

Volume 4 • Issue 1
June 2026



ift.iift.ac.in

IIFT

International Business and Management Review Journal

IIFT International Business and Management Review Journal is published biannually in June and December by International Indian Institute of Foreign Trade, Delhi.

IIFT International Business and Management Review Journal is hosted on our web-based online submission and peer review system. Please read the manuscript submission guidelines on the journal website, and then visit <https://peerreview.sagepub.com/jim> to login and submit your article online. Manuscripts should be prepared in accordance with the 7th edition of the *Publication Manual of the American Psychological Association*.

Copyright © 2026 International Indian Institute of Foreign Trade, Delhi. All rights reserved. The views expressed in the articles and other material published in *IIFT International Business and Management Review Journal* do not reflect the opinions of the Institute.

Annual Subscription: Individual rate (print only) ₹1,580; institutional rate (print only) ₹2,760. For orders from Pakistan, Bangladesh, Sri Lanka and Maldives, SAARC rates apply: individuals \$35; institutional rate \$50. Prices include postage. Print subscriptions are available for institutions at a discounted rate. For subscriptions, please write to: customerservicejournals@sagepub.in

Change of Address: Four weeks' advance notice must be given when notifying change of address. Please send the old address label to ensure proper identification. Please specify the name of the journal and send change of address notification to customerservicejournals@sagepub.in

Printed and published by Dr Pramod Kumar Gupta, publisher of the IIFT International Business and Management Review Journal, on behalf of International Indian Institute of Foreign Trade (IIFT), B-21, Qutab Institutional Area, New Delhi 110016, India. Printed at Sai Printo Pack Pvt Ltd, A 102/4 Phase II, Okhla Industrial Area, New Delhi, Delhi 110020.

Editor-in-Chief: Dr Sheeba Kapil

About the Journal

IIFT International Business and Management Review is a biannual peer-reviewed journal from the Indian Institute of Foreign Trade. The Indian Institute of Foreign Trade (IIFT), a Deemed to be University, was set up in 1963 by the Ministry of Commerce & Industry, Government of India, as an Institution with a focus on imparting knowledge through research and training in international business and trade. It has ranked among the top 10 business schools in the country for the past two decades and earned AACSB Accreditation.

IIFT International Business and Management Review tends to highlight the significance of emerging issues on the national and international front, addressing challenges and reflecting opportunities relating to International business and management. The interdependence among businesses in a liberalized world increases the intricacies of business practices and makes way for a wide range of business research problems. This journal will cater to all those research questions that are arising in the new challenging business world intersected with cross-border issues. The COVID-19 pandemic has completely changed the dynamics of international markets and how they function. This brings a turnaround in theories, models and phenomena which are obsolete and not applicable to the world hit by a pandemic. Therefore, it makes more sense now to introduce the International Business and Management Review Journal, as it will be addressing all the contemporary issues in International Business. It is an open-access journal under a Creative Commons License (CC-BY-NC).



Aims and Scope

The journal aims at bringing together managerial issues, practices and innovations which are useful to scholars, educators, managers, consumers, other societal stakeholders and policy makers around the world. It aims to play a significant role in shaping the content and boundaries of the management discipline while simultaneously covering the international scope of businesses. With the aim of impacting the management education and industry practices, *IIFT International Business and Management Review* (IBMR) publishes innovative empirical and conceptual articles with advanced knowledge of management and international business, and provides the readers with a broad-spectrum of high-quality papers on evolving trends, insights and philosophies in management. All articles appearing in the journal will be peer reviewed to ensure academic rigour and practical relevance and will publish studies from all geographical regions. Discussion of newer forms of cross-border business activity, such as strategic alliances and global sourcing, is also encouraged. IBMR also aims to advance the exploration of issues that include the implications of customer orientation in multinational business, cross-cultural market segmentation and market research.

The journal welcomes submissions pertaining to various multidisciplinary studies such as:

- Accounting and Finance
- International Business & Strategic Management
- Marketing & Sales
- Corporate Governance, Business Ethics and Law
- Human Resource Management & Organizational Behaviour
- Managerial Economics
- Entrepreneurship & Business Ventures
- Operations Management & Supply Chain
- Management Information Systems

Editor-in-Chief

Sheeba Kapil, *Professor and Head of Division (Finance), Indian Institute of Foreign Trade, Delhi Campus, New Delhi, India*

Editorial Board

Dunusinghe G. Dharmarathna, *Head, Department of Accountancy & Finance, Sabaragamuwa University of Sri Lanka, Sri Lanka*

S. V. D. Nageswara Rao, *Professor, Shailesh J. Mehta School of Management, Indian Institute of Technology (IIT) Bombay, India*

Sukhomay Pal, *Professor, School of Business, IIT Guwahati, India*

Rajshree Bedamatta, *Professor, School of Business, IIT Guwahati, India*

Sanjay Sehgal, *Professor, Financial Studies, University of Delhi, India*

Surya Prakash Singh, *Professor, Department of Management Studies, IIT Delhi, India*

Arpan Kumar Kar, *Chair Professor, Department of Management Studies, IIT Delhi, India*

Seema Sharma, *Professor & Head, Department of Management Studies, IIT Delhi, India*

Pawan Kumar Singh, *Director, IIM Tiruchirappalli, Tamil Nadu, India*

Sangeeta Sahney, *Professor, Vinod Gupta School of Management, IIT Kharagpur, India*

Darko Vukovic, *HOD, RUDN University, Russia*

M. P. P. Dharmadasa, *Professor, Marketing, University of Colombo, Sri Lanka*

Ruth Banomyong, *Dean, Thammasat University, Bangkok, Thailand*

Jones Mathew, *Professor, Marketing, Great Lakes Institute of Management, Gurgaon, India*

Pritam Ranjan, *Professor, IIM Indore, Indore, India*

Etsuaki Yoshida, *Professor, Doshisha Business School, Kyoto, Japan*

Vishnu Tunuguntla, *Professor, Goa Institute of Management, Goa, India*

Contents

Editorial	7
------------------	----------

Articles

A Multilevel Model of Frontline Employee Performance and Customer Outcomes in the Hospitality Industry <i>S.M.R.K. Illangarathne and Chathuni Jayasinghe</i>	9
Assessing the Impact of Government Export Promotion Programmes on Firm-level Export Performance: Evidence from India's Apparel Sector <i>Rashmi M. Arora</i>	29
From Social Media to Civic Life: Examining How Civic Attitudes and Behaviours Mediate Engagement Among Working Women <i>Krishna Murari and Shalini Shukla</i>	54
Recency Frequency Monetary Analysis for Segmenting Milk Suppliers of a Dairy Organisation <i>Subir Mitra</i>	77
Impact of Modern Agricultural Practices on the Environment <i>Zeenat Fatima and Arifa Khan</i>	87

Visit <https://ift.iift.ac.in/>

Reimagining International Business and Management Research in an Era of Global Disruption

IIFT International Business and
Management Review Journal
2026, 4(1) 7–8
© The Author(s) 2026
DOI: 10.1177/jiift.261454537
ift.spectrumjps.com



Geopolitical fragmentation, AI-driven transformation, climate uncertainty, technological acceleration, supply chain realignments, shifting trade policies, and changing societal expectations are driving unprecedented disruptions that are transforming the global business landscape. The traditional notions of globalization, efficiency, competitiveness and managerial stability are being challenged. The role of the management scholarship and business education institutions in this context is now more crucial than ever. International Business and Management Review Journal is published by IIFT. IIFT publishes the International Business and Management Review Journal. Under the umbrella of the Indian Institute of Foreign Trade, it aims to meaningfully participate in this ongoing conversation by commissioning policy-relevant, rigorous, interdisciplinary, and contemporary research on the challenges of international business in a turbulent world. The journal's vision is aligned with the increasing demand for intellectual frameworks that can explain and help organizations navigate the rapid changes of the world and become more resilient, sustainable, and responsible. Structural changes in global markets have been hastened by the post-pandemic era. Today, strategic decoupling, geopolitical instability, digital sovereignty, cyber risks and climate threats are shaping the business world, complementing economic globalization. In addition to economic globalization, strategic decoupling, geopolitical uncertainty, digital sovereignty, cyber vulnerabilities and climate risks are defining the business world today. AI, digitization and sustainability are no longer side issues but key factors in achieving competitive edge and survival for organizations, recent studies highlight. AI, especially, has come into the world as a game-changing possibility and a strategic disruptor.

The business models, labour markets, governance systems, and consumer behaviours are being reshaped by AI-driven automation, predictive analytics, generative intelligence, and platform ecosystems. But, while the efficiencies are being realized, so are the concerns about ethics, accountability, inequality, algorithmic governance and data sovereignty. AI is increasingly being seen today not only as a technological advancement but as a geopolitical and economic player shaping global power dynamics and industrial competitiveness. At the same time, sustainability has evolved from a voluntary corporate effort to a



Creative Commons Non Commercial CC BY-NC: This article is distributed under the terms of the Creative Commons Attribution-NonCommercial 4.0 License (<http://www.creativecommons.org/licenses/by-nc/4.0/>) which permits non-Commercial use, reproduction and distribution of the work without further permission provided the original work is attributed.

business strategy. Climate change, ESG expectations, carbon regulations and stakeholder activism are driving companies to reimagine their operations, supply chain, financing and governance. Profitability is no longer the only measure that is used to assess an organization, they are also being judged on their ability to be resilient, inclusive, and environmentally responsible, plus their impact on society over the long-term. The new paradigm calls for businesses to make sustainability a central element of their strategy and not just a secondary function. These disruptions also present unprecedented opportunities for an economy like India. The vast scope for India to become a leader in global trade and innovation networks is offered by its increasing digital infrastructure, services exports, manufacturing ambitions, startup ecosystem, and geopolitical positioning. However, these opportunities come with issues of technological readiness, institutional capacity, skill building, and strategic policy alignment. The changing landscape of India's global trade demands research that is specific to the context, with institutions that are attuned to both the local and the global. In this fast-changing environment, business schools and scholarly journals need to transcend the traditional silo mentality. The future of management research is interdisciplinary integration, linking finance together with sustainability, trade to geopolitics, technology to ethics, and strategy to resilience. Academic research must be more relevant and yet carry on a scientific approach. Research should not only help to develop theory, but also to inform policy-making, institutional development, and corporate responsibility.

The journal is a forum for new ideas in international business and management and welcomes scholarly work that critically analyses current challenges and advances new avenues for sustainable and inclusive growth. Issues like AI governance, digital transformation, restructuring of the global value chain, sustainable finance, responsible leadership, strategies for resilience, climate economics, realignments of trade, and the future of the workforce are likely to become the next-generation management thought. This is the time of adaptation, of ethics, of intellectually courageous scholarship. The IIFT IBMR Journal is one of the journals that play an important role in bridging communication between academia, industry, policy makers and society. The journal aims to help build resilient organizations, informed policy ecosystems and sustainable futures on the planet by fostering evidence-based research on current global disruptions. The future of international business is not defined by markets or technology alone, but by the way institutions and societies collectively innovate, take responsibility and think strategically about how to deal with disruptions.

Sheeba Kapil

Editor-in-Chief

Email: sheebakapil@iift.edu

A Multilevel Model of Frontline Employee Performance and Customer Outcomes in the Hospitality Industry

IIFT International Business and
Management Review Journal
2026, 4(1) 9–28
© The Author(s) 2026
DOI: 10.1177/jiift.261437942
ift.spectrumjps.com



S.M.R.K. Illangarathne¹  and Chathuni Jayasinghe¹ 

Abstract

Frontline employees play a pivotal role in shaping customer experiences and driving organisational performance within the hospitality industry, where service encounters are highly interpersonal and emotionally demanding. Recognising this, the present study develops a comprehensive multilevel framework that explains how high-performance work systems (HPWS) influence employee performance, customer satisfaction and organisational financial outcomes. Grounded in the Ability–Motivation–Opportunity (AMO) framework, the model explicitly distinguishes between organisational-level and individual-level mechanisms through which HPWS exert their effects.

At the organisational level, HPWS are proposed to foster a positive service climate and a supportive display rules climate. These climates create shared perceptions among employees regarding service quality expectations and emotional expression norms, which subsequently influence aggregated employee service performance, overall customer satisfaction and financial performance outcomes. By shaping collective attitudes and behaviours, HPWS contribute to sustained service excellence and competitive advantage.

At the individual level, HPWS enhances employees' abilities through training and skill development, strengthens motivation via rewards and recognition, and expands opportunities by promoting autonomy and participation. These mechanisms lead to improved service performance and more effective emotional regulation during customer interactions, while also positively affecting employee well-being. By integrating individual and organisational outcomes into a single multilevel framework, this study contributes to both human resource

¹University of Kelaniya, Western Province, Sri Lanka

Corresponding author:

S.M.R.K. Illangarathne, University of Kelaniya, Kelaniya, Western Province 11600, Sri Lanka.
E-mail: raveesha111@gmail.com



Creative Commons Non Commercial CC BY-NC: This article is distributed under the terms of the Creative Commons Attribution-NonCommercial 4.0 License (<http://www.creativecommons.org/licenses/by-nc/4.0/>) which permits non-Commercial use, reproduction and distribution of the work without further permission provided the original work is attributed.

management (HRM) and service management literature. It offers a theoretically grounded model that clarifies cross-level linkages and provides a foundation for future empirical research, as well as actionable insights for hospitality practitioners seeking to optimise workforce and service outcomes.

Keywords

Customer satisfaction, employee performance, high-performance work systems, hospitality industry, service climate

Introduction

Service delivery in the hospitality industry is inherently multilevel, which involves the interplay of different organisational systems, employee behaviours and customer experiences (Liao & Chuang, 2004). Scholars have emphasised that customer satisfaction and financial outcomes are moulded not only by service encounters but also by the underlying practices of human resource management (HRM) and climates that enable them (Najam et al., 2020). Yet, studies in the hospitality industry have often remained very much fragmented, focusing either on unit-level linkages between HR systems and customer outcomes, or on micro-level processes of employee attitudes, behaviours and well-being (Hu & Oh, 2022).

At the organisational level, the framework extends the service-profit chain by exhibiting how high-performance work systems (HPWS) influence service climate and display rules climate, thereby shaping aggregated employee performance, customer satisfaction and financial outcomes. Service climate implies employees' shared perception of the organisation's practices, procedures and behaviours that are rewarded, supported and expected for delivering quality service (Mokhtaran et al., 2014). While the display rules climate refers to employees' shared understanding of the organisational norms and expectations for expressing emotions during customer interactions, like 'smile at customers', 'stay calm under pressure' (Ma et al., 2023). At the individual level, the model draws upon the Ability–Motivation–Opportunity (AMO) framework to explain how HPWS shapes employee service performance and emotional regulation, drawing consequences for employee well-being. By bridging these two layers, the model highlights how frontline employee performance aggregates upward to affect organisational outcomes, while simultaneously generating individual well-being consequences.

Theoretical Background

The Service-profit Chain (Organisational Layer)

The service-profit chain provides the core theoretical foundation for the organisational-level relationships proposed in the present model (Heskett et al., 2008). At its core, the service-profit chain posits that organisational practices, systems and internal climates shape collective employee attitudes and behaviours, which subsequently influence customer satisfaction, customer loyalty, and,

ultimately, organisational profitability, reflected in financial performance. This perspective emphasises that sustainable financial outcomes are not achieved directly, but rather emerge through a sequential process in which internal organisational conditions drive external customer responses.

Within this framework, organisational-level human resource and management practices—such as HPWS—play a central role in establishing climates that support service excellence. These climates influence shared employee perceptions regarding service priorities, behavioural expectations and performance standards. When employees collectively perceive that their organisation values service quality and supports them in delivering superior service, they are more likely to engage in consistent, customer-oriented behaviours. Importantly, the service-profit chain operates at the collective level, suggesting that it is not isolated individual actions but the aggregated patterns of behaviour across employees that shape customer experiences and organisational outcomes.

This logic is particularly salient in the hospitality industry, where service experiences are produced and consumed simultaneously during face-to-face interactions between frontline employees and guests (Dawson et al., 2023). Unlike manufacturing or technology-driven sectors, hospitality services cannot be stored, standardised or corrected after delivery. As a result, service failures are immediately visible to customers and can have an outsized impact on perceptions of quality and value. The immediacy of service encounters leaves little room for error, making consistency across employees and service episodes critically important.

In this context, the quality of customer experiences depends not only on the behaviours of individual employees, but also on the degree to which service delivery is uniform and reliable across the entire unit or organisation. Aggregated frontline behaviours create shared customer perceptions regarding the organisation's reliability, trustworthiness and brand credibility. When customers repeatedly encounter courteous, responsive and emotionally appropriate service behaviours, they develop positive evaluations of the organisation as a whole, rather than of individual employees. These evaluations form the basis for customer trust, satisfaction and perceived value.

Over time, positive customer perceptions accumulate and translate into higher levels of customer loyalty, repeat patronage and positive word-of-mouth, all of which are critical drivers of financial performance in the hospitality sector (Sirdeshmukh et al., 2002). Conversely, inconsistent service delivery can undermine customer confidence and erode brand equity, even when individual service encounters are occasionally positive. Thus, financial performance emerges as a downstream outcome of sustained service quality rather than short-term transactional success.

