and several non-fundamental elements (including speculation, geopolitics, and the US dollar exchange rate) also affect the movement of crude oil prices. Therefore, understanding and predicting the volatility of crude oil and other natural resources (due to their heavy industrial use) in the market is both important and difficult (Dogan et al., 2021; Duc Huynh et al., 2020; Guan et al., 2021c).

However, by examining the effect of geo-political tensions on the volatility of natural resource prices using the Geopolitical Risk Index Daily and examining the causality between connectedness of crude oil, natural gas, copper, silver, and gold (in US dollars) as variables for a time period spanning from January 2012 to July 2022, the authors of this article aim to close the theoretical and empirical gap. To anticipate price volatility for natural resources, our study makes a contribution by combining hyperparameter adjustment with a hybrid model of the GJR-GARCH (1,1) with an LSTM network. The theoretical addition to the article offers a strategic diagram of the conceptual structure and inductive analysis of the theme, "Geo-political tensions and natural resources."

The remainder of the article is divided into the following sections. The strategic diagram and inductive analysis are covered in Section 2. Section 3 describes the approach and discusses LSTM-GJR-GARCH with hyper-parameter tuning and GJR-GARCH volatility, whereas Section 4 is concerned with the findings and conclusions. Conclusion, policy repercussions, and future research priorities are covered in Section 5.

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## Section snippets

### Review of literature

This section presents the results and findings of the insightful and manual analysis of the selected research articles....

### Data

The data for the analysis consists of daily closing prices of crude oil, natural gas, copper, silver, and gold (in US dollars) from January 2012 to July 2022, consisting of 2733 observations. The time-period selected (i.e., 2012) depends on the availability of synchronised data for all the variables, as before 2012, there was

inconsistency in daily closing values for copper and silver. Crude oil has dominated the energy market for the past century (Wu and Chen, 2019) and commands a share of...

## Results and discussion

In this section, we present the results of exploratory data analysis, diagnostics tests, GJR-GARCH volatility, and LSTM-GJR-GARCH with hyper-parameter tuning results....

## Policy implications and future research agenda

Policymakers shall attempt to closely examine the impact of financialisation and geo-political tensions on the interconnectedness of the commodity markets, wherein an increase in systemic risk may jeopardise the stability of financial markets and other economic sectors.

Policies should target reducing the negative effects of oil price volatility. This might be accomplished by encouraging the use of clean energy instead of fossil fuels (Salisu et al., 2021). It has been discovered that white...

## Conclusion

This study incorporates a strategic diagram and an inductive analysis, which helps us to update the theoretical framework of the geo-political conflicts and natural resource subject under discussion. The variables, including the Geopolitical Risk Index, crude oil, natural gas, copper, silver, and gold (in US dollars) from January 2012 to July 2022, were subjected to exploratory data analysis, diagnostic tests, GJR-GARCH volatility, and LSTM-GJR-GARCH with hyper-parameter tuning. Many earlier...

## Ethics approval and consent to participate

Not applicable....

## Consent to publish

Not applicable....

## Availability of data and materials

The datasets used during the current study are available from the corresponding or first author on reasonable request....

## Conflicts of interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper....

## Authorship statement

All persons who meet authorship criteria are listed as authors, and all authors certify that they have participated sufficiently in the work to take public responsibility for the content, including participation in the concept, design, analysis, writing, or revision of the manuscript. Furthermore, each author certifies that

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### Authorship Contribution

Amar Rao: Data collection, Result and Analysis, Discussion.

Mrinalini Srivastava: Introduction, Conclusion.

Jaya Singh Parhiar: Introduction, Conclusion.

Shubham Chavriya: Review of Literature and Conclusion.

Surender Singh: Overall supervision, concept and policy implications....

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### Declaration of competing interest

None....