By emphasising these sequential linkages, the service-profit chain underscores the strategic importance of managing organisational-level practices and climates that foster customer-focused behaviours and collective service consistency. It highlights that investments in internal systems and climates are not merely operational decisions, but strategic imperatives that support long-term value creation (Hogreve et al., 2021). Accordingly, the service-profit chain offers a robust theoretical lens for understanding how organisational-level HRM practices influence customer outcomes and financial performance within the hospitality industry.

Strategic HRM and HPWS (Linking Mechanism)

HPWS serve as the strategic HRM foundation that links organisational practices to employee attitudes, behaviours and performance outcomes in a systematic and mutually reinforcing manner. Rather than functioning as isolated HR practices, HPWS are conceptualised as coherent bundles of interrelated practices designed to enhance workforce effectiveness and align employee behaviour with organisational objectives. Consistent with prior research, HPWS typically encompass selective recruitment and staffing, extensive training and development, employee empowerment, performance-based rewards and participative decision-making (Huang et al., 2016). The strategic value of HPWS lies not only in their capacity to enhance employee skill sets but also in their ability to shape shared meanings, expectations and behavioural norms across the organisation.

In service-intensive industries such as hospitality, where frontline employees act as the primary interface between the organisation and its customers, HPWS plays a particularly critical role. Hospitality service encounters are characterised by high levels of interpersonal interaction, emotional labour and real-time problem-solving, making employee behaviour a central determinant of service quality and customer satisfaction. Within this context, HPWS functions as a powerful signalling mechanism that communicates organisational priorities regarding service excellence, emotional conduct and customer orientation. Through consistent implementation, these practices convey what the organisation truly values, thereby influencing how employees interpret their roles and responsibilities.

A key outcome of HPWS implementation in hospitality organisations is the development of two interrelated organisational climates: service climate and display rules climate. Service climate reflects employees' shared perceptions of the extent to which high-quality service is emphasised, supported and rewarded by management. When HPWS prioritise training for service skills, empowers employees to resolve customer issues, and rewards service-oriented behaviours, employees collectively perceive that service excellence is a core organisational priority. This perception fosters consistent service behaviour across units, enhancing reliability and customer trust.

Complementing the service climate, display rules climate captures shared expectations regarding the emotional expressions that employees are required to display during service interactions. In hospitality settings, employees are often expected to exhibit positive emotions such as friendliness, enthusiasm and empathy, regardless of their internal emotional states. HPWS contributes to shaping this climate by establishing clear emotional norms through training, supervision and performance appraisal systems. By clarifying acceptable emotional expressions and providing support mechanisms, HPWS reduces ambiguity surrounding emotional labour demands and promotes uniformity in emotional displays (Min & Hu, 2022).

Together, service climate and display rules climate function as interpretive filters through which employees understand how their work should be performed and evaluated. These climates translate abstract HR practices into concrete behavioural expectations, thereby reducing role ambiguity and enhancing

behavioural consistency across employees and service encounters. Over time, the embedding of these climates fosters shared norms and standardised patterns of behaviour that align employee actions with customer expectations and organisational goals. As a result, HPWS lays the foundation for unit-level performance by facilitating coordinated service delivery, enhancing customer satisfaction and supporting favourable financial outcomes.

By emphasising the climate-building role of HPWS, this perspective highlights how strategic HRM systems operate as collective-level mechanisms rather than solely individual-level interventions. In doing so, it underscores the importance of viewing HPWS as a critical driver of organisational alignment and sustained competitive advantage within the hospitality industry.

AMO Framework and Employee Performance (Individual Layer)

The lower layer of the proposed multilevel model draws on the AMO framework to explain the mechanisms through which HPWS influence individual-level employee performance and well-being. The AMO framework posits that employee performance is maximised when individuals possess the necessary abilities, are sufficiently motivated, and are provided with meaningful opportunities to contribute to organisational goals (Bos-Nehles et al., 2023). Rather than treating performance as a function of any single factor, the AMO perspective emphasises the interactive and complementary nature of these three components, suggesting that deficiencies in one dimension may constrain the effectiveness of the others.

Within this framework, HPWS serves as a primary organisational mechanism through which abilities, motivation and opportunities are developed and sustained. From an ability perspective, HPWS emphasises selective recruitment and comprehensive training programmes that enhance employees' job-relevant knowledge, technical competencies and interpersonal skills. In hospitality settings, this includes training in service delivery, communication, cultural sensitivity and problem-solving, all of which are essential for managing dynamic customer interactions. By strengthening employees' capabilities, HPWS ensures that frontline staff are equipped to meet both operational and service quality expectations.

From a motivation standpoint, HPWS incorporates performance-based rewards, recognition systems and career development opportunities that encourage employees to exert discretionary effort. These practices foster both extrinsic motivation, through tangible incentives, and intrinsic motivation, by reinforcing a sense of purpose, competence and organisational commitment (Boxall & Macky, 2009). Motivated employees are more likely to engage proactively with customers, demonstrate persistence in service recovery situations, and invest emotional energy into their roles—behaviours that are particularly valuable in the hospitality industry.

The opportunity dimension of the AMO framework is addressed through HPWS practices that promote employee empowerment, participation in decision-making, and access to necessary resources. By granting frontline employees autonomy and discretion, HPWS enables them to respond flexibly to customer

needs, personalise service encounters, and resolve issues in real time. This is especially critical in hospitality contexts, where rigid procedures may hinder service responsiveness and negatively affect guest experiences.

In frontline hospitality roles, employees are required to balance operational efficiency with emotional sensitivity, often engaging in emotional labour while maintaining service standards. The AMO framework provides a useful lens for understanding why employees operating within HPWS-rich environments are better positioned to deliver both high-quality service and adaptive emotional responses (Dorta-Afonso et al., 2021). When employees feel capable, motivated and empowered, they are more likely to regulate their emotions effectively, display appropriate affect and sustain positive interactions, even under demanding conditions.

Moreover, the effectiveness of AMO resources is further enhanced when they are embedded within a strong service climate and display a rules climate at the organisational level. These climates provide clear interpretive cues that guide how employees should apply their abilities and motivation in service encounters. When aligned with HPWS, such climates reduce ambiguity and reinforce consistent service behaviours, increasing the likelihood that individual-level capabilities and motivations translate into reliable and customer-focused performance outcomes (Pengekalan et al., 2023). Thus, the AMO framework offers a critical explanatory mechanism, linking HPWS to individual service performance within the broader multilevel model.

Employee Well-being (Individual Outcomes)

A defining characteristic of work in the hospitality industry is the pervasive requirement for emotional labour, which refers to employees' efforts to regulate their internal feelings and external emotional expressions in accordance with organisational display rules (Hori & Chao, 2022). Frontline hospitality employees are expected to consistently exhibit positive emotions such as warmth, enthusiasm and attentiveness, regardless of their actual emotional states or the challenges they encounter during service interactions. These emotional demands are embedded within daily work routines and form a critical component of service quality, as customers often evaluate their experiences based on employees' emotional expressions as much as on technical service delivery.

Employees typically manage emotional labour through two primary strategies: deep acting and surface acting. Deep acting involves consciously attempting to align internal feelings with organisationally desired emotional displays, thereby generating more authentic emotional expressions. This approach has been associated with enhanced customer satisfaction, stronger relational bonds and perceptions of sincerity during service encounters (Fatawu & Atingabono, 2024). In contrast, surface acting involves suppressing genuine emotions and merely feigning required expressions, creating a discrepancy between felt and displayed emotions. While surface acting may enable employees to meet immediate service expectations, it often results in emotional dissonance, which has been linked to increased stress, emotional fatigue and burnout over time (Pugh et al., 2010).

Within the proposed model, emotional labour is therefore conceptualised as a double-edged sword that simultaneously contributes to customer experience quality and poses risks to employee well-being (Yang et al., 2023). On the one hand, effective emotional regulation enhances service encounters, reinforces positive customer perceptions, and supports organisational performance. On the other hand, sustained emotional labour—particularly when dominated by surface acting—can deplete employees' emotional resources, undermining psychological health and long-term performance capacity. This duality highlights the importance of examining emotional labour not only as a performance mechanism, but also as a critical well-being concern.

Recognising this tension, the present framework extends beyond traditional performance-centric models by explicitly incorporating employee well-being as a core outcome. This extension reflects the growing consensus that organisational success cannot be evaluated solely through financial metrics, but must also account for the sustainability of employee health, morale and engagement (Arokiasamy et al., 2024). In hospitality contexts characterised by high emotional demands and labour intensity, neglecting employee well-being may yield short-term performance gains at the cost of long-term workforce stability and service quality.

By integrating emotional labour and well-being into the multilevel framework, the model emphasises the critical role of HPWS and organisational climates in shaping how emotional labour is experienced and managed. HPWS can mitigate the negative effects of emotional labour by fostering supportive leadership, providing training in emotional regulation, and promoting a display rules climate that emphasises authenticity rather than forced positivity. Additionally, wellness initiatives, access to psychological support, and recognition of emotional effort signal organisational care for employees, encouraging deeper forms of emotional engagement while reducing reliance on surface acting (Saleem et al., 2024).

Collectively, these practices help ensure that performance improvements derived from emotional labour are sustainable and do not come at the expense of employee well-being. By addressing both the productive and potentially harmful aspects of emotional labour, the model offers a more balanced and human-centred approach to understanding performance dynamics in the hospitality industry.

Model Development

The hospitality and similar service-intensive industries are those that require a very high level of interaction with the customer and where the customer employees are under great pressure due to the emotional demands of the job, as well as performance expectations (Saito, 2025). In such situations, the quality of service provided to customers is no longer the only factor that determines the organisation's success; the human resource systems' ability to maintain employee performance and well-being over time has also become a factor (Alqudah et al., 2023). To meet these challenges, the current conceptual model makes a suggestion for a multilevel system that combines the arguments of strategic HRM, service climate and employee well-being to show how HPWS affect both customer and organisational outcomes via employee-level mechanisms (Figure 1).

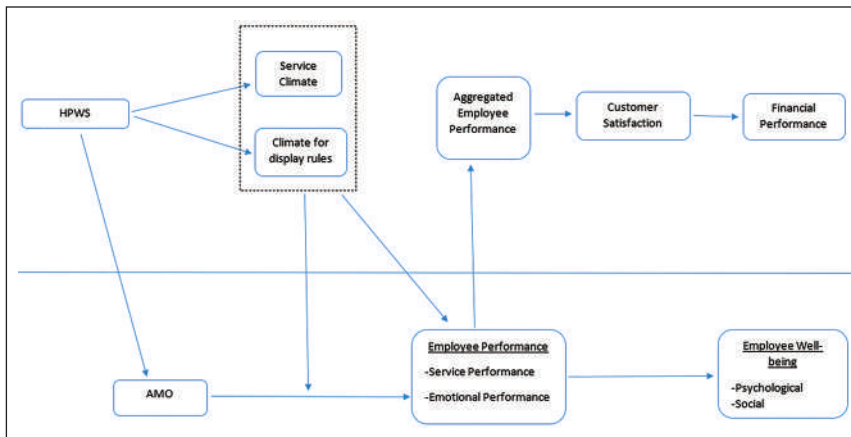


Figure 1. Multilevel Model of Frontline Employee Performance & Customer Outcomes.

Source: Authors (2025).

The model fundamentally views HPWS as a prime organisational input with multiple pathways leading to positive employee attitudes, actions and performance. HPWS stands for a coherent system of HR practices such as selective hiring, extensive training, performance-based compensation, employee participation and management that fosters communication, which all aim at improving the AMO area of employees (ability, motivation and opportunity). These practices have a significant impact on the hospitality industry because it is the frontline employees that interact with customers the most; thus, they are the ones who actually implement the HR policies through their service deliveries. Therefore, the model identifies HPWS as the basic factor that drives the perception of climate and individual-level performance outcomes.

The model's main benefit is that it clarifies the organisational climate as a mediator between HR systems and employee behaviour. Following Bowen and Ostroff's (2004) HRM system strength and climate views, the model suggests that HPWS create two different but related climates: service climate and climate for display rules. Service climate is the term for the common perceptions of the employees about the organisation's main focus on service quality, customer orientation and service excellence (Dietz et al., 2004). On the other hand, the climate for display rules communicates common agreements on the emotion expression practices, how employees should handle and show emotions during service encounters (Carrasco et al., 2011). The model thereby differentiates the two climates and accepts that service delivery in the hospitality industry engages technical and interpersonal skills as well as lasting emotional control.

These climates operate as collective sense-making mechanisms, which communicate HR policies in an abstract way and set the expectations and norms in an actual way (Mossholder et al., 2011). The model does not consider that HPWS has a direct and uniform effect on individual behaviour, but rather says that employees react to the organisation's values and rewards as they perceive

them collectively. Thus, service climate and display rules climate act as important channels for HPWS to affect the behaviour of frontline employees, which will be showing through both task-related service behaviours and emotional labour strategies during customer interactions.

On the level of a single person, the model thinks about employee performance as a multidimensional concept that includes both service performance and emotional performance. Service performance is showing the employees' skills in providing reliable, responsive and customer-oriented service behaviour, while emotional performance indicates the degree to which employees are able to control and show their emotions according to the company's expectations (Hanafi & Ibrahim, 2018). The model brings emotional performance into the performance construct, which thus reacts to the increasing acceptance that emotional labour is not a marginal activity but a major part of the frontline work in hospitality. Furthermore, the model points out that employee performance is determined not only by personal traits and motivation (as represented by the AMO framework) but also by organisational cues that indicate how much effort and emotion should be put into the service encounters (Kellner et al., 2019).

The model not only considers individual outcomes but also includes cross-level aggregation processes by connecting the individual performance of employees to the aggregated performance of employees at the unit or organisational level. This aggregation is a translation of the overall service quality that customers perceive through several interactions rather than through the performance of isolated employees (Hong et al., 2016). Therefore, the aggregated employee performance is considered to be a close factor influencing customer satisfaction, which then leads to financial performance outcomes such as revenue growth, repeat patronage and profitability (Tiana et al., 2022). This chain of events mirrors and expands the service-profit chain logic while being incorporated into a more extensive HRM and climate-based framework.

The pivot point of the model is the explicit integration of employee well-being as a key outcome rather than a secondary or assumed by-product, as in traditional performance-centric frameworks. Employee well-being is treated as a complex and diverse multidimensional construct comprising both psychological well-being (e.g., stress, burnout, emotional exhaustion) and social well-being (e.g., sense of belonging, interpersonal support and social functioning at work) (Sonnetag, 2015). The model suggests that a direct connection exists between the employee performance, especially emotional performance and well-being, thus acknowledging that continuous emotional labour, even if effective in terms of service, may lead to psychological and social costs. By this, the framework not only recognises the 'dark side' of high-performance in service roles, but also disputes the idea that superior customer outcomes always coincide with employee health (Kloutsiniotis & Dimitrios, 2020).

Recognising employee well-being as a co-occurring result together with customer satisfaction and financial performance represents an indication and theoretical change toward more sustainable models of organisational effectiveness. Instead of only regarding well-being as an antecedent or a moderator, the model assigns it as an effect resulting from HR systems, climates and performance

demands. This perspective is consistent with current discussions in HRM about the necessity for 'mutual gains' systems that integrate organisational performance with employee sustainability, especially in service sectors with high emotional demands (Rondi et al., 2021).

One more aspect that sets the model apart is its multi-layered structure, which clearly connects organisational, climate, individual and outcome levels. The model, by indicating these levels and their connections, answers the demand for deeper theoretically rooted, multilevel research in HRM and hospitality management. It also lays out a very clear way for testing through the (Kaushik & Mukherjee, 2021) empirical hierarchy or multilevel modelling techniques that are representative of the nested character of the service organisations.

To sum up, the model introduced is a unifying framework that connects the three domains of strategic HRM, service management and occupational well-being, considering that service excellence, financial performance and employee well-being, goes beyond efficiency and offer a broader and more sustainable view of organisational success in service-intensive industries.

Organisational-level Linkages

At the organisational level, HPWS operate as strategic bundles of practices that shape the service context (Kaushik & Mukherjee, 2021). HPWS signal an organisation's commitment to both service quality and the regulation of emotional display, thereby promoting a service climate and a display rules climate. These climates function as collective frames of reference, aligning employee behaviours with customer expectations and strengthening the overall consistency of service delivery (Takeuchi et al., 2009).

Service and display rules climates subsequently influence aggregated employee performance by shaping shared norms and behavioural patterns across frontline staff (Hui et al., 2007). When employees collectively enact high standards of service and emotional regulation, these behaviours accumulate into unit-level performance outcomes. This collective performance serves as a direct predictor of customer satisfaction, which, in turn, becomes the foundation for organisational profitability, which is all about the financial outcomes (Kozlowski & Ilgen, 2006). Thus, the organisational layer of the model underscores the cascading impact of HRM practices through climates, aggregated employee behaviours and customer evaluations (Rogg, 2001).

Individual-level Linkages

At the individual level, HPWS enhance employees' capacity to deliver superior service through the interrelated mechanisms articulated by the AMO framework. The AMO perspective provides a robust explanatory lens for understanding how HR practices translate into individual performance by emphasising that employees are most effective when they possess the necessary capabilities, are sufficiently motivated, and are provided with opportunities to apply their skills in meaningful ways. Within HPWS, training and development initiatives strengthen employees'

abilities by enhancing job-related knowledge, service competencies and interpersonal skills. In hospitality settings, such training often extends beyond technical tasks to include communication skills, cultural awareness and service recovery techniques, all of which are essential for managing diverse and dynamic customer interactions (Arulsamy et al., 2023).

Motivation is cultivated through HPWS practices such as performance-based rewards, recognition systems and career advancement opportunities, which reinforce desired service behaviours and encourage discretionary effort. These motivational mechanisms not only provide extrinsic incentives but also foster intrinsic commitment by signalling that service excellence is valued and rewarded by the organisation. In parallel, empowerment practices embedded within HPWS expand employees' opportunities to contribute meaningfully by granting autonomy, encouraging participation in decision-making, and providing access to resources necessary for effective service delivery. Together, these ability-, motivation- and opportunity-enhancing practices equip employees with the psychological and material resources required to consistently engage in service excellence (Browning, 1998).

Employees operating within supportive organisational climates and possessing high levels of AMO are more likely to demonstrate effective service performance at the individual level (Alqudah et al., 2021). Such performance encompasses not only task-related service behaviours, such as efficiency, accuracy and responsiveness, but also the regulation of affect in accordance with organisational display rules. In hospitality contexts, employees are expected to manage their emotional expressions carefully, displaying warmth, empathy and positivity during service encounters (Lucas, 2002). When AMO resources are strong, employees are better positioned to regulate their emotions effectively, delivering service that appears both competent and emotionally authentic.

Importantly, individual-level service performance has implications that extend beyond immediate customer outcomes. While successful service delivery can foster a sense of personal accomplishment, pride and professional identity, the emotional demands inherent in hospitality work introduce a potential tension between performance and well-being. Emotional labour, particularly when it involves sustained regulation of feelings and expressions, represents a double-edged sword for employees (Gilsa et al., 2013). Surface acting, characterised by inauthentic emotional displays that conflict with internal feelings, can deplete emotional resources over time, leading to emotional exhaustion, stress and diminished well-being. In contrast, deep acting—where employees genuinely attempt to align their emotions with organisational display expectations—has been shown to reduce emotional dissonance and promote more positive psychological outcomes (Rafiq et al., 2020).

The AMO framework helps explain why HPWS can influence not only performance outcomes but also employee well-being. When HPWS foster sufficient abilities, sustains motivation and provides opportunities for autonomy and support, employees are less likely to rely on surface acting and are more capable of engaging in deep acting strategies. Consequently, well-designed HPWS can help balance the dual objectives of high-quality service delivery and employee

well-being, ensuring that individual performance gains are sustainable rather than achieved at the cost of long-term psychological health (Tsoukatos & Rand, 2007).

Cross-level Integration

The proposed model underscores the dynamic and reciprocal interplay between organisational-level and individual-level processes in shaping performance outcomes within the hospitality industry. Individual service performance does not occur in isolation; rather, it is embedded within a broader organisational context and accumulates across employees to form unit-level performance. When frontline employees consistently engage in high-quality service behaviours, their collective actions establish patterns of reliability, responsiveness and emotional consistency that customers experience at the unit or organisational level. These aggregated behaviours form the foundation for customer satisfaction, loyalty and ultimately financial success (Garrido-Moreno et al., 2024).

This aggregation process highlights the importance of viewing service performance as a multilevel phenomenon. Individual employees may vary in skills, motivation and emotional regulation, but organisational systems and climates shape the extent to which such variability translates into consistent service outcomes. HPWS operate simultaneously across levels by influencing individual capabilities and behaviours while also fostering shared perceptions, norms and climates at the organisational level. Through this dual influence, HPWS align individual efforts with collective service goals, enabling organisations to deliver standardised yet flexible service experiences (Wang et al., 2021).

Importantly, the model illustrates how organisational-level practices cascade downward to shape individual experiences, while individual behaviours simultaneously feed upward to influence organisational outcomes. For example, service climate and display rules climate provide interpretive frameworks that guide how employees apply their abilities and motivation during service encounters. In turn, repeated individual-level service behaviours reinforce these climates over time, creating a feedback loop that strengthens organisational consistency. This dynamic cross-level interaction demonstrates that HRM effectiveness depends not only on the design of practices but also on their integration across organisational layers.

Beyond extending traditional service-profit logic, the model makes a critical theoretical contribution by explicitly incorporating employee well-being as a central outcome alongside customer satisfaction and financial performance. Conventional service-profit frameworks primarily emphasise the instrumental role of employees in generating customer and financial outcomes, often underplaying the long-term human costs associated with emotionally demanding service work. By integrating well-being into the model, this framework recognises that sustainable organisational success depends on maintaining the psychological health, engagement and resilience of frontline employees (Gómez et al., 2023).

This perspective highlights the dual responsibility of HRM systems: to foster service excellence that enhances customer experiences and organisational performance, while simultaneously safeguarding employee well-being. HPWS

that achieve this balance enable organisations to sustain high service quality without exhausting their workforce. Consequently, the model offers a more holistic and ethically grounded understanding of performance dynamics in the hospitality industry, emphasising that long-term competitive advantage arises from the alignment of organisational effectiveness and employee sustainability.

Discussion

This model makes a substantive contribution to both the HRM and services management literatures by advancing a multilevel framework that explicates how organisational systems and climates are translated into meaningful outcomes for both customers and employees (Renkema et al., 2017). By explicitly theorising cross-level relationships, the model integrates organisational-level HR architectures with individual-level psychological and behavioural processes, thereby addressing a long-standing divide between strategic HRM research and micro-level studies of employee experience (Andersén & Jansson, 2024). This integration is particularly relevant in service-intensive contexts such as hospitality, where frontline employees act as the primary interface between organisational strategies and customer experiences. Consequently, the model enhances theoretical clarity regarding how HPWS operate in practice, moving beyond assumptions of uniform effects to capture the mechanisms through which HR systems shape daily service encounters (Wang & Jiang, 2024).

Second, the model extends the traditional service-profit chain by explicitly incorporating employee well-being as a central and non-negotiable outcome of organisational systems (Andersén & Jansson, 2024). While the service-profit chain has traditionally emphasised customer satisfaction, loyalty and financial performance, it has paid comparatively less attention to the sustainability of the workforce responsible for delivering service quality. By integrating employee well-being into this framework, the model challenges performance-centric perspectives that implicitly tolerate high levels of stress, burnout and emotional exhaustion among frontline employees. This extension is particularly important in hospitality settings, where sustained emotional labour and rigid display rules are common and can impose significant psychological costs on employees (Lu et al., 2022). Prior research has frequently prioritised customer-related outcomes while underestimating or overlooking the cumulative human costs associated with prolonged emotional regulation demands (Elganas & Sheppard, 2019). By positioning employee well-being alongside customer outcomes, the model reframes organisational effectiveness in more holistic and ethically grounded terms, recognising employee health and sustainability as integral to long-term organisational success rather than as secondary considerations (Laily et al., 2019).

Third, the model foregrounds the role of service climate and display rules climate as critical mediating mechanisms through which HPWS exert their influence on both employee and customer outcomes (Tran Huy, 2023). Whereas much of the strategic HRM literature focuses primarily on the design and presence of HR practices at the systems level, this framework emphasises the importance

of collective interpretations and shared meanings that emerge within work units. These climates serve as the ‘translation mechanisms’ that convert formal HR policies into informal norms, expectations and behavioural standards that guide employee conduct during service interactions (Cherkos & Shuka, 2025). By adopting a climate-based perspective, the model aligns with broader organisational climate theory and highlights how employees collectively make sense of organisational priorities, particularly with regard to service quality expectations and emotional regulation norms. This shared sense-making process reinforces consistent service delivery while also shaping how employees manage emotional labour demands in customer-facing roles (Lo et al., 2024).

From a practical standpoint, the model offers important implications for hospitality organisations seeking to achieve high service standards without compromising employee well-being. It suggests that HPWS should be intentionally designed to balance performance objectives with sustainable human outcomes (Wang & Jiang, 2024). HR practices such as supportive supervision, authentic and transformational leadership, employee voice mechanisms, wellness initiatives and resilience-building programmes can play a crucial role in buffering the strain associated with emotional labour, while maintaining service excellence (Andersen et al., 2025). Moreover, the model advocates for organisations to adopt a broader set of performance metrics that encompass both customer-related indicators—such as satisfaction, loyalty and repeat patronage—and employee well-being indicators, including burnout, engagement and psychological health (Saito et al., 2024). This dual measurement approach enables a more accurate and comprehensive assessment of organisational effectiveness, supporting long-term sustainability and responsible management practices rather than short-term performance gains alone (Moldavska & Welo, 2019).

Conclusion and Future Research

The suggested multilevel model reveals the dual and mutual dependence of HPWS on the organisation performance and employee well-being fields within the hospitality sector at the same time (Park et al., 2023). The linking of HR systems at the organisational level and the climate of service at the same level to the individual-level psychological and behavioural mechanisms is a big step forward to a more scholarly view, as it not only draws a line from strategic HRM to service management and occupational well-being research but also from the latter to the former. The process of reshaping the co-dependent and dynamic role of HPWS in the two-fold outcomes of organisational performance and employee well-being is at the heart of the moving from single-level analyses to complex, cross-level processes of HR practices impact on both employee experiences and customer-facing outcomes (Bowen & Ostroff, 2004), which the framework responds to. This integrative approach has a positive impact on the theoretical coherence by classifying HPWS as socially embedded systems that determine not only productivity but also the quality of health, motivation and service delivery behaviours of the employees.

The empirical testing of the theoretical model through high-quality multilevel research designs is a prerequisite for the adoption of the nested structure of the hospitality organisations as a key element in future studies. Besides, different data sources, such as service personnel, managers, patrons and organisational performance records, would make it more difficult for the researchers to prove the proposed cross-level linkages. To give an example, survey data of employees could be combined with the metrics of customer satisfaction and financial indicators to assess if the increase in employee well-being leads to an enhancement in service quality and organisational performance.

Moreover, the longitudinal research designs would assist the researchers in investigating the temporal dynamics between HPWS, organisational climate, employee well-being and customer outcomes. Such methods would push the literature past static, cross-sectional snapshots and provide a deeper understanding of the time span of the influence of HR systems over, including potential lagged or reciprocal effects.

Future inquiries in this area can occur by analysing the contextual moderators that play a role in the strength, direction or consistency of the suggested relationships. One example for this is the national culture, which might impact service display rules and emotional labour expectations from employees, thereby altering perceived HPWS at the individual level. Similarly, market segment differences, such as luxury versus budget hospitality, can lead to varying customer service quality expectations, thereby affecting the influence of employee well-being on performance.

The leadership style factor is another boundary limitation, as supportive or transformational leadership may help in implementing and signalling the policies and practices effectively. Theoretical implications in hospitality management are made by linking the HR architectures at the organisational level with the employee experiences at the individual level (Vasudevan & Mahadi, 2017). It is asserted that HR systems should be designed in such a way that they would neither solely focus on customer satisfaction and financial performance nor overlook the protection and enhancement of employee well-being. The concept is particularly relevant in service-intensive industries where high emotional labour demands, workforce turnover and performance pressures are a common scenario. Eventually, the model provides a route to more sustainable and responsible management practices, thus positioning employee well-being not as a secondary outcome but rather as a central long-term driver of organisational success (Gupta, 2024).

Acknowledgements

The authors hereby acknowledges the submission of my article titled ‘A Multilevel Model of Frontline Employee Performance and Customer Outcomes in the Hospitality Industry’ to the Indian Institute of Foreign Trade (IIFT) for consideration in the forthcoming edited volume/publication. The author confirms that this manuscript is an original work and has not been published previously, nor is it under consideration for publication elsewhere. All sources of information have been duly acknowledged, and ethical guidelines pertaining to academic integrity have been strictly followed. The author sincerely appreciates the opportunity provided by IIFT to contribute to this scholarly work and looks forward to the review process.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

Funding

The authors received no financial support for the research, authorship and/or publication of this article.

ORCID iDs

S.M.R.K. Illangarathne  <https://orcid.org/0009-0004-8210-2007>

Chathuni Jayasinghe  <https://orcid.org/0000-0002-6986-8401>

References

- Alqudah, I. H., Carballo-Penela, A., & Ruza-Sanmartín, E. (2021). High-performance human resource management practices and readiness for change: An integrative model including affective commitment, employees' performance, and the moderating role of hierarchy culture. *European Research on Management and Business Economics*, 28(1), 100177. <https://doi.org/10.1016/j.iedeen.2021.100177>
- Alqudah, H., Lutfi, A., Abualoush, S. H., Qudah, M. Z. A., Alshira'h, A. F., Almaiah, M. A., Alrawad, M., & Tork, M. (2023). The impact of empowering internal auditors on the quality of electronic internal audits: A case of Jordanian listed services companies. *International Journal of Information Management Data Insights*, 3(2), 100183. <https://doi.org/10.1016/j.jjime.2023.100183>
- Andersén, J., & Jansson, C. (2024). Commitment capital: Bridging the gap between organizational commitment and human capital resources. *Human Resource Management*, 63(6), 981–1000. <https://doi.org/10.1002/hrm.22246>
- Andersen, L., Pihl-Thingvad, J., & Andersen, D. (2025). How superiors support employees to manage emotional demands: A qualitative study. *International Journal of Environmental Research and Public Health*, 22, 670. <https://doi.org/10.3390/ijerph22050670>
- Arokiasamy, L., Fujikawa, T., Piaralal, S., & Arumugam, T. (2024). Role of HRM practices in organization performance: A survey approach. *International Journal of Sociotechnology and Knowledge Development*, 16, 1–32. <https://doi.org/10.4018/IJSKD.334555>
- Arulsamy, A., Singh, I., Kumar, S., Panchal, J., & Bajaj, K. (2023). Employee training and development enhancing employee performance—A study. *International Journal of Management*, 16, 406–416.
- Bos-Nehles, A., Townsend, K., Cafferkey, K., & Trullen, J. (2023). Examining the ability, motivation and opportunity (AMO) framework in HRM research: Conceptualization, measurement and interactions. *International Journal of Management Reviews*, 25(4), 725–739. <https://doi.org/10.1111/ijmr.12332>
- Bowen, D., & Ostroff, C. (2004). Understanding HRM-firm performance linkages: The role of the “strength” of the HRM system. *Academy of Management Review*, 29, 203–221. <https://doi.org/10.5465/AMR.2004.12736076>
- Boxall, P., & Macky, K. (2009). Research and theory on high-performance work systems: Progressing the high-involvement stream. *Human Resource Management Journal*, 19, 3–23. <https://doi.org/10.1111/j.1748-8583.2008.00082.x>

- Browning, V. (1998). Creating service excellence through Human Resource Management practices. *South African Journal of Business Management*, 29, 135–141. <https://doi.org/10.4102/sajbm.v29i4.778>
- Carrasco, H., Martínez-Tur, V., Peiró, J. M., García-Buades, E., & Moliner, C. (2011). Service climate and display of employees' positive emotions: The mediating role of burnout and engagement in services. *Psychologica*, 55, 229–253. https://doi.org/10.14195/1647-8606_55_12
- Cherkos, F. D., & Shuka, J. K. (2025). Human resource management practices for successful performance of construction companies: Unveiling hierarchical importance and interplay. *International Journal of Construction Management*, 1–21. <https://doi.org/10.1080/15623599.2025.2544912>
- Dawson, M., Guchait, P., Russen, M., Wang, X., & Paşamehmetoğlu, A. (2023). Hospitality organizational culture: Impact on employee's job satisfaction, organizational citizenship behaviors, service recovery performance, and intention to leave. *Journal of Human Resources in Hospitality & Tourism*, 22, 460–488. <https://doi.org/10.1080/15332845.2023.2180963>
- Dietz, J., Pugh, S. D., & Wiley, J. W. (2004). Service climate effects on customer attitudes: An examination of boundary conditions. *Academy of Management Journal*, 47(1), 81–92. <https://doi.org/10.2307/20159561>
- Dorta-Afonso, D., González-De-La-Rosa, M., García-Rodríguez, F., & Romero-Domínguez, L. (2021). Effects of high-performance work systems (HPWS) on hospitality employees' outcomes through their organizational commitment, motivation, and job satisfaction. *Sustainability*, 13(6), 3226. <https://doi.org/10.3390/su13063226>
- Elganas, T., & Sheppard, R. (2019). Effects of emotional labor on job satisfaction and customer satisfaction: An empirical study of Libyan banks. *International Journal of Academic Research in Business and Social Sciences*, 9, 1–10. <https://doi.org/10.6007/IJARBS/v9-i11/6656>
- Fatawu, A., & Atingabono, L. (2024). Impact of hospitality management practices on employee job satisfaction. *Journal of Social Responsibility Tourism and Hospitality*, 44, 40–51. <https://doi.org/10.55529/jsrth.44.40.51>
- Garrido-Moreno, A., Martín-Rojas, R., & García-Morales, V. J. (2024). The key role of innovation and organizational resilience in improving business performance: A mixed-methods approach. *International Journal of Information Management*, 77, 102777. <https://doi.org/10.1016/j.ijinfomgt.2024.102777>
- Gilsa, L., Zapf, D., Ohly, S., Trumpold, K., & Machowski, S. (2013). There is more than obeying display rules: Service employees' motives for emotion regulation in customer interactions. *European Journal of Work & Organizational Psychology*, 23. <https://doi.org/10.1080/1359432X.2013.839548>
- Gómez, S., Leal, Y., Olivas-Luján, M., & Yusliza, M. Y. (2023). Companies could benefit when they focus on employee wellbeing and the environment: A systematic review of sustainable human resource management. *Sustainability*, 15, 5435. <https://doi.org/10.3390/su15065435>
- Gupta, J. (2024). Employee well-being initiatives: A critical analysis of HRM practices. *Educational Administration: Theory and Practice*, 30, 6808–6815. <https://doi.org/10.53555/kuvey.v30i5.4020>
- Hanafi, H., & Ibrahim, S. (2018). Impact of employee skills on service performance. *International Journal of Science and Research (IJSR)*, 7, 587–598. <https://doi.org/10.21275/ART20193416>