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#### [Geopolitical risks and the oil-stock nexus over 1899–2016](#)

Finance Res. Lett. (2017)

N. Antonakakis *et al.*

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R. Bedoui *et al.*

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# Financial inclusion as a tool for sustainable macroeconomic growth: An integrative analysis

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## Abstract

Despite extensive research on the relationship between financial inclusion and macroeconomic growth, little is known about the role of financial inclusion as a significant driver of macroeconomic growth in developing countries. Financial inclusion could boost sustainable macroeconomic growth, which has been a key policy goal for governments worldwide because it affects employment, population, inequality, and poverty. This study explores the influence of crucial financial inclusion indicators on developing countries' macroeconomic growth. The study shows that digital finance, financial technologies, financial outreach, financial literacy, demographics access to finance, microfinance and financial stability are the ways through which financial inclusion affects macroeconomic growth. We used the Scopus database to get information from 419 research articles and analyzed those to figure out how financial inclusion affected macroeconomic growth from 2006 to 2020. The study will help policymakers, governments, and marketers develop policies to involve everyone in the financial system, which results in macroeconomic growth.

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**INFERENCE OF REFORM, PERFORM AND TRANSFORM IN INDIAN BANKING AND FINANCIAL INSTITUTIONS: PROFITABILITY ANALYSIS**

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**ABSTRACT**

*India is a huge market of Banking and Financial Institutions. Whether it is any public bank or any private bank or institution, all of them are providing growth opportunities for the nation's growth. Banking and Financial Institutions are helping Indian economy through accepting deposits from those customers who have money or providing investment opportunities to their customers like Fixed Deposit (FD), Recurring Deposit (RD) etc. and providing various financial services to those who need finance like- education loan, home loan, microfinance etc. Banking and Financial Institutions consist of a major part of the economy, as they circulate money in the market which helps the economy in its working. Our study is based on the funds raised through equity and investments made by the Indian Banking and Financial Institutions and how they are contributing to the profitability and growth of the firm. The proposed paper is based on the impact of total investments and equity share capital on the profitability of the firm, for which we took total investments and equity share capital of the firms as independent variables and net profit as dependent variables of the study. Timely reforms in Banking and Financial Institution and in the whole sector has affected the economic structure of India in a positive manner, as reform is necessary to upgrade their working system to get fruitful results and that makes them globally competitive. Transformation is essential for any organization to survive in the market with high value of shares and profits like Indian Banking and Financial Institutions provide services through mobile applications, e-banking, etc which gives their customers hassle free services and ultimately satisfaction. Furthermore, financial performance is always a matter of concern for the Indian Banking and Financial Institutions, as they have to utilize their funds where they get fruitful results and thus increase in the net profits every year. For the purpose of the study, we collected secondary data of top Indian Banking and Financial Institutions like- MUTHOOT FINANCE, LIC HOUSING FINANCE, ICICI BANK, HDFC BANK, SHRIRAM CITY UNION FINANCE, KOTAK MAHINDRA BANK, etc. of the year 2014-2020 from different online websites like- Money Control, Economic times. ANOVA and Multiple Regression Analysis were used, in order to test the hypothesis and to achieve the objectives of the study.*

*Keywords: Net Profit, Total Investment, Equity Shareholding, Reform, Perform and Transform in Indian Banking and Financial Institutions.*

---

**INTRODUCTION**

Finance is the essence of every business and household to work in day-to-day life, as it drives economic activities. Without finance, one cannot imagine working in an economy. Indian Banking and Financial Institutions accept deposits of their customers and help in formation of capital in the economy as they lend money to the section at need or borrowers at a pre-decided rate of interest. Through advancement of technology and innovations in the services provided, Indian Banking and Financial Institutions have transformed and as a result, they are able to attract more customers towards them.

Not very long ago, people used to avoid taking banking services, as they didn't used to feel it safe and secure. But Indian Banking and Financial institutions have removed this rigidity through various advertisement camps and made people trust upon their safe and secure working that now a customer knows that these Banking and Financial services are beneficial for them and for the country at large. Loan was considered as bad earlier, as it increases the liability of the loan holder to pay in future but institutions like LIC housing finance, HDFC, ICICI etc. are doing well on these loan services provided by them, as customers are now more aware then they were earlier, now they don't hesitate in raising loan from the Banks or financial institutions when their need arises.