- Heskett, J. L., Jones, T. O., Loveman, G. W., Sasser, W. E., Jr., & Schlesinger, L. A. (2008, July 1). Putting the service-profit chain to work. *Harvard Business Review*. <https://hbr.org/2008/07/putting-the-service-profit-chain-to-work>
- Hogreve, J., Iseke, A., & Derfuss, K. (2021). The service-profit chain: Reflections, revisions, and reimaginations. *Journal of Service Research*, 25(3), 460–477. <https://doi.org/10.1177/10946705211052410>
- Hong, Y., Jiang, Y., Liao, H., & Sturman, M. (2016). High performance work systems for service quality: Boundary conditions and influence processes. *Human Resource Management*, 56. <https://doi.org/10.1002/hrm.21801>
- Hori, N., & Chao, R.-F. (2022). How emotional labor affects job performance in hospital-ity employees: The moderation of emotional intelligence. *International Journal of Research in Business and Social Science*, 11, 151–160. <https://doi.org/10.20525/ijrbs.v11i3.1733>
- Hu, D., & Oh, I. (2022). The “why” and “how” of human resource (HR) practices: A critical review of the antecedents and consequences of employee HR attributions research. *Research in Personnel and Human Resources Management*, 157–204. <https://doi.org/10.1108/s0742-73012022000040006>
- Huang, L.-C., Ahlstrom, D., Lee, A., Chen, S.-Y., & Hsieh, M.-J. (2016). High performance work systems, employee well-being, and job involvement: An empirical study. *Personnel Review*, 45, 296–314. <https://doi.org/10.1108/PR-09-2014-0201>
- Hui, C., Chiu, W., Yu, P., Cheng, K., & Tse, H. (2007). The effects of service climate and the effective leadership behaviour of supervisors on frontline employee service quality: A multi-level analysis. *Journal of Occupational and Organizational Psychology*, 80, 123–140. <https://doi.org/10.1348/096317905X89391>
- Kaushik, D., & Mukherjee, U. (2021). High-performance work system: A systematic review of literature. *International Journal of Organizational Analysis*. <https://doi.org/10.1108/IJOA-07-2020-2282>
- Kellner, A., Cafferkey, K., & Townsend, K. (2019). Ability, Motivation and Opportunity theory: A formula for employee performance? In *Elgar introduction to theories of human resources and employment relations*. Edward Elgar Publishing. <https://doi.org/10.4337/9781786439017.00029>
- Kloutsiniotis, P., & Dimitrios, M. (2020). The effects of high performance work systems in employees’ service-oriented OCB. *International Journal of Hospitality Management*, 90. <https://doi.org/10.1016/j.ijhm.2020.102610>
- Kozlowski, S. W., & Ilgen, D. R. (2006). Enhancing the effectiveness of work groups and teams. *Psychological Science in the Public Interest*, 7(3), 77–124. <https://doi.org/10.1111/j.1529-1006.2006.00030.x>
- Laily, N., Rahmawati, F., Sukaris, & Triyonowati. (2019). Organizational effectiveness with the holistic organizational effectiveness method. *International Journal of Recent Technology and Engineering (IJRTE)*, 8, 9281–9286. <https://doi.org/10.35940/ijrte.D9446.118419>
- Liao, H., & Chuang, A. (2004). A multilevel investigation of factors influencing employee service performance and customer outcomes. *Academy of Management Journal*, 47(1), 41–58. <https://doi.org/10.2307/20159559>
- Lo, Y., Lu, C., Chang, Y., & Wu, S. (2024). Examining the influence of organizational commitment on service quality through the lens of job involvement as a mediator and emotional labor and organizational climate as moderators. *Heliyon*, 10(2), e24130. <https://doi.org/10.1016/j.heliyon.2024.e24130>
- Lu, Y., Zhang, M. M., Yang, M. M., & Wang, Y. (2022). Sustainable human resource management practices, employee resilience, and employee outcomes: Toward common

- good values. *Human Resource Management*, 62(3), 331–353. <https://doi.org/10.1002/hrm.22153>
- Lucas, R. (2002). Fragments of HRM in hospitality? Evidence from the 1998 workplace employee relations survey. *International Journal of Contemporary Hospitality Management*, 14(1), 10–17. <https://doi.org/10.1108/09596110210433727>
- Ma, P., Zhang, L., Dong, H., & Yu, J. (2023). The relationships between teachers' emotional labor and display rules, trait emotions, exhaustion, and classroom emotional climate. *Frontiers in Psychology*, 14, 957856. <https://doi.org/10.3389/fpsyg.2023.957856>
- Min, H., & Hu, Y. (2022). Revisiting the effects of smile intensity on judgments of warmth and competence: The role of industry context. *International Journal of Hospitality Management*, 102, 103152. <https://doi.org/10.1016/j.ijhm.2022.103152>
- Mokhtaran, M., Fakharyan, M., Jalilvand, M. R., & Mohebi, M. (2014). The effect of service climate on perceived service value and behavioral intentions: The mediating role of service quality. *Asia Pacific Journal of Tourism Research*, 20, 1–15. <https://doi.org/10.1080/10941665.2014.889029>
- Moldavska, A., & Welo, T. (2019). A Holistic approach to corporate sustainability assessment: Incorporating sustainable development goals into sustainable manufacturing performance evaluation. *Journal of Manufacturing Systems*, 50, 53–68. <https://doi.org/10.1016/j.jmsy.2018.11.004>
- Mossholder, K. W., Richardson, H. A., & Settoon, R. P. (2011). Human resource systems and helping in organizations: A relational perspective. *Academy of Management Review*, 36(1), 33–52. <https://doi.org/10.5465/amr.2011.55662500>
- Najam, U., Ishaque, S., Irshad, S., Salik, Q.-U.-A., Khakwani, M., & Liaquat, M. (2020). A link between human resource management practices and customer satisfaction: A moderated mediation model. *SAGE Open*, 10, 1–17. <https://doi.org/10.1177/2158244020968785>
- Park, J., Ok, C., & Ryu, S. (2023). The two faces of HPWS in employee perceptions and organizational performance. *Asia Pacific Management Review*, 28. <https://doi.org/10.1016/j.apmr.2023.03.001>
- Pengkelan, P. D., Pekerja, K., Upaya, K., Pengantara, K., Organisasi, I., Hashim, H., Zannierah, S., Marzuki, S., & Mansor, F. (2023). Leader-member exchange and employees with disabilities' job embeddedness: Mediating effects of organizational climate. *Jurnal Pengurusan*, 67. <https://doi.org/10.17576/pengurusan-2023-67-01>
- Pugh, S., Groth, M., & Hennig-Thurau, T. (2010). Willing and able to fake emotions: A closer examination of the link between emotional dissonance and employee well-being. *Journal of Applied Psychology*, 96(2), 377–390. <https://doi.org/10.1037/a0021395>
- Rafiq, N., Abbasi, A. S., Sair, S. A., Mohiuddin, M., & Munir, I. (2020). Emotional labor and its association with emotional exhaustion through cultural intelligence. *Transnational Corporation Review*, 12(4), 392–405. <https://doi.org/10.1080/19186444.2020.1846670>
- Renkema, M., Meijerink, J., & Bondarouk, T. (2017). Advancing multilevel thinking in human resource management research: Applications and guidelines. *Human Resource Management Review*, 27. <https://doi.org/10.1016/j.hrmr.2017.03.001>
- Rogg, K. (2001). Human resource practices, organizational climate, and customer satisfaction. *Journal of Management*, 27, 431–449. <https://doi.org/10.1177/014920630102700403>
- Rondi, E., Überbacher, R., Von Schlenk-Barnsdorf, L., De Massis, A., & Hülsbeck, M. (2021). One for all, all for one: A mutual gains perspective on HRM and innovation

- management practices in family firms. *Journal of Family Business Strategy*, 13(2), 100394. <https://doi.org/10.1016/j.jfbs.2020.100394>
- Saito, H., Brozović, D., & Baum, T. (2024). Well-being of hospitality employees: A systematic literature review. *International Journal of Hospitality Management*, 124, 103955. <https://doi.org/10.1016/j.ijhm.2024.103955>
- Saleem, A., Bhutta, M. K. S., Abrar, M., Bari, M. W., & Bashir, M. (2024). Leader's ethical behavior: A precursor to employees' well-being through emotions management. *Acta Psychologica*, 249, 104453. <https://doi.org/10.1016/j.actpsy.2024.104453>
- Sirdeshmukh, D., Singh, J., & Sabol, B. (2002). Consumer trust, value, and loyalty in relational exchanges. *The Journal of Marketing*, 66(1), 15–37. <https://doi.org/10.1509/jmkg.66.1.15.18449>
- Sonnentag, S. (2015). Wellbeing and burnout in the workplace: Organizational causes and consequences. In *International encyclopedia of the social & behavioral sciences* (2nd ed.) (pp. 537–540). Elsevier. <https://doi.org/10.1016/b978-0-08-097086-8.73021-2>
- Takeuchi, R., Chen, G., & Lepak, D. (2009). Through the looking glass of a social system: Cross-level effects of high-performance work systems on employees' attitudes. *Personnel Psychology*, 62(1), 1–29. <https://doi.org/10.1111/j.1744-6570.2008.01127.x>
- Tiana, A., Alexandre, T., & Marie, R. (2022). Employee satisfaction, a factor of financial performance of the company. *International Journal of Applied Science and Engineering Review*, 3, 22–31. <https://doi.org/10.52267/IJASER.2022.3403>
- Tran Huy, P. (2023). High-performance work system and knowledge hoarding: The mediating role of competitive climate and the moderating role of high-performance work system psychological contract breach. *International Journal of Manpower*, 44, 77–94. <https://doi.org/10.1108/IJM-06-2021-0331>
- Tsoukatos, E., & Rand, G. (2007). Cultural influences on service quality and customer satisfaction: Evidence from Greek insurance. *Managing Service Quality*, 17, 467–485. <https://doi.org/10.1108/09604520710760571>
- Vasudevan, H., & Mahadi, N. (2017). Organizational citizenship behavior in hospitality industry: Bridging challenges, benefits and contribution. *International Journal of Human Capital in Urban Management*, 2, 243–250. <https://doi.org/10.22034/ijh-cum.2017.02.03.008>
- Wang, C.-J., & Jiang, Z.-R. (2024). Exploring high-performance work systems and sustainable development in the hospitality industry. *Sustainability*, 16(22), 10019. <https://doi.org/10.3390/su162210019>
- Wang, H., Zhang, Y., & Wan, M. (2021). Linking high-performance work systems and employee well-being: A multilevel examination of the roles of organisation-based self-esteem and departmental formalisation. *Human Resource Management Journal*, 32, 92–116. <https://doi.org/10.1111/1748-8583.12391>
- Yang, Y., Qin, Y., Wang, Z., & Sun, A. (2023). The influence of emotional labor of service employees on customer service misbehavior and repurchase intention: The role of face. *Psychology Research and Behavior Management*, 16, 1109–1124. <https://doi.org/10.2147/PRBM.S396775>

Assessing the Impact of Government Export Promotion Programmes on Firm-level Export Performance: Evidence from India's Apparel Sector

IIFT International Business and
Management Review Journal
2026, 4(1) 29–53
© The Author(s) 2026
DOI: 10.1177/jiift.261434284
ift.spectrumjps.com



Rashmi M. Arora^{1,2}

Abstract

This study examines the impact of government Export Promotion Programmes (EPPs) on the export performance (EP) of Indian apparel firms. Using primary data from Maharashtra-based exporters, the research employs partial least squares-structural equation modelling to test relationships between managerial perception, awareness, export knowledge, perceived benefits and EP. Findings indicate that managerial perception, firm-level awareness and export knowledge significantly enhance EP, whereas perceived benefits of EPPs show no significant effect. These results emphasise the necessity of improving awareness, simplifying administrative procedures and increasing scheme effectiveness. The study provides valuable firm-level evidence from a developing economy on EPPs' role in driving export growth.

Keywords

Export Promotion Programmes, export knowledge, export performance, firm-level awareness, managerial perception, PLS-SEM

Introduction

In India, significant 1990s reforms introduced export incentives and removed discretionary controls (Kathuria, 1996). These measures focused on increasing promotional activities, reducing quantitative restrictions and developing infrastructure. During this period, tariffs were eased and several export promotion

¹Foreign Trade Researcher, Independent, Mumbai, Maharashtra, India

²Current affiliation: Gem & Jewellery Export Promotion Council (GJEPC), Mumbai, Maharashtra, India

Corresponding author:

Rashmi M. Arora, Foreign Trade Researcher, Independent, Mumbai, Maharashtra 400081, India.

E-mail: rashmi4.iift@gmail.com



Creative Commons Non Commercial CC BY-NC: This article is distributed under the terms of the Creative Commons Attribution-NonCommercial 4.0 License (<http://www.creativecommons.org/licenses/by-nc/4.0/>) which permits non-Commercial use, reproduction and distribution of the work without further permission provided the original work is attributed.

schemes were introduced, including Duty Exemption, Advance Licence, DEPB, Duty Drawback (DBK), Focus Market Scheme (FMS), Focus Product Scheme (FPS), MLFPS, MDA and MAI. Digital trade facilitation via SWIFT and EDI further modernised the export environment.

Macro-level research generally links export orientation with growth (Balassa, 1978; Coughlin & Cartwright, 1981). However, firm-level evidence remains mixed (Wang et al., 2017). Gencturk and Kotabe (2001) found that Export Promotion Programmes (EPPs) influence performance directly and indirectly, while Lages and Montgomery (2005) reported an insignificant total effect. Francis and Collins (2004) noted that active exporters benefit more from EPPs than experienced firms.

Indian scholars confirmed that export profitability and growth increased following trade liberalisation (Kathuria, 1996; Veeramani, 2007, 2012). Despite extensive macroeconomic research (Bajpai & Biberman, 2020; Banik, 2001; Bhat, 2011; Ghemawat & Patibandla, 1998; Joshi & Little, 1994; Kanagasabapathy & Tilak, 2013; Kumar, 2010; Mukherjee, 2012; Mukherjee & Mukherjee, 2012; Nagraj, 2019; Panagariya, 2004; Singh & Singla, 2012; Suvrathan, 1991; Veeramani, 2007, 2012; Virmani, 2001), few studies (Dholakia & Kapur, 2001; Naidu & Rao, 1993; Vanderleest, 1996) empirically assess EPPs at the firm level.

Given that EPPs are utilised by both large and small firms, examining their effectiveness at the firm level remains an important area of research, particularly in light of the sustained and extensive export promotion efforts undertaken by the Government of India over the past few decades. Such an analysis enables scholars to validate the impact of EPPs on firm-level exports using Indian firms as a case. Moreover, the impact of EPPs on firms' export performance (EP) is influenced by firm-specific characteristics, particularly levels of awareness, export knowledge, perceptions of EPP benefits and managerial perceptions of government export promotion schemes (Ahmed et al., 2002; Freixanet, 2012; Gencturk & Kotabe, 2001; Seringhaus, 1987).

Reid (1981) classified the determinants of EP into three broad categories: (a) managerial determinants, including managerial skills, training, export experience and managerial perceptions of government export promotion schemes; (b) organisational determinants, such as firm age, firm size, export knowledge and awareness; and (c) environmental determinants, including export market attractiveness, market barriers and market competitiveness. EPPs provide external support to help firms acquire the information, knowledge, experience and resources required to formulate effective export strategies and improve EP (Singer & Czinkota, 1994). Accordingly, key drivers of EP are considered in this study to assess the impact of EPPs on firms' EP.

The objectives of the study are: (a) to assess the impact of EPPs on firms' EP through key EP determinants; and (b) to examine the differential impact of specific export promotion schemes on firms' EP.

To achieve these objectives, the study employs an empirical approach using firm-level data to examine the relationship between EPPs, key performance determinants and EP. By providing evidence on the effectiveness of export promotion initiatives, the study contributes to the literature on export promotion policy and offers insights for policymakers in designing more targeted mechanisms

to enhance the effectiveness of export support for exporters. Moreover, existing studies examine export promotion measures in developing economies; firm-level evidence on the effectiveness of EPPs in labour-intensive manufacturing sectors remains limited. This study addresses this gap by providing firm-level empirical evidence from the apparel sector in a major developing economy, thereby contributing to the literature on trade policy effectiveness and EP.

Literature Review and Formulating Hypotheses

Theoretically, this study is anchored in the resource-based view (RBV) (Barney, 1991) and the internationalisation process model (Johanson & Vahlne, 1977, 1990). The RBV posits that firm-level EP depends on the deployment of tangible and intangible resources like managerial resource-enhancing mechanisms for firms in emerging economies. Complementing this, internationalisation theory explains export growth as a learning-driven, incremental process (Johanson & Vahlne, 1977, 1990). Government EPPs reduce uncertainty and accelerate experiential learning.

Seringhaus (1987) suggested that export aid programmes benefit firms possessing the capability to utilise support. Arthur (1988) observed that US initiatives like seminars and credit insurance effectively reduced risks. Vanderleest (1996) found government publications effective but underutilised. Wilkinson and Brouthers (2006) reported that trade fairs have a positive association with exports, whereas trade missions show no correlation.

Kotabe and Czinkota (1992) presented a framework categorising firms into five stages: partial interest, exploring, experimental, experienced with limited scope and experienced exporters. They concluded that managerial ability is generally more important than financing (Kotabe & Czinkota, 1992). Gencturk and Kotabe (2001) identified EPP use as a critical determinant affecting performance directly and indirectly through export involvement. Conversely, Lages and Montgomery (2005) found the total effect to be non-significant, as positive direct effects are offset by negative indirect effects via pricing adaptation. Francis and Collins (2004) suggested that sporadic and active exporters benefit most, with limited short-term impact on experienced firms (Francis & Collins, 2004).

Martincus and Carballo (2010) found that smaller, inexperienced firms derive greater benefits than larger firms. Yunis and Shamsuddoha (2009) showed that EPP impact is largely indirect, operating through internal determinants like export knowledge and commitment. Girma et al. (2009) documented that production subsidies stimulate existing exporters but are less effective for market entry. Freixanet (2012) observed a positive relationship between firm size, involvement and awareness. Leonidou and Katsikeas (1996) demonstrated that national EPPs strengthen essential resources for marketing strategies.

Haddoud et al. (2018) found that informational EPPs (seminars) improve local buyer relationships, while experiential EPPs (exhibitions) strengthen foreign buyer links. Wang et al. (2017) highlighted that marketing capabilities enhance information-related EPP effectiveness, while financial aid moderates the process. Sharma et al. (2018) reported that EPPs exert a positive indirect impact by improving perceptions of market attractiveness.

Munch (2015) found EPPs enhance value addition and productivity among small firms. Han and Park (2019) concluded that information-, operational- and experience-focused EPPs predict small and medium-sized enterprise (SME) value chain performance. Malca et al. (2019) found that prior performance positively influences current resources and operations. Mota et al. (2021) reported that participation positively influences performance, especially for firms with prior experience, noting that firm size has a positive effect while age exerts a negative influence (Mota et al., 2021).

In the Indian context, Naidu and Rao (1993) developed a seven-step framework to enhance competitiveness, including need-based programmes and addressing bureaucratic red tape. Obadia and Vida (2024) demonstrated that EPPs and exporter–importer cooperation significantly shape outcomes. Singh et al. (2024) showed that institutional support indirectly enhances performance through readiness. Mansor and Cheah (2024) highlighted governance perspectives in EPP effectiveness, while Chopra et al. (2024) reaffirmed the relevance of promotion strategies for SMEs.

Based on the review of the literature, it is evident that firms' EP is closely associated with a range of internal and external determinants. Accordingly, hypotheses are formulated in this study to examine the impact of various export promotion schemes implemented by the Government of India on the EP of Indian firms. Furthermore, from a trade policy perspective, EPPs are expected to enhance firm capabilities by reducing information, compliance and market-entry costs, which in turn improves EP. This provides the theoretical basis for the hypotheses tested in this study.

Managerial Perception About Government Schemes and EP

EPPs are vital components of the export environment provided by governments and institutions to support firms, particularly SMEs (Wheeler, 1990). Positive managerial perceptions of this environment are key determinants of EP (Abay & Slater, 1989; Zou & Stan, 1998). Pointon (1978) used managerial perception to assess the usefulness of EPPs, while Shamsuddoha (2004, 2009) emphasised that managers' attitudes significantly influence performance. Sood and Adams (1984) showed that the export environment shapes managerial decision-making. Managers viewing the environment favourably are more likely to acquire knowledge and develop effective strategies. Cavusgil and Zou (1994) and Donthu and Kim (1993) suggested that positive perceptions regarding government support and markets instil confidence, helping managers reduce uncertainty and overcome barriers to increase international penetration.

Consequently, in this study managerial perception is treated as a key antecedent influencing firms' engagement with EPPs and their subsequent EP in this study.

H₁: There exists a positive impact of managers' perceptions of EPPs on firms' EP.

Firms' Level of Awareness and EP

Awareness regarding external assistance has grown alongside the importance of knowledge about government export promotion schemes (Seringinghaus, 1987). Studies by Czinkota and Ricks (1981), Kedia and Chhokar (1986) and Seringinghaus (1986) found that ITA programmes were underutilised due to low awareness,

limiting export sales. Conversely, Vanderleest (1996) argued that these programmes were known and not underutilised. Mansfield et al. (1987), Wheeler (1990) and Pahuud de Mortange and Van Gentt (1991) reported that exporters of various sizes derived tangible benefits from promotional support. However, SMEs often possess limited knowledge of services (Reid, 1981; Seringhaus, 1986, 1987). Weil (1978) and Kedia and Chhokar (1986) concluded that low awareness remains a major challenge, preventing firms from expanding export operations effectively.

Accordingly, this study treats firms' level of awareness of government export promotion schemes as a key explanatory variable influencing EP outcomes.

H_2 : There exists a positive impact of firms' awareness levels of EPPs on firms' EP.

Firms' Export Knowledge and EP

Internationalisation theories proposed by Johanson and Vahlne (1977, 1990) highlight the importance of information and knowledge in enabling firms to integrate into foreign markets and increase export commitment. These theories argue that a lack of knowledge and resources constitutes a major barrier, which can be mitigated through experiential learning. Similarly, resource-based theory posits that tangible and intangible resources, including knowledge and expertise, are critical for achieving competitiveness and operational efficiency (Barney, 1991; Coff, 1997). As firms accumulate export-related knowledge concerning procedures, policies and promotional schemes, managers gain a better understanding of foreign markets, establish stronger relationships with overseas clients, design effective marketing programmes and ultimately enhance EP (Abay & Slater, 1989).

Accordingly, this study incorporates firms' export knowledge as a key determinant in explaining variations in EP among Indian exporting firms.

H_3 : There exists a positive impact of firms' export knowledge of EPPs on firms' EP.

Managers' Perception About Benefits of EPPs and EP

Several studies have evaluated EPPs by examining managerial perceptions of their usefulness. Seringhaus (1986) and others utilised qualitative approaches to assess these perceptions. Generally, promotional measures exhibit a positive relationship with performance, with Durmuşoğlu et al. (2012), Geldres-Weiss and Carrasco-Roa (2011), Martincus and Carballo (2010), Shamsuddoha and Ali (2004, 2009) and Lages and Montgomery (2005) reporting significant associations between EPPs and firm-level outcomes. Experiential EPPs like exhibitions and trade missions show strong positive correlations with performance (Durmuşoğlu et al., 2012; Freixanet, 2012), though some studies found these relationships statistically insignificant (Faroque & Takahashi, 2012; Wilkinson & Brouthers, 2006). Geldres-Weiss and Carrasco-Roa (2011) noted that EPP effectiveness varies, while Wilkinson and Brouthers (2006) found marketing support particularly impactful. Clarke (1991) argued that awareness must be paired with the capability to utilise programmes effectively. Similarly, Yannopoulos (2010) emphasised aligning assistance with specific exporter needs. Conversely, Seringhaus (1987)

found no significant relationship between trade mission participation and outcomes like export intensity or volume. Accordingly, this study treats managerial perception about the benefits of government export promotion schemes as a critical determinant influencing firms' EP.

H₄: There exists a positive impact of the managers' perception about the benefits of EPPs on firms' EP.

Categories of EPPs and EP

Shamsuddoha (2009) found that EP is influenced by managerial perceptions, knowledge and commitment stemming from market development activities. Market-oriented EPPs, such as trade fairs and seminars, provide critical information for effective marketing strategies and increased sales. Financial EPPs indirectly boost performance by generating resources for overseas operations and shaping trade strategies that affect costs. While EPPs generally enhance performance, excessive or poorly targeted assistance can have negative indirect effects. Consequently, this study examines the differential impact of market development, financial and technology development EPPs on the Indian apparel sector. It considers key firm-level determinants that influence how effectively this support is utilised.

Accordingly, this study examines the differential impact of market development, financial and technology development EPPs on firms' EP in the Indian apparel sector, taking into account key firm-level determinants that influence the effective utilisation of export promotion support.

H₅: There exists a difference in the impact of different EPPs on EP.

Research Methodology

A structured questionnaire was used for a self-administered field survey to collect primary data from senior export managers and owners of apparel firms in Mumbai. Conducted between June and December 2023, the survey yielded 151 valid responses from micro, small and medium enterprise (MSME) units, satisfying the requirement of at least 10% of the identified sampling frame.

Variables and Measurement

The study incorporates multiple independent and dependent variables as detailed in Table 1.

Results

Hypotheses were tested using variance-based partial least squares-structural equation modelling (PLS-SEM) (version 3). PLS-SEM is ideal for reflective/formative constructs and smaller sample sizes (Hair et al., 2019). Confirmatory tetrad analysis (CTA-PLS) confirmed that all constructs are reflective (Table 2).

Table 1. Conceptual and Operational Definition of Variables.

S. No.	Variables	Category	Conceptual Definition
		Observed/ Latent	
1	Managerial perception about government schemes	Latent	A construct measure with six-item statements (measured on a five-point scale). Perception is considered positive (if ≥ 3 mean) and negative (if mean < 3)
2	Firms' level of awareness	Latent	A construct measure with 9/10 Export Promotion Programmes (EPPs) measured on a five-point scale ranging from 1 (= have never heard about the scheme) to 5 (= have the ability to evaluate it and recommending the firm to use it).
3	Firms' export knowledge	Latent	A construct measure with eight-item statements measured on a five-point scale 1 (= not at all) to 5 (= extremely) Further, in three categories: 1. Poor export knowledge (mean score of export knowledge 1–2.99) 2. Fair export knowledge (mean score 3–3.99) 3. Good export knowledge (mean score equal and more than 3.5)
4	Managers' perception about EPPs benefits	Latent	A construct measure with 9/10 EPPs measured on a five-point scale. A construct measure with eight-item statements measured on a five-point scale 1 (= not at all beneficial) to 5 (= extremely beneficial)
5	Exports promotional programmes	Latent	Three categories: Marketing, finance and technology development; EPPs were taken into account and benefit was captured on a five-point scale
6	Firm's export performance	Latent	Dependent variable comprises nine statements and is measured on a scale of 5 from 1 (= not at all increased) to 5 (= greatly increased)

Measurement Fit for Reflective Models

The measurement model's adequacy was evaluated through indicator reliability, internal consistency (Cronbach's alpha/composite reliability), convergent validity (average variance extracted [AVE]) and discriminant validity (Fornell–Larcker/heterotrait–monotrait ratio [HTMT]).

Table 2. Confidence Intervals of Five Latent Variables—Apparel Sector.

Managerial Perception About the Government Schemes			Level of Awareness		Export Knowledge		Perceived Benefit of Export Promotion Programmes (EPPs)		Export Performance	
CI Low Adj.	CI Up Adj.		CI Low Adj.	CI Up Adj.	CI Low Adj.	CI Up Adj.	CI Low Adj.	CI Up Adj.	CI Low Adj.	CI Up Adj.
0.092	0.529		-0.070	0.144	-0.029	0.592	-0.044	0.081	-0.082	0.236
-0.125	0.413		-0.339	0.121	-0.024	0.670	-0.023	0.088	-0.037	0.254
-0.096	0.306		-0.043	0.086	-0.268	0.370	-0.063	0.053	-0.029	0.311
-0.324	0.087		-0.622	-0.040	-0.084	0.371	-0.036	0.057	-0.104	0.168
-0.113	0.338		-0.049	0.106	-0.198	0.449	-0.017	0.135	-0.043	0.199
0.231	0.974		-0.033	0.063	-0.130	0.474	-0.023	0.096	0.029	0.406
0.087	0.641		-0.028	0.056	-0.140	0.454	-0.036	0.082	-0.042	0.194
-0.157	0.364		-0.751	-0.121	0.052	0.690	-0.025	0.070	-0.053	0.215
0.051	0.566		-0.807	-0.093	-0.045	0.457	-0.020	0.118	-0.199	0.050
			-0.350	0.047	-0.010	0.528	-0.036	0.096	-0.138	0.209
			-0.100	0.102	-0.217	0.168	0.003	0.130	-0.159	0.071
			-0.413	0.028	-0.263	0.121	-0.035	0.090	-0.114	0.191
			-0.127	0.187	-0.222	0.104	-0.018	0.146	-0.198	0.142
			-0.171	0.111	-0.136	0.467	-0.008	0.103	-0.072	0.128
			-0.194	0.107	-0.188	0.369	-0.027	0.092		
			-0.209	0.089	-0.283	0.227	-0.027	0.108		
			-0.259	0.119	-0.279	0.299	-0.035	0.047		
			-0.205	0.106	-0.465	0.018	-0.002	0.170		

(Table 2 continued)

(Table 2 continued)

Managerial Perception About the Government Schemes				Level of Awareness				Export Knowledge				Perceived Benefit of Export Promotion Programmes (EPPs)				Export Performance			
CI Low Adj.	CI Up Adj.	CI Low Adj.	CI Up Adj.	CI Low Adj.	CI Up Adj.	CI Low Adj.	CI Up Adj.	CI Low Adj.	CI Up Adj.	CI Low Adj.	CI Up Adj.	CI Low Adj.	CI Up Adj.	CI Low Adj.	CI Up Adj.	CI Low Adj.	CI Up Adj.	CI Low Adj.	CI Up Adj.
		-0.243	0.143			-0.329	0.220			-0.040	0.020			-0.040	0.020				
		-0.238	0.143			-0.283	0.287			-0.004	0.120			-0.004	0.120				
		-0.248	0.139							-0.024	0.099			-0.024	0.099				
		-0.115	0.064							-0.043	0.061			-0.043	0.061				
		-0.241	0.049							-0.066	0.025			-0.066	0.025				
		-0.153	0.089							-0.036	0.067			-0.036	0.067				
		-0.243	0.121							-0.049	0.055			-0.049	0.055				
		-0.083	0.342							-0.058	0.043			-0.058	0.043				
		-0.274	0.116							-0.056	0.021			-0.056	0.021				
		-0.323	0.135							-0.035	0.032			-0.035	0.032				
		-0.334	0.068							-0.060	0.028			-0.060	0.028				
		-0.031	0.487							-0.018	0.089			-0.018	0.089				
		-0.199	0.120							-0.021	0.077			-0.021	0.077				
		-0.096	0.332							-0.028	0.054			-0.028	0.054				
		-0.164	0.244							-0.047	0.038			-0.047	0.038				
		-0.133	0.300							-0.081	0.042			-0.081	0.042				
		-0.101	0.187							-0.029	0.076			-0.029	0.076				

Table 3. Measurement Fit for Reflective Models: Indicator Reliability (Loadings) and Construct Reliability and Validity—Apparel Sector.

Constructs	Items	Scale	Outer Loadings	Cronbach's Alpha	Rho_A	Composite Reliability	Average Variance Extracted (AVE)	p Value
Managerial perception about the different export promotion schemes	Availing the export promotional schemes/benefits is easy for us	B1c	0.788	.874	0.879	0.905	0.612	.000
	Export promotional schemes help in increasing exports	B1d	0.772					.000
	Export promotional schemes help in entering new markets	B1e	0.795					.000
	Due to tedious procedures, it is difficult to avail the benefits of export promotional schemes	B1f	0.768					.000
	Due to domestic challenges (logistics issues, lack of finance and others), it is difficult to increase exports despite the availability of government export promotional benefits	B1g	0.786					.000
	Online procedures have made it easy to avail the benefits of export promotional schemes	B1h	0.786					.000

(Table 3 continued)

(Table 3 continued)

Constructs	Items	Scale	Outer Loadings	Cronbach's Alpha	Rho_A	Composite Reliability	Average Variance Extracted (AVE)	p Value
Firms' level of awareness	Exhibitions/trade fairs	B2Ma Reflective	0.635	.863	0.869	0.891	0.51	.000
	Buyer–seller meet (BSM)	B2Mb	0.565					.000
	Export promotion seminars/workshops	B2Mc	0.616					.000
	Trade delegation	B2Md	0.700					.000
	Merchandise Exports from India Scheme (MEIS)	B2Me	0.666					.000
	Interest Equitisation Scheme	B2F1	0.685					.000
	Duty Drawback Scheme	B2F2	0.695					.000
	Export Credit	B2F3	0.673					.000
	Export Promotion Capital Goods (EPCG)	B2T1	0.681					.000
	Technology Upgradation Scheme (TUF)	B2T2	0.771					.000
Firms' export knowledge	Preferences/needs of foreign customers	B4a Reflective	0.588	.875	0.882	0.91	0.536	.000
	Competitors' products/position strategy	B4b	0.677					.000
	Foreign trade policies and procedures	B4d	0.703					.000

(Table 3 continued)

(Table 3 continued)

Constructs	Items	Scale	Outer Loadings	Cronbach's Alpha	Rho_A	Composite Reliability	Average Variance Extracted (AVE)	p Value
Managers' perception about EPP benefits	Government export benefits/incentives available for the sector	B4e	0.766					.000
	Shipping and forwarding mechanism	B4f	0.764					.000
	Economic and legal environment in export markets	B4g	0.752					.000
	Economic development in the world markets	B4i	0.766					.000
	Free Trade Agreements/Preferential Trade Agreements	B4j	0.815					.000
	Exhibitions/trade fairs	B5a	0.597	.891	0.894	0.912	0.51	.000
	BSM	B5b	0.642					.000
	Export promotion seminars/workshops	B5c	0.626					.000
	Trade delegation	B5d	0.709					.000
	MEIS	B5e	0.732					.000
	Interest Equitisation Scheme	B5f	0.804					.000
	Duty Drawback Scheme	B5g	0.739					.000

(Table 3 continued)

(Table 3 continued)

Constructs	Items	Scale	Outer Loadings	Cronbach's Alpha	Rho_A	Composite Reliability	Average Variance Extracted (AVE)	p Value
Firm's export performance	Export Credit	B5h	0.741					.000
	EPCG	B5i	0.772					.000
	TUF	B5j	0.747					.000
	Export turnover	Ca	0.689	.892	0.894	0.916	0.608	.000
	Presence in the existing market	Cc	0.824					.000
	Information about foreign markets	Ce	0.811					.000
	Branding in foreign markets	Cf	0.807					.000
	Advancement in technology	Ch	0.794					.000
	Overall competitiveness of the firm	Ci	0.754					.000

Indicator reliability: Of 45 initial items, 5 were removed for low factor loadings. Remaining items meet the ≥ 0.70 threshold and are statistically significant ($p < .05$) (Table 3).