Profit plays a major role in any business organization, as it's the basic motive of these organizations which helps them in long- term survival. So, in our proposed study we analyzed profitability of Indian Banking and Financial Institutions and factors which affect their profitability like- total investment and equity share capital.

In this competition driven world, even banks give a tough competition to each other. In order to earn more profits, they try to give more benefits to their customers and prospective customers through various technology innovations and advancement of services which lead to growth in the performance of Indian Banking and Financial Institutions. Customers deposit their money only in those banks that are safe and keep their money

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## *Analysing the Indian Banking System: A Case Study of Rewa District in Madhya Pradesh*

**Kiran Gupta**

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### **Abstract**

*Indian banking is the lifeline of the nation and its people. Banking has helped in developing the vital sectors of the economy and usher in a new dawn of progress on the Indian horizon. The sector has translated the hopes and aspirations of millions of people into reality. But to do so, it has to control miles and miles of difficult terrain, suffer the indignities of foreign rule and the pangs of partition. Today, Indian banks can confidently compete with modern banks of the world. To survive and thrive in a globally competitive marketplace, organizations must adopt a broad strategy that gives them a sustainable competitive advantage. Total quality relates to strategic management. It enhances organizations ability to gain a sustainable competitive advantage in the market place because the total quality approach is the best way to continually improve efficiency and cut costs. Total quality can also improve an organization's chances of becoming a leader in a given market niche. The present study attempts to find the integration between strategic human resources management (SHRM) and implementation of total quality management (TQM) in the banking sector of Rewa District. The TQM is a crucial strategy that banks obliged to do in order to be more effective in providing best services for their clients. TQM is an overall organization strategy formulated at the top level and then diffused throughout the entire organization. It is primarily an organizational strategy that works as a change program towards excellence.*

**Keywords:** TQM, Indian Banking Sector, HRM.

### **Introduction**

Bank plays an important role in the economic development of a country. The banking industry in India is facing certain challenges i.e., challenges of quality service, customer satisfaction, customer retention and customer loyalty. Successful banking in future will depend on people or human resources. As the competition intensifies the need for banking institutions to attract and retain the best skills and talents will become more urgent. Management of people includes whole activities associated with the acquisition, development and retention of skilled workforce in highly dynamic working environment. Now these days Indian banking sector is facing various HR related problems, as identified in various researches (Kamath 2003; Bharati 2007). Thus, HRM is a comprehensive people-oriented, individual-oriented, development-oriented, continuous future-oriented inter-disciplinary and challenging function of management. The quality of human resources can be ensured only through effective human resource management.

Service organizations like banks produce a product that is intangible. Usually, the complete product cannot be seen or touched, rather it is experienced. The intangible nature of the product makes defining quality difficult. Also, since a service is experienced, perceptions can be highly subjective. In addition to tangible factors, quality of services is often defined by perceptual factors. These include responsiveness to customer needs, courtesy and friendliness of staff, promptness in resolving complaints, and atmosphere. Other definitions of quality in services include time-the amount of time a customer has to wait for the service; and consistency-the degree to which the service is the same each time.

Banks in Indian sector have adapted total quality management to enhance the value of their banks, financially and socially and increase return on equity in order to become more competitive in domestic and regional banking markets, the banks also provide innovated

# Reconstructing History : A Study of Carlos Fuentes's *Terra Nostra* and *The Campaign*

Smita Banerjee

## Abstract

This paper analyzes two novels written by the Mexican writer Carlos Fuentes, *Terra Nostra* (1976), and *The Campaign* (1990) as significant fictional texts that reconstruct the Latin American colonial encounters and the wars of independence to represent a counter-narrative that can reclaim the cultural identity of the continent. This literary enterprise is crucial to foreground the attempts at a critical assessment of the past to understand issues of cultural identities that could work towards decolonizing the continent's cultural identity in postcolonial times, as is evident through Fuentes's views and his literary engagements.

**Keywords:** Archival-fiction; Colonialism; Counter-Narrative; Hegemony; History; Latin America; Postcolonial.

## Introduction

"The history of Latin America is a history to be lived" (Fuentes, *Myself with Others*).

"The eighteenth-century offered us a linear conception of time...We were told to forget the circular and mythical time of our origin in favor of a progressive, irreversible time, destined to an infinitely perfectible future... this dream proved to be vain...progressive linearity offered too many exceptions for us to put our whole-hearted faith in it, the critique of linear time became positively a way of recovering other times, including our own Latin American time, the recovery times of Latin American culture: times in which the present contains past and future because the present is the place both of memory and desire" (ibid 75-76).

The two quotations cited above are from Mexican author Carlos Fuentes's





# Wisdom Speaks

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# 'Reading Women Performers' Lives: Gauhar Jaan And Jaddanbai In A Spirit Of Reinvention Of Their Images And Personas

Dr. Smita Banerjee and Neeru Ailawadi

## Abstract

This article examines the life stories of two women performers Gauhar Jaan and Jaddanbai, who belonged to the tawaif tradition of North India. Their difficult life circumstances and careers as working women were mapped out in the early part of the last century as they navigated the world of music performance and early film industry. We read their life stories as instances of spirited reinventions of their images and personas that enabled them to create selves that can be read as narratives of resistances undertaken by women against patriarchy and circumscribed social conditions.

**Keywords:** Courtesan, patriarchy, performance, resistance, tawaif, women.

## Introduction

The lives and contributions of tawaifs have attracted a lot of scholarly attention in the recent past, both from historical and cultural studies perspectives. Scholars such as Veena Oldenberg (1990), Lata Singh (2010), and Shweta Sachdeva Jha (2009; 2015) have written persuasively on the tradition and culture of women performers belonging to the tawaif lineages of North India. Their path breaking work is significant for an understanding of the multiple traces of resistances that can be mapped onto this performative tradition by reading the archive against the grain. Historically, the decline of the tawaif tradition and lack of patronage coincided with the coming of the British rule. The nationalistic ideology also marginalized this tradition to bolster its politics. It was the arrival of new technology of radio, music and film industry that led to a reinvention of the musical and performing tradition associated with the tawaif. With this, some of them were able to acquire a celebrity status and constructed their personas to straddle this world of possibilities.

In this paper, we seek to recover traces of the tawaifs histories via the life stories of two exceptional women performers, Gauhar Jaan (1873-1930) and Jaddanbai (1892 -1949). We focus on their constructions of selves, their efforts to seek independence, their economic and business acumen and the ability to reinvent themselves according to the changing times. The retelling here is informed by a revisionist frame as we read their lives with our understanding of women's histories from our contemporary insights. We draw on the works of feminist scholars who have mapped the trajectories of these performers and their contributions as well as oral and anecdotal sources to foreground the life stories of these two women. Belonging to the tawaif tradition, these two women created their texts in the fields of music and film industry. Predicated along the axis of radio, music concerts, acting, singing, film production, the story of Gauhar Jaan and Jaddan Bai can be read as narratives of women's lives that attempted and actualized creative reinventions of selves and personas.



# Om Puri in/and 1980s Hindi cinema: narrating the 'nation' and the 'subaltern protagonist'

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## ABSTRACT

This article focuses on analysing the 1980s Hindi cinema through Om Puri's (1950–2017) text. Much awarded, feted and internationally known for acting in Hollywood and British productions, Puri's text needs to be mapped critically. If Bachchan's star text has acquired a metonymic status typifying the 1970s, then the 1980s can be termed as the Om Puri decade as his cinematic text navigated across New Wave films housing the politics and praxis of the 'subaltern peasant body', inhabiting the disenchantment of the times in films such as *Aarohan*, *Ardh Satya*, *Aakrosh*, *Susman*, *Mirch Masala*, etc. This article analyses *Aakrosh* (1980) and *Aarohan* (1982) and his biography, *Unlikely Hero* (2009), and attempts to uncover the nodes of Puri's actor/star text as a crucial site for excavating the much-neglected history of the subaltern male actor/subaltern-citizen in the New Wave Hindi cinema of the 1980s. The critical questions for the article are: Can one move away from the towering Bachchan phenomena and chart out a different trajectory of the male actor for the Hindi film hero/protagonist? How can one locate the emergence of this male actor with a different idiom of masculinity that typifies the 1980s Hindi cinema, borrowing Peberdy's argument on masculine performative angst in American films of the 1990s? Can Puri's text that navigated the parallel and the popular be used to map the emergence of another node of the actor/star such as Nawazuddin Siddiqui for the contemporary Hindi cinema?