The final model consists of five latent variables:

- *Managerial perception:* 6 indicators (B1c–B1h).
- *Awareness level:* 10 indicators (B2Ma–B2Me, B2F1–F3, B2T1–T2).
- *Export knowledge:* 8 indicators (B4a–B4j).
- *Perceived benefits:* 10 indicators (B5a–B5j).
- *EP:* 6 indicators (Ca–Ci).

All reliability and validity conditions were met, rendering the model fit for further assessment (Table 4).

Assessing the Structural Model

The results presented in Table 5 indicate that all hypothesised relationships between the antecedent variables and firms’ EP are supported at the 5% level of significance, with the exception of one hypothesis. These findings suggest that, among the factors examined in this study, firms’ levels of awareness, firms’ export knowledge and managers’ perceptions of government export promotion schemes exert a statistically significant and positive influence on EP.

Table 4. Assessment of Measurement Fit for Reflective Model.

Conditions	Response	Remarks
<i>Reliability</i>		
Reflective indicators loadings, internal consistency reliability ≥ 0.708 and/or $p < .05$	Yes	Internal consistency reliability is established (refer Table 3)
Composite reliability values of all constructs, maximum 0.90, that is, between 0.70 and 0.90	Yes	Reliability of the model is established (refer Table 3)
Cronbach’s alpha values of all constructs, minimum .70	Yes	
Rho_A values should lie between composite reliability and Cronbach’s alpha	Yes	
Convergent validity: Average variance extracted of all constructs should be ≥ 0.50	Yes	Validity of the model is established
Discriminant validity: Fornell–Larcker criterion	Yes	
Discriminant validity: Heterotrait–monotrait ratio (HTMT) < 0.90	Yes	
Standardised root mean square residual (SRMR) < 0.90	Yes	
Normed fit index (NFI) < 0.90	Yes	

Table 5. Hypothesis Testing—Results.

Hypothesis	Latent Variables	Path Coefficients	t-Statistics	p Values	Status
<i>Apparel</i>					
H_1	Manager's perception about the government schemes → Firms' export performance	0.348	5.181	.000	Supported
H_2	Level of awareness → Firms' export performance	0.150	2.15	.032	Supported
H_3	Firm's export knowledge → Firms' export performance	0.373	4.811	.000	Supported
H_4	Managers' perception about Export Promotion Programme (EPP) benefits → Firms' export performance	0.07	1.096	.274	Not supported

Table 6. Collinearity Statistics Inner (Variance Inflation Factor [VIF]) Values.

Latent Variables	Firm's Export Performance—Apparel
Firm's export knowledge	2.236
Firm's export performance	
Level of awareness	1.815
Manager's perception about Export Promotion Programme (EPP) benefits	1.743
Managers' perception about the government schemes	1.721

After establishing measurement model reliability and validity, the structural model was assessed to test the proposed hypotheses and evaluate EPP effects on EP. Regression paths were estimated, and inner variance inflation factor (VIF) values remained below 3, indicating an absence of multicollinearity (Table 6).

Constructs were categorised into five dimensions: managerial perceptions of schemes, awareness levels, export knowledge, perceived benefits and EP. A bootstrapping procedure with 5,000 subsamples was conducted via Smart-PLS for the 151 observations. The model explains 63.7% of the variance in EP, indicating adequate explanatory power (Figure 1). Adjusted R^2 showed a marginal decrease, suggesting that additional predictors did not further improve fit (Table 7). Results in Table 5 show that all hypothesised relationships, except one, are supported at the 5% significance level. These findings confirm that firm awareness, export knowledge and managerial perceptions exert a statistically significant positive influence on EP.

Table 7. *R*² and Adjusted *R*²—Coefficient of Determination: Goodness of Fit.

Goodness of Fit	Scenario	Endogenous Construct	Path Coefficient	t-Statistics	p Value
Apparel	<i>R</i> ²	Firms' export performance	0.637	14.417	0
	Adjusted <i>R</i> ²	Firms' export performance	0.627	13.813	0

Discussions

The empirical findings of the study can be interpreted through the lenses of the RBV and internationalisation theory. The significant impact of managerial perception, awareness and export knowledge on EP underlines the central role of intangible capabilities in shaping firms' international competitiveness. EPPs contribute to firm performance primarily by strengthening learning processes, cognition and strategic decision-making rather than solely through financial incentives.

The absence of a significant relationship between perceived benefits of EPPs and EP in the apparel sector suggests that institutional support yields performance gains only when firms are able to effectively absorb and internalise such support. This observation aligns with RBV arguments that external resources must be combined with firm-specific capabilities to generate sustained performance advantages.

Managerial Perception About Government Schemes and EP

The bootstrapping results obtained using Smart PLS-SEM support *H*₁, positing that managers' perceptions of government export promotion schemes positively impact firms' EP. Path coefficients ($\beta = 0.348$ and $\beta = 0.188$) and *t*-statistics indicate statistically significant relationships ($p \leq .05$). The findings suggest that favourable managerial perceptions contribute to improved performance, consistent with earlier literature (Abay & Slater, 1989; Cavusgil & Zou, 1994; Zou & Stan, 1998). The study reveals that while managers perceive EPPs as useful, domestic constraints, including logistics, finance and procedural complexities, restrict full leverage of benefits. Although digitalisation has simplified access, operational bottlenecks remain. These findings underline that while positive perception is necessary, effectiveness depends on addressing structural challenges and simplifying administration.

Recommendations

Government level: (a) Simplify and automate benefit procedures with a clear value proposition. (b) Conduct periodic EPP impact assessments with research institutions. (c) Publish and disseminate empirical reports on EPP outcomes through trade bodies. (d) Publicise success stories to build positive perceptions and enable knowledge-sharing among small exporters.

Export Promotion Councils (EPCs)/trade bodies: (a) Establish helpdesk services to address procedural issues. (b) Empirically assess the service quality of support mechanisms. (c) Improve outreach regarding EPP benefits and procedures.

Firms: (a) Organise training to familiarise managers with compliance requirements. (b) Strengthen internal communication to enhance managerial confidence and scheme utilisation.

Firms' Level of Awareness and EP

The causal relationship between firms' awareness of export promotion schemes and EP was examined through H_2 . Estimated path coefficients ($\beta = 0.15$ and $\beta = 0.19$) and significant p values ($p \leq .05$) support the hypothesis, confirming that awareness has a positive, significant impact on firm-level EP. These results align with Kedia and Chhokar (1986), Seringhaus (1987) and Vanderleest (1996), emphasising that awareness is critical for utilising export support. Improving awareness is essential for maximising EPP impact.

Recommendations

Government level: (a) Maintain a comprehensive, updated list of all EPPs. (b) Encourage EPCs to conduct structured knowledge-sharing workshops. (c) Use sector-wise databases for direct communication regarding scheme updates. (d) Enhance digital platforms or apps to provide consolidated information on benefits. (e) Strengthen follow-up mechanisms to assess awareness, particularly among MSMEs.

EPCs/trade bodies: (a) Conduct outreach and capacity-building for MSMEs. (b) Establish dedicated facilitation helpdesks. (c) Develop standardised informational modules on EPP utilisation. (d) Provide customised consultancy support using available funding.

Firm level: Firms should proactively seek information and participate in awareness-building initiatives.

Firms' Export Knowledge and EP

Export knowledge was examined as an independent construct influencing firms' EP. The PLS-SEM results show statistically significant path coefficients ($\beta = 0.373$ and $\beta = 0.320$, $p \leq .05$), supporting the hypothesis that export knowledge positively affects performance. These findings align with Abay and Slater (1989) and Coff (1997). Industry stakeholders validate that an enhanced understanding of domestic and foreign market conditions—including economic, financial, legal and policy frameworks—enables firms to export more effectively across diverse markets.

Recommendations to strengthen export knowledge:

Government level: (a) Develop a centralised digital portal containing country-wise laws, policies, customs procedures and tariffs. (b) Prepare commodity-wise and country-specific export guides. (c) Provide digital directories of foreign importers. (d) Develop user-friendly FTA benefit calculators at the HS-code level.

EPCs/trade bodies: (a) Support digital knowledge platforms using MAI funding. (b) Disseminate market intelligence and sector-specific insights.

Firm level: Firms should proactively enhance knowledge through trade fairs, market research, workshops and direct engagement with overseas buyers.

Managers' Perceived Benefits of EPPs and EP

The hypothesis examining the impact of perceived benefits of EPPs on EP was not supported for the apparel sector. The PLS-SEM results show an insignificant path coefficient ($\beta = 0.07, p \geq .05$), indicating that *perceived benefits of EPPs do not have a statistically significant positive impact on EP in this sector*. This finding contrasts with earlier studies by Durmuşoğlu et al. (2012), Geldres-Weiss and Carrasco-Roa (2011), Martincus and Carballo (2010), Shamsuddoha and Ali (2009) and Lages and Montgomery (2005). A possible explanation is that although apparel exporters may utilise government export promotion benefits, they may not perceive these programmes as sufficiently impactful in enhancing export turnover, market share, competitiveness or overall performance. This suggests a disconnect between programme usage and perceived effectiveness. Accordingly, future research may empirically examine the intensity of EPP usage and investigate the factors underlying this divergence between perceived benefits and actual EP outcomes.

Different EPPs and EP

In this study, EPPs implemented by the government are classified into three broad categories: (a) market development EPPs, (b) financial EPPs and (c) technology development EPPs (Table 8).

The bootstrapping results obtained using Smart-PLS-SEM support H_5 , which posits a positive impact of different EPPs on firms' EP. Accordingly, the hypothesis stating that market development, financial and technology development EPPs exert a positive impact on firms' EP in the apparel sector is accepted (Table 9 and Figure 2). A scheme-wise assessment based on subjective responses further indicates that participation in exhibitions and trade fairs, as well as buyer-seller meets (BSMs), is perceived as the most beneficial by apparel exporters. In contrast, exporters' perceptions regarding the benefits of the Interest Equalisation scheme, the Technology Upgradation Fund (TUF) scheme and trade delegations are relatively lower. The findings suggest scope for future research to empirically examine the utilisation intensity of specific EPPs and their firm-level benefits, as

Table 8. Export Promotional Programmes—Apparel Sector.

Code	Export Promotional Schemes
<i>Marketing Schemes</i>	
B2Ma	Exhibition/trade fairs
B2Mb	Buyer–seller meet (BSM)
B2Mc	Export promotional seminars/workshops
B2Md	Trade delegation
B2Me	Merchandise Exports from India Scheme (MEIS)
<i>Finance Schemes</i>	
B2F1	Interest Equalisation Scheme
B2F2	Duty Drawback Scheme
B2F3	Export Credit
<i>Technology Development Schemes</i>	
B2T1	Export Promotion Capital Goods (EPCG)
B2T2	Technology Upgradation Scheme (TUF)

Table 9. Impact of Different Export Promotion Programmes (EPPs) on Firms' Export Performance—Apparel Sector.

Schemes	Original Sample	Standard Deviation	t-Statistics	p Values
Finance scheme → Export performance	0.191	0.069	2.749	.006
Marketing scheme → Export performance	0.469	0.067	7.0210	.000
Technology development scheme → Export performance	0.191	0.060	3.162	.002

well as to investigate the underlying causes of the observed disconnect between perceived programme benefits and firms' EP.

Conclusions

From a theoretical perspective, this study contributes to the trade and development literature by offering firm-level empirical evidence on the effectiveness of EPPs in a developing economy. By integrating the RBV and internationalisation theory, the study provides firm-level evidence on how institutional support mechanisms translate into EP in an emerging economy context.

The study concludes that government EPPs have a significantly positive impact on the EP of apparel firms that utilise these programmes. The findings highlight the critical role of the government in facilitating EP by simplifying procedures

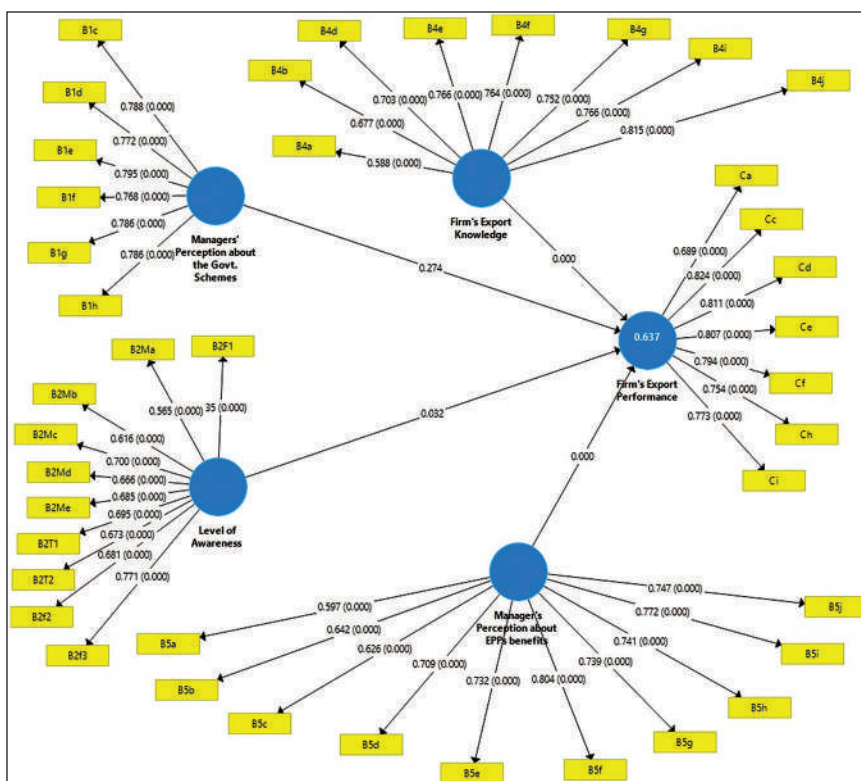


Figure 1. Structural Model.

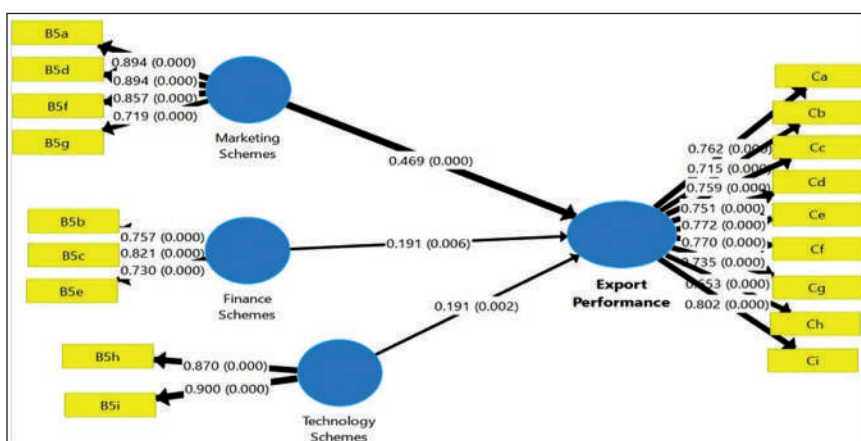


Figure 2. Impact of Different Export Promotion Programmes (EPPs) on Firms' Export Performance—Apparel Sector.

and improving access to export incentives. The study highlights the need for systematic and quantitative impact assessment of EPPs in terms of export growth, market diversification and competitiveness. Regular dissemination of updated information on EPPs, enhanced direct communication with exporters, and the development of dedicated digital platforms and applications are essential for improving programme effectiveness.

By empirically establishing the causal relationship between EPPs and firms' EP, this study contributes to the existing literature. However, continued research across sectors, regions and time periods is required to enable a comprehensive assessment of export promotion policies in India.

Limitations of the Study

The present study is confined to a single sector, namely the apparel sector, for examining managerial perception, firms' awareness, usage and knowledge of government EPPs, as well as their impact on firms' EP. Further, the sample is geographically restricted to selected locations within the state of Maharashtra. Given the vast regional diversity of India, the findings cannot be generalised across all states.

The study adopts a firm-level, cross-sectional research design based on primary survey data. Although various EPPs introduced after the economic reforms of 1991 have been discussed at the macro level, their causal relationship with EP over different time periods has not been empirically examined. Moreover, the study does not assess the direct and indirect effects of EPPs, which would require the incorporation of mediating and moderating variables into the model. Importantly, the impact of short-term export promotional support measures introduced during crisis periods such as the Global Financial Crisis of 2008 and the economic disruption caused by the COVID-19 pandemic in 2020 has not been specifically analysed in terms of export recovery and resilience.

Directions for Future Research

1. *Extension to other sectors*: Future studies could survey sectors like agriculture, pharmaceuticals and software. This would validate present findings and facilitate sector-wise comparisons of EPP effectiveness.
2. *Wider geographical coverage*: Expanding the study to multiple regions would improve generalisability and reveal inter-state variations in awareness, perception and EPP usage.
3. *Scheme-specific impact analysis*: Future research should examine individual sub-schemes, such as trade fairs or export credit, to measure their specific impact on EP beyond broad categories.
4. *Direct and indirect effects*: EPPs often influence performance indirectly via improved resources and knowledge. Incorporating mediating variables could help assess these pathways in the Indian context.

5. *Longitudinal analysis*: A longitudinal design would capture dynamic changes in firms' export behaviour, commitment and performance over time.
6. *Moderating variables*: Studies should include factors like firm size and export experience. Gap analyses can also assess alignment between exporters' needs and government support.
7. *Impact of COVID-19 trade measures*: Future research should empirically evaluate pandemic-era relief measures, such as RoDTEP and 'Districts as Export Hubs', to determine their effectiveness in supporting export recovery and resilience.

Acknowledgements

This research article is part of the author's thesis, which was completed at the Indian Institute of Foreign Trade (IIFT), New Delhi, and conferred in 2023, under the guidance of Professor Dr Rakesh Mohan Joshi, Vice Chancellor, IIFT. The author is profoundly grateful to him for his invaluable guidance, encouragement and support throughout this journey. His insights, mentorship and constant motivation were instrumental in shaping this work.

Data Availability

Data may not be shared, as while gathering the data, we have asked respondents that the submitted information will remain confidential.

Declaration of Conflicting Interests

The author declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

Funding

The author received no financial support for the research, authorship and/or publication of this article.

Notes

1. Merchandise Exports from India Scheme (MEIS) was included in the survey as it was a major scheme active for a long period. It started in *April 2015* and ended in *December 2020*, later replaced by *RoDTEP*.
2. The study considers MEIS to understand the benefits of a scheme that has been operational for several years. Similarly, FMS, FPS and MLFPS have been discontinued, but due to their significance, they have been added in the survey conducted around their discontinuation time.

References

- Abay, N.-E., & Slater, S. F. (1989). Management influences on export performance. *International Marketing Review*, 6(4), 7–26.
- Ahmed, Z. U., Osman, M., Johnson, J. P., & Meng, L. Y. (2002). Export promotion programmes of Malaysian firms. *Journal of Business Research*, 55(10), 831–843.

- Arthur, R. T. (1988). The role of export promotion in international marketing. *Journal of Global Marketing*, 1(3), 75–90.
- Bajpai, N., & Biberman, J. (2020). *Reforms to revitalize the Indian economy* (ICT India Working Paper 26). Columbia University.
- Balassa, B. (1978). Exports and economic growth: Further evidence. *Journal of Development Economics*, 5(2), 181–189.
- Banik, N. (2001). An analysis of India's exports during the 1990s. *Economic & Political Weekly*, 36(44), 4222–4230.
- Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17(1), 99–120.
- Bhat, T. P. (2011). *Structural changes in India's foreign trade*. Institute for Studies in Industrial Development.
- Cavusgil, S. T., & Zou, S. (1994). Marketing strategy–performance relationship. *Journal of Marketing*, 58, 1–21.
- Chopra, R., Bhardwaj, S., Baber, H., & Sanusi, O. I. (2024). Navigating global horizons: Export promotion for SMEs. *Journal of Business & Industrial Marketing*, 39(12), 2774–2790.
- Clarke, W. M. (1991). Changing small firms' attitudes to exporting: A case study of successful intervention. In F. H. R. Seringhaus (Ed.). *Export development and promotion* (pp. 275–300). Kluwer Academic Publishers.
- Coff, R. W. (1997). Human assets and management dilemmas. *Academy of Management Review*, 22(2), 374–402.
- Coughlin, C. C., & Cartwright, P. A. (1981). State foreign export promotion. *Economic Development Quarterly*, 1(3), 257–267.
- Czinkota, M. R., & Ricks, D. A. (1981). Export assistance: Are we supporting the best programmes? *Columbia Journal of World Business*, 34(6), 73–78.
- Dholakia, R. H., & Kapur, D. (2001). Economic reforms and trade performance. *Economic & Political Weekly*, 36(49), 4560–4566.
- Donthu, N., & Kim, S. H. (1993). Implications of firm controllable factors. *Journal of Global Marketing*, 7(1), 47–63.
- Durmuşoğlu, S. S., Apfelthaler, G., Nayir, D. Z., Alvarez, R., & Mughan, T. (2012). The effect of government-designed export promotion service use on small and medium-sized enterprise goal achievement: A multidimensional view of export performance. *Industrial Marketing Management*, 41(4), 680–691.
- Faroque, A. R., & Takahashi, Y. (2012). *Export assistance: The way back and forward*. Springer.
- Francis, C., & Collins, D. (2004). Impact of EPPs on firm competencies. *International Marketing Review*, 21(4/5), 474–495.
- Freixanet, J. (2012). Export promotion programmes and competitiveness. *International Business Review*, 21(6), 1065–1086.
- Geldres-Weiss, V. V., & Carrasco-Roa, J. A. (2011). Impact evaluation of national EPPs. *International Journal of Export Marketing*, 1(1), 77–95.
- Gencturk, E., & Kotabe, M. (2001). Effect of export assistance usage. *Journal of International Marketing*, 9(2), 51–72.
- Ghemawat, P., & Patibandla, M. (1998). India's exports since the reforms. *Economic & Political Weekly*, 33(20), 1196–1198.
- Girma, S., Gong, Y., Görg, H., & Yu, Z. (2009). Heterogeneous firms and trade. *Scandinavian Journal of Economics*, 111(4), 863–891.
- Haddoud, Y. M., Onjewu, A.-K., & Jones, P. (2018). Investigating the moderating role of EPPs. *Critical Perspectives on International Business*, 14.

- Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use PLS-SEM. *European Business Review*, 31(1), 2–24.
- Han, J. H., & Park, H.-Y. (2019). Sustaining small exporters' performance. *Sustainability*, 11(8), 2380.
- Johanson, J., & Vahlne, J. E. (1977). Internationalization process of the firm. *JIBS*, 8(1), 23–32.
- Johanson, J., & Vahlne, J. E. (1990). The mechanisms of internationalization. *International Marketing Review*, 7(4), 11–24.
- Joshi, V., & Little, I. M. D. (1991). *India: Macroeconomics and political economy*. World Bank.
- Kanagasabapathy, K., & Tilak, V. G. (2013). A rethink on India's foreign trade policy. *Economic & Political Weekly*, 48(31), 137–139.
- Kathuria, S. (1996). Export incentives: Recent policy changes in India. *Indian Economic Review*, 31(1), 109–126.
- Kedia, B. L., & Chhokar, J. S. (1986). An empirical investigation of EPPs. *Columbia Journal of World Business*, 21(4), 13–20.
- Kotabe, M., & Czinkota, M. R. (1992). State government promotion of exports. *JIBS*, 23(4), 637–58.
- Kumar, N. (2010). Economic reforms and their macro-economic impact. *Economic & Political Weekly*, 35(10), 803–812.
- Lages, L. F., & Montgomery, D. (2005). Export assistance and performance improvement. *European Journal of Marketing*, 39, 755–784.
- Leonidou, L. C., & Katsikeas, C. S. (1996). The export development process. *JIBS*, 27(3), 517–551.
- Malca, O., Peña, V. J., & Acedo, F. (2019). EPPs as export performance catalysts. *Small Business Economics*, 55(3), 831–851.
- Mansor, N. F. A., & Cheah, J. S. (2024). EPPs and SME export performance. *Journal of Governance and Integrity*, 7(1), 636–649.
- Mansfield, E., Romeo, A., & Wagner, S. (1987). *Foreign trade and U.S. competitiveness*. National Academy Press, Washington, DC
- Martincus, C., & Carballo, J. (2010). Distributional impacts of EPPs. *Journal of Development Economics*, 92(2), 201–214.
- Mota, M., Gomes, R., & Lopes, A. (2021). Export promotion programs and firm performance: Evidence from emerging economies. *Journal of International Business Studies*, 52(4), 645–667.
- Mukherjee, S. (2012). *India's export performance: Trends and drivers* (IIMB Working Paper 363).
- Mukherjee, S., & Mukherjee, S. (2012). *Overview of India's export performance* (IIMB Working Paper 363).
- Munch, J. (2015). The effect of export promotion on firm-level performance. *American Economic Journal*, 10(1), 357–387.
- Nagraj, R. (2019). Economic reforms and manufacturing sector growth. *Economic & Political Weekly*, 52(2), 61–68.
- Naidu, G. M., & Rao, T. R. (1993). Public sector promotion of exports. *Journal of Business Research*, 27(1), 85–101.
- Obadia, C., & Vida, I. (2024). Export marketing strategy and performance. *International Business Review*, 33(2).
- Pahuud de Mortange, C., & Van Gent, A. (1991). International marketing and government export promotion: A review and research agenda. *European Journal of Marketing*, 25(4), 35–4

- Panagariya, A. (2004). *India's trade reform*. Indian Policy Forum.
- Pointon, T. (1978). Measuring the gains from government export promotion. *European Journal of Marketing*, 12(6), 451–458.
- Reid, S. (1981). The decision-maker and export entry. *JIBS*, 12, 101–112.
- Seringhaus, F. H. R. (1986). Trade missions in exporting. *Management International Review*, 29(2), 5–16.
- Seringhaus, F. H. R. (1987). *Export promotion: Role and impact of government*. *Irish Marketing Review*, 2, 106–116.
- Shamsuddoha, A. K. (2004). *Export promotion policies and their impact on export performance: Evidence from developing countries*. Doctoral Dissertation, University of Western Sydney.
- Shamsuddoha, A. K. (2009). Export assistance and export performance: Evidence from SMEs. *Journal of Marketing Development and Competitiveness*, 3(4), 36–47.
- Shamsuddoha, A. K., & Ali, M. Y. (2004). Export promotion programs and their impact on firm performance: A study of Bangladesh. *Journal of Business Research*, 57(6), 673–678.
- Shamsuddoha, A. K., & Ali, M. Y. (2009). Export assistance, firm resources, and export performance. *Asia Pacific Journal of Marketing and Logistics*, 21(3), 408–425.
- Sharma, R. R., Sraha, G., & Crick, D. (2018). EPPs and Ghanaian firms. *International Marketing Review*, 35(4), 661–682.
- Singer, T. O., & Czinkota, M. R. (1994). Effective use of export assistance. *Journal of International Marketing*, 2(1), 53–71.
- Singh, K., & Singla, S. K. (2012). An analysis of Indian exports, 1991–2006. *IJBEMR*, 2(2), 79–108.
- Singh, V. K., Keshari, A., Singh, D., & Gautam, A. (2024). Green export strategies and SMEs. *Journal of Innovation and Entrepreneurship*, 13, 87.
- Sood, J. H., & Adams, P. (1984). Management learning styles as a predictor. *Journal of Business Research*, 12(2), 169–182.
- Suvrathan, P. I. (1991). Machine tool industry: Export performance and prospects. *Economic & Political Weekly*, 26(8), M13–M19.
- Vanderleest, H. W. (1996). New exporters and US export promotion. *Multinational Business Review*, 4(2), 21–29.
- Veeramani, C. (2007). Sources of India's export growth. *Economic & Political Weekly*, 42(25).
- Veeramani, C. (2012). Anatomy of India's merchandise export growth. *Economic & Political Weekly*, 47(1), 94–104.
- Virmani, A. (2001). *India's 1990–91 crisis* (Planning Commission Working Paper 4/2000).
- Wang, X., Chen, A., Wang, H. & Shengxiao. (2017). EPPs and manufacturing SMEs. *Journal of Business Economics and Management*, 18(1), 131–145.
- Weil, M. (1978). Export promotion and economic growth. *World Development*, 6(5), 657–665.
- Wheeler, C. N. (1990). Stimulating UK economies through EPPs. *In International perspectives on trade promotion*. Bloomsbury Academic.
- Wilkinson, T., & Brouthers, L. E. (2006). Trade promotion and SME performance. *International Business Review*, 15, 233–252.
- Yannopoulos, P. (2010). Export assistance programmes: Insights from Canadian SMEs. *IRBRP*, 6.
- Yunis, A. M., & Shamsuddoha, A. K. (2009). Government export assistance for SMEs. *Journal of Enterprise Information Management*, 22(4), 408–422.
- Zou, S., & Stan, S. (1998). Determinants of export performance review. *International Marketing Review*, 15(5), 333–356.

From Social Media to Civic Life: Examining How Civic Attitudes and Behaviours Mediate Engagement Among Working Women

IIFT International Business and
Management Review Journal
2026, 4(1) 54–76
© The Author(s) 2026
DOI: 10.1177/jiift.261439598
ift.spectrumjps.com



Krishna Murari¹  and Shalini Shukla² 

Abstract

This study investigates how social media use (SMU) influences civic engagement (CE), focusing on the mediating roles of civic engagement attitudes (CEA) and behaviours (CEB). Using survey data from 403 working women respondents from India and partial least squares structural equation modelling (PLS-SEM) analysis, the research finds that SMU—measured through integration into social routines (ISR) and social integration and emotional connection (SIEC)—affects CE only indirectly, via CEA and CEB, with no direct effects. These results highlight context-specific, gendered pathways to civic participation, shaped by cultural and socio-economic factors. The study offers policymakers insights into leveraging social media to foster CE by targeting underlying attitudes and behaviours.

Keywords

Social media use (SMU), civic engagement attitude (CEA), civic engagement behaviour (CEB), civic engagement (CE), integration into social routine (ISR), social integration & emotional connection (SIEC)

Introduction

The advent of social media has fundamentally altered how individuals engage with civic and political issues. Platforms like Facebook, WhatsApp and Twitter (now X) have transitioned from mere communication tools to vital spaces for

¹Department of Management Studies, BBAU (A Central University), Vidya Vihar, Raebareli Road, Lucknow, Uttar Pradesh, India

²Department of Management, Sikkim University (A Central University), Gangtok, Sikkim, India

Corresponding author:

Shalini Shukla, Department of Management, Sikkim University (A Central University), Gangtok, Sikkim 737101, India.

E-mail: shuklashalini@gmail.com



Creative Commons Non Commercial CC BY-NC: This article is distributed under the terms of the Creative Commons Attribution-NonCommercial 4.0 License (<http://www.creativecommons.org/licenses/by-nc/4.0/>) which permits non-Commercial use, reproduction and distribution of the work without further permission provided the original work is attributed.

political discourse, activism and community mobilisation (Gil de Zúñiga et al., 2012). While prior research has established a general link between social media use (SMU) and civic engagement (CE) (Boulianne, 2015). In India, where internet penetration has surged to over 880 million users,¹ social media has become an indispensable medium for civic discourse. However, working women, who often juggle professional, domestic and social responsibilities, may experience digital CE differently than the general population. Most quantitative studies examining SMU have traditionally focused on behavioural metrics, while neglecting the emotional dimensions of platform engagement (Jenkins-Guarnieri et al., 2013). The Social Media Use Integration Scale (SMUIS), developed by Jenkins-Guarnieri et al. (2013), addresses this gap through its two core constructs: social integration and emotional connection (SIEC) and integration into social routine (ISR). ISR refers to the habitual use of social media as part of daily life, characterised by frequent platform visits, ritualised checking and passive content consumption (LaRose, 2010; Xenos et al., 2014). In contrast, SIEC captures the affective dimension of digital engagement, encompassing strong-tie networks that offer emotional support, a sense of belonging to online communities, and meaningful relational investment (Berger & Milkman, 2012; Kim et al., 2013). Civic engagement attitudes (CEA) includes internal efficacy, civic duty and interest in public affairs (Blais & Achen, 2019), while civic engagement behaviours (CEB) involves tangible actions such as signing online petitions or attending community meetings (Barnard, 2012; Bode, 2016). Research shows that online participation often leads to offline action (Boulianne, 2015), forming a continuum of engagement that is both habit-forming (Aldrich & Meyer, 2015) and socially contagious through network effects (Centola, 2010). For working women, digital platforms can help lower the threshold for initial civic involvement, offering accessible, low-effort entry points that can evolve into sustained patterns of participation over time.

When examined through the integrated lens of role strain theory (Goode, 1960), uses and gratifications theory (UGT) (Katz et al., 1973) and social cognitive theory (Bandura, 1986), ISR and SIEC reveal complex pathways to CE that are particularly salient for working women navigating multiple social roles. Additionally, working women face unique challenges in civic participation due to several reasons. First, time scarcity—balancing work and caregiving responsibilities leaves little time for traditional civic activities (Hilbrecht et al., 2013). Second, social media offers low-effort ways to engage, like sharing posts or signing petitions, which fit better into their busy, fragmented schedules (Arora, 2019). Third, emotional labour often spills over into digital spaces, where online networks serve both as support systems and platforms for civic involvement (Vickery, 2018).