## KEYWORDS

Om Puri; New Wave film; subaltern-citizen; masculinity

## Introduction: Om Puri and his biography

Scene 1. A man wearing a torn brown half waistcoat, a short dhoti around his waist, a thick rope wound round his neck knotted on his chest and binding his wrists being led from a prison van into the court building. As he is herded by the two constables holding the rope, the camera pans to frame a poorly dressed old man in tattered vest and short dhoti leaning on his walking staff and a young woman with a crying infant looking at the prisoner. There is no exchange of words, all three are silent, and slowly the prisoner gazes at the old man, the young woman and the child, averts his eyes and is startled by the court bailiff calling out a name Lahanya Bhiku and number. We see him walking into the courtroom, standing in the witness box, the rope still around his neck and body as the court clerk makes him take oath and he remains silent. He says nothing, and as the proceedings begin with the judge, state prosecutor and the defence lawyer affirming their presence.

Scene 2. In another scene from a different film, we see another court room where the same actor appears with crutches sitting alone next to a well-dressed confident looking man in a pristine white kurta, and we are informed that the lawyer for the man with crutches is in jail as a preventive



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# Editorial: Variation in plant strategies with levels of forest disturbance

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## KEYWORDS

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## Editorial on the Research Topic

### Variation in plant strategies with levels of forest disturbance

The forest ecosystems across the globe are experiencing direct and indirect effects of climate change and anthropogenic disturbances, leading to a marked transformation in their structure and function (Hansen et al., 2020). Due to these two factors, tropical dry forests (TDFs), providing ~40% of global tropical forest cover, and accounting for a major share of primary productivity and carbon sequestration, are progressing toward permanent loss (Bonan, 2008; Allen et al., 2017). Disturbance events and plant responses ultimately shape the community structure and composition of a region and regulate its functional diversity (Allen et al., 2017; De Long et al., 2023). Subsequently, the variations in plant community functional diversity in response to disturbances modulate ecosystem functioning through biomass accumulation and litter decomposition, and help in sustaining the ecosystem via positive plant-soil feedback mechanisms (Chen et al., 2018; De Long et al., 2023). Nowadays, the conservation of forests via understanding their functional traits and adaptation strategies to different levels of disturbance events, has been given top priority for attaining the Sustainable Development Goals (SDGs) (Amigo, 2020; Hansen et al., 2020; Chaturvedi et al., 2021). In this Research Topic, emphasis has been given to the systematic understanding of the relationship between environmental change, anthropogenic disturbances, vegetation structure, plant community composition, and ecosystem functioning, with particular reference to TDFs. The major themes covered in this topic include (i) assessment of the impact of natural and anthropogenic disturbances on plant community functional diversity, (ii) the role of plant community functional diversity and functional traits in the prediction of the resilience of vegetation to disturbance, (iii) the significance of disturbance ecology for development of theory about the functional role of plant morphological and physiological traits, and (iv) interactions amongst plant functional diversity, productivity, and disturbances in relation to global climate change. The Research Topic consists of seven articles contributed by 23 authors belonging to five countries viz., Bangladesh, China, Ethiopia, India, and Kenya. These articles highlight several aspects of variation in plant strategies in response to disturbance events occurring in different forest ecosystems.