The role strain theory (Goode, 1960) posits that individuals experience stress when multiple societal roles conflict. For working women, social media may act as a CE equaliser, reducing participation barriers through micro-acts (e.g., sharing posts, signing petitions) that fit into fragmented schedules (Hilbrecht et al., 2013), providing asynchronous engagement (civic discussions can occur outside work hours) and fostering peer accountability (online communities reinforce civic

identity), as supported by Tufekci (2017). Additionally, UGT by Katz et al. (1973) helps explain why working women turn to social media for civic purposes—whether for informational needs (ISR) or emotional validation (SIEC). Empirical evidence supports that frequent users encounter more civic opportunities (Xenos et al., 2014), as well as emotionally engaged users participate more (Boulianne, 2019). Finally, social cognitive theory (Bandura, 1986) informs how CEA and CEB mediate these relationships, shaping sustained civic participation.

Despite these theoretical foundations, critical gaps persist in the literature. First, while prior studies highlight social media's role in CE, few examine gendered differences, particularly among working women in non-Western contexts. Second, the mediating mechanisms—how attitudes and behaviours translate digital use into action—remain underexplored. Third, regional studies on digital CE in India's northeastern states, such as Sikkim, are scarce, despite their unique sociocultural dynamics. This study seeks to address existing research gaps by testing key hypotheses grounded in role strain theory, UGT and social cognitive theory. The research is guided by two central questions that explore the relationship between SMU and CE among working women in Sikkim. The first research question (RQ1) examines the direct impact of SMU on CE. It asks: *How do ISR—and SIEC influence the overall CE of working women?* This question explores whether frequent and emotionally meaningful use of social media translates into increased civic participation in reality. The second research question (RQ2) investigates the mediating role of CEA and CEB in this relationship. Specifically, it asks: *How do CEA and CEB mediate the effects of ISR and SIEC on overall CE?* This aims to uncover whether it is through shifts in attitudes (e.g., increased civic interest or efficacy) and behaviours (e.g., petition signing or community involvement) that SMU leads to sustained civic participation.

In order to seek the answers to the research questions, the remainder of the article is organised as follows: 'Literature Review' section highlights the literature review, followed by research gaps and hypotheses formulation; 'Methodology' section sheds light on methodology and data collection, followed by findings and discussion in 'Results and Findings' and 'Discussion and Implications' sections. 'Conclusion' section provides a concluding remark, with scope for future studies.

Literature Review

The use of social media platforms has become increasingly popular in recent years, providing individuals with new avenues to engage with one another and the broader community. The concept of CE has been studied extensively in political science, sociology and other social sciences. Research has shown that social media platforms can be a powerful tool for promoting CE. One way that social media can encourage CE is by providing individuals with access to information about political and social issues. Studies have found that social media platforms can increase political knowledge and awareness among users (Njeru, 2021; Siyal & Brohi, 2022). Social media also allows individuals to connect with others who share similar interests and values, enabling the formation of online communities

centred around specific issues or causes. Another way that social media can promote CE is by providing a platform for political participation and deliberations on any issue of common interest to the members. Social media platforms like Twitter and Facebook can be used to share political opinions, mobilise others to support a particular cause, and organise protests and rallies. Social media has also been used to encourage voter turnout, with some studies finding that social media can increase voter turnout by as much as 2% (Bond et al., 2012).

The relationship between SMU and CE can be founded on the grounds of role strain theory (Goode, 1960), uses and gratification theory (Katz et al., 1973) and social cognitive theory (Bandura, 1986) in the extant literature.

Role Strain Theory

Goode (1960) elucidates why working women may develop distinct patterns of SMU for civic purposes. The theory's emphasis on competing role demands helps explain how ISR emerges as a compensatory mechanism—routine SMU enables civic participation despite time constraints (Hilbrecht et al., 2013). This aligns with findings that individuals with higher ISR scores demonstrate greater CE (Ahmed & Gibreel, 2021; Shukla & Murari, 2023), as habitual platform use provides efficient access to civic content within limited time budgets. Research demonstrates that ISR significantly impacts CE by increasing incidental exposure to civic information by 37% (Fletcher & Nielsen, 2018). This creates what scholars term 'ambient awareness' of social issues through continuous, low-level exposure to political content in everyday scrolling (Vitak et al., 2011). Interestingly, studies show ISR's effects on CE often surpass those of deliberate news seeking (Song et al., 2020). This suggests that for time-constrained working women, the passive absorption of civic content through routine SMU may be particularly significant. The algorithmic amplification of political content in personal feeds further enhances these effects, making CE an almost inevitable byproduct of daily digital routines (Gil de Zúñiga et al., 2012).

UGT

Katz et al. (1973) complement this perspective by identifying the specific needs fulfilled through social media engagement. SIEC reflects the emotional gratifications sought by working women—the desire for community belonging and social support that may be lacking due to role conflicts (Kim & Kim, 2022). UGT helps explain why emotionally-connected users (high SIEC) show stronger CE (Setiawan et al., 2021; Valenzuela et al., 2009), as these platforms satisfy needs for social integration that traditional civic channels cannot provide amidst busy schedules. Research indicates that SIEC enhances willingness to participate in civic actions by 42% (Boulianne, 2019), primarily through fostering a collective identity that is crucial for sustained engagement (Tufekci, 2017). For working women, SIEC may be particularly impactful. Marginalised groups often rely on emotionally supportive online communities as safe spaces for civic discourse

(Vickery, 2018). The sense of belonging and mutual care in these digital networks can lower psychological barriers to participation that might otherwise deter women facing multiple role demands (Hilbrecht et al., 2013).

Social Cognitive Theory

Bandura (1986) bridges these perspectives by explaining the psychological mechanisms translating media use into civic action. The theory's constructs of observational learning and self-efficacy are key to understanding the mechanism of how ISR facilitates CEA through repeated exposure to civic content (Bandura, 1986; Valenzuela et al., 2009) and how SIEC strengthens CEB by building participatory confidence through social reinforcement (Gil de Zúñiga et al., 2012; Vitak et al., 2011). Research demonstrates that CEA mediates 58% of social media's effect on participation (Skoric et al., 2016), developing through observational learning in digital spaces (Bandura, 1986). Notably, CEA often proves more influential than demographics in predicting engagement (Verba et al., 1995). For working women in Sikkim, this suggests that even with time constraints, positive civic attitudes cultivated through social media could significantly impact participation levels. The development of these attitudes through digital platforms may follow different pathways than traditional civic socialisation.

Gender and CE in Digital Spaces

Working women navigate CE through distinct patterns shaped by their social position. Time scarcity affects 72% of working women's participation (Hilbrecht et al., 2013), leading to a preference for digital conveniences, like mobile engagement (Arora, 2019). Safety considerations also play a role, with many women preferring private digital spaces for sensitive civic discussions (Vickery, 2018). Research consistently demonstrates that gender significantly influences how individuals engage with civic issues through digital platforms (Xenos et al., 2014). Women tend to participate in civic activities that align with their social roles and community networks, often favouring grassroots mobilisation over formal political processes (Schlesinger & Heldman, 2001). Studies show that women are more likely to engage in what Treré (2018) terms 'quiet activism'—sharing content, signing petitions and participating in local community groups rather than high-visibility political debates. Feminist Standpoint Theory claims that women's CE reflects distinct lived experiences and priorities (Harding, 2004). The emotional dimensions of SMU appear particularly salient for women's CE. According to Vickery (2018), women frequently utilise digital platforms to build emotional support networks that subsequently facilitate civic participation. This aligns with findings that SIEC scores correlate more strongly with CE among women than men (Kim & Kim, 2022).

Research suggests that there is a strong relationship between SIEC, ISR, CEA and CEB (Shukla & Murari, 2023). The individuals who reflect higher levels of engagement at social media platforms; have higher levels of SIEC and more ISR

and are more likely to engage in civic activities and have positive civic attitudes (Ahmed & Gibreel, 2021; Kim & Kim, 2022; Setiawan et al., 2021; Valenzuela et al., 2009). These patterns suggest that working women may develop innovative strategies to balance civic participation with other responsibilities. Digital platforms appear particularly well-suited to support these adaptive approaches, offering flexible, low-risk avenues for engagement that accommodate complex schedules.

Research Gaps and Hypotheses

The literature reveals several critical gaps that this study addresses. First, a limited understanding exists of how CEA and CEB operate differently for ISR versus SIEC pathways. Second, a few studies specifically examine working women's digital CE, despite their unique constraints and opportunities. Third, the Himalayan states' sociotechnical dynamics remain understudied in CE research. By integrating role strain theory with digital media scholarship, this study develops a comprehensive model of working women's CE in Sikkim. The research contributes to broader theoretical conversations while addressing regionally specific knowledge gaps about digital participation patterns in India's northeastern states.

Overall, the literature on social media and CE suggests a complex relationship between the two, with both positive and negative impacts depending on various factors, such as age, education, political interest, and the broader political and social context. Besides, the mediating role of CEA and CEB, can be pivotal in understanding these complex dynamics. Based on the literature review, the research questions are translated into six specific hypotheses, as shown in Table 1, that will be tested empirically.

Table 1. Formulation of Hypotheses and Empirical Support.

Hypothesis	Theoretical Basis	Expected Outcome	Empirical Support
H_1 : ISR $\rightarrow$ CE (+)	UGT (habitual use)	Routine use increases CE	Xenos et al. (2014)
H_2 : SIEC $\rightarrow$ CE (+)	UGT (social-emotional needs)	Stronger ties $\rightarrow$ More CE	Boulianne (2015)
H_3 : ISR $\rightarrow$ CEA $\rightarrow$ CE	Social cognitive theory	Attitudes strengthen ISR-CE link	Valenzuela et al. (2009)
H_4 : ISR $\rightarrow$ CEB $\rightarrow$ CE	Behavioural reinforcement	Past actions sustain CE	Skoric et al. (2016)
H_5 : SIEC $\rightarrow$ CEA $\rightarrow$ CE	Observational learning	Emotional bonds shape attitudes	Kim et al. (2013)
H_6 : SIEC $\rightarrow$ CEB $\rightarrow$ CE	Network accountability	Peer influence sustains CE	Tufekci (2017)

Note: CE: Civic engagement; CEA: Civic engagement attitudes; CEB: Civic engagement behaviours; ISR: Integration into social routines; SIEC: Social integration and emotional connection; UGT: Uses and gratifications theory.

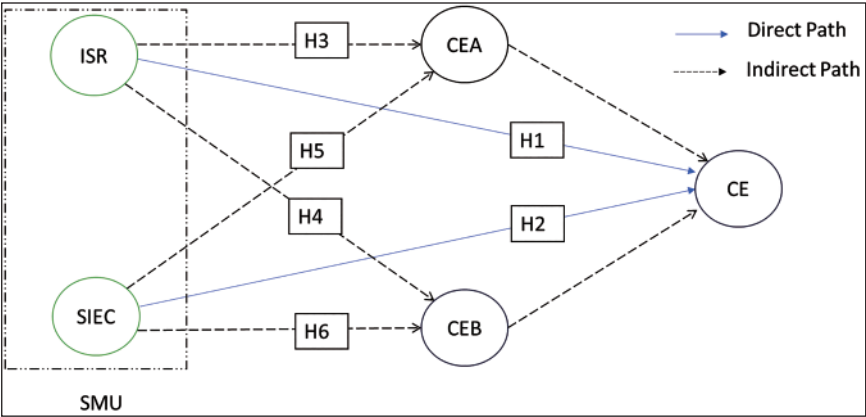


Figure 1. Proposed Research Model and Hypotheses.

Based on the above hypotheses, a conceptual research model is depicted in Figure 1.

Methodology

Research Context: Why Working Women of Sikkim?

This study focuses on Sikkim, a state with one of India’s highest female labour force participation rates, that is, 68.6%,² to examine how social media facilitates CE amid competing role demands. The choice of Sikkim as the research setting is deliberate and significant for several reasons. As one of India’s smallest states with a population of approximately 600,000, Sikkim presents unique sociocultural characteristics that influence CE patterns. The state’s matrilineal traditions in certain communities, combined with its high female workforce participation, create a distinctive context for examining gender dynamics in digital civic participation. Moreover, Sikkim’s rapid digital transformation, with internet penetration growing from 27% in 2011 to over 65% in 2023,¹ provides an ideal setting to study emerging digital civic practices. Working women in Sikkim represent a critical demographic for several reasons. First, their high labour force participation suggests greater economic agency that may correlate with CE. Second, the time constraints they face from balancing work and family responsibilities make them particularly reliant on efficient forms of civic participation, with social media offering potentially ideal solutions. Third, their experiences can provide valuable insights for other regions undergoing similar social and digital transformations. These intersecting trends of SMU and civic participation, especially among working women, create a unique context where working women must navigate complex digital landscapes while balancing multiple social roles and responsibilities.

Measurement and Scales

In this study, the SMU is captured using an SMU integration scale developed by Jenkins-Guarnieri et al. (2013). It included two reflective constructs, namely SIEC and ISR, for assessing the working women's perception of SMU. SIEC and ISR refer to the extent to which individuals feel connected to and involved in social networks and routines, respectively. Involvement of individuals in civic activities, that is, CE, can be reflected by CEA and CEB, like volunteering for community projects, attending a community meeting to discuss local community problems, donating items for their local neighbourhoods, and working for a social group in the community (Kim & Ball-Rokeach, 2006). CEA refers to an individual's beliefs and values regarding CE and the importance of participating in civic activities. CEB refers to an individual's actual involvement in civic activities such as volunteering, voting or participating in community events.

Constructs, Variables and Operational Definitions

SIEC

SIEC is represented by four items in this study. The construct is drawn out from the SMUIS, along with another variable, namely ISR (Jenkins-Guarnieri et al., 2013). SIEC originally consists of six items; however, items SIEC 1 and 5 have been removed due to poor factor loading. The items in SIEC describe the integration and emotional connection of individuals with social media and the people who use it. It consists of items such as *I feel disconnected from friends when I have not logged into my social media accounts*, and *I get upset when I can't log on to my social media accounts*.

ISR

Similar to SIEC, ISR is also drawn out as a dimension from the SMUIS, and the items describe the engagement and frequency of use of social media. ISR is represented by four items and consists of items such as *I enjoy checking my social media accounts* and *Using social media is a part of my everyday routine*.

CEA

CEA is drawn out from a Civic Engagement Scale developed and validated by Doolittle and Faul (2013), consisting of two dimensions, that is, CEA and CEB. CEA consists of eight items and refers to the personal beliefs and feelings that people have about their involvement and their perceived ability to make a difference in the community. Three items, namely CEA 1, 5 and 7, have been removed from the scale due to poor factor loading in the construct.

CEB

CEB refers to the actions that people take to actively engage and make a difference in their community. CEB consists of six items. CEB 5 has been removed from the construct due to poor factor loadings.

CE.

CE in this study refers to the actual posts, information, updates, videos and others received over social media and actions taken by the people in reality for the betterment of society as a whole. It is an overall process of believing that one can make a difference in enhancing their community through social media. Initially, we included the six dimensions of CE, namely *civic sense* (such as being polite; showing consideration to the elderly and other needy people; not littering on streets, keeping public property clean; smoking only at designated places and others), *social issues of public concern* (such as poverty, inequalities, gender issues, illiteracy, public health, unemployment, bullying, people with a disabilities and others), *environmental issues* (such as stopping the use of plastic, switching to renewable energy resources, saving electricity and water, recycling waste, lowering consumerism, buying energy-saving and water-saving appliances, using chemical-free products, plantation and others), *community volunteering activities* (such as the organisation of blood donation camps and free medical camps, raising funds and resources during disasters, planting trees and teaching poor children free of charge), *political participation* (such as influence others, e.g., elected representatives and policy makers while they make decisions of public concern; protests, strikes, boycotts, online petitioning, e-campaigning, blogging and others), and *protection of cultural heritage* (such as tangible culture—buildings, monuments, landscapes, books, works of art and artefacts; intangible culture—folklore, traditions, language and knowledge) in our scale. But while checking reliability and validity, two dimensions, that is, environmental issues and protection of cultural heritage, were dropped due to poor results. Thus, four variables of CE related to civic sense, social issues of public concern, community volunteering and political participation were assessed on a 5-point Likert scale with anchors as 0: do not receive, 1: receive the information, 2: receive the information and share with others, 3: share with others and ask them to take action, 4: engage myself and ensure others participation for assessing the overall active or passive engagement in civic activities for the betterment of the community. Table 2 summarizes the sources of constructs and items included under each. The final results of reliability and validity of constructs and variables are shown in Tables 3–7.

Table 2. Constructs, Items and Sources of Scales.

Concepts/Constructs	Items	Source
SIEC and ISR	SIEC: 6, ISR: 4	Jenkins-Guarnieri et al. (2013)
CEA and CEB	CEA: 8, CEB: 6	Doolittle and Faul (2013)
Civic engagement	Four items	Self-developed and validated

Note: CEA: Civic engagement attitudes; CEB: Civic engagement behaviours; ISR: Integration into social routines; SIEC: Social integration and emotional connection.

Sampling Design

The study employs a quantitative research design to provide a comprehensive understanding of research questions and the testing of hypotheses. A structured survey was administered to 403 working women across Sikkim's five districts, employing stratified sampling to ensure representation across urban and rural areas, different economic sectors, and age groups. The sample size of 403 working women was determined based on statistical considerations aimed at ensuring reliable and generalisable findings. The selection aligns with widely accepted practices in survey research, where a sample size of approximately 400 provides a 95% confidence level with a margin