The first theme of this Research Topic provides insight into plant functional diversity and responses with respect to different disturbance levels. It is evident that the overexploitation of forest resources, accompanied by harsh environmental conditions, may result in



## Wood production potential of traditional agroforestry in some districts of eastern Chhattisgarh: A case study

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**ABSTRACT:** Agroforestry can boost wood production function and environmental quality while also acting as a climate change indicator. The paper deals, the wood production potential of trees occurring in agroforestry practices of the Chhattisgarh plain zone, India. We determined the species structure and the wood production by laying out 60 sample plots of 0.41 ha size in three districts, Bilaspur, Janjgir-Champa, and Mungeli of Chhattisgarh State. Total 17 tree species encountered on crop fields in a mixed and unsystematic pattern in Bilaspur, ten species in Janjgir-Champa, and four species in Mungeli districts. The most abundant trees species across districts was *Butea monosperma* (Lam) (27.19%), followed by *Acacia nilotica* (L.) (18.20%), *Terminalia arjuna* (Roxb.) (15.51%), and *Albizia procera* (L.) (8.33%). The mean wood production was maximum (13.37t ha<sup>-1</sup>) in Bilaspur and minimum (6.54t ha<sup>-1</sup>) in Janjgir-Champa. The potential wood production in agroforestry trees was estimated at 3.09 million tons for the total agriculture areas of Bilaspur district and 1.7 million tons for Janjgir-Champa district, if all the farmers maintain the level of the current trees in their farms. Based on the current wood stocks in agroforestry of studied sites, other farmers may be attracted through the market and industrial support which would improve the wood production function of AF and mitigation of the climate change.

### Research Article

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### 1. INTRODUCTION

India imports 18.01 million M<sup>3</sup> year<sup>-1</sup> wood worth US \$6701 million, increasing at the rate of 0.9 million M<sup>3</sup> year<sup>-1</sup> and projected to be 31.5 million M<sup>3</sup> year<sup>-1</sup> up to 2030 (Chavan *et al.*, 2015; Srivastava and Saxena, 2017). The WWF and Planning Commission of India have already warned about the scarcity of wood in India due to poor supply from domestic and international sources (Manoharan, 2011). India is estimated to have between 14,224 million (Ravindranath and Hall 1995) and 24,602 million (Prasad *et al.*, 2000) trees outside forests (TOF), which covers about 17 million ha area (GOI, 1999), supplying 49% of the 201 million tonnes of fuelwood and 48% of the 64 million M<sup>3</sup> of timber consumed annually by the country (Rai and Chakrabarti, 2001). For decades the wood production potential is restricted to 0.7 M<sup>3</sup> ha<sup>-1</sup> year<sup>-1</sup> in the country compared to the world average of 2.1 M<sup>3</sup> ha<sup>-1</sup> year<sup>-1</sup> (ICFRE, 2010; FSI, 2011). Although the increment in growing stock of trees outside the forest was merely 25

million M<sup>3</sup> in 2015 than forest assessment report 2011 (FSI, 2015), the TOF productivity of 3.06 M<sup>3</sup> ha<sup>-1</sup> year<sup>-1</sup> was incomparable to the productivity of natural forest (ITTO, 2004; Handa *et al.*, 2016; Agrawal and Saxena, 2017). However, TOF contributes higher wood supply than natural forests, but we are less concerned towards agroforestry compared natural forests.

The wood production capacity of countries agroforestry was estimated 42.31 million M<sup>3</sup> from 13.75 million ha of agroforestry area of (Rizvi *et al.*, 2014). This value is higher than the wood produced from natural forests (Srivastava and Agrawal, 2017). The ever-increasing demand of the timber sector cannot fulfill from the natural forests and hence need to promote agroforestry across the country. This system has immense potential for food security and wood security and has been serving the demand of wood-based industries and the energy requirements of rural India (Jain, 2016). The country launched the National Agroforestry Policy 2014 for simplifying the farmers' issues on tree farming, such as legal restrictions on felling and transport, market price, and industrial support. However, the results need to reflect on the ground. By taking initiatives recently, Tamil Nadu Agricultural University has developed a consortium by involving scientists, farmers, industrialists, nursery person and NGOs in a value-based chain for complete solution of the issues and problems of all stakeholders related to supply of quality

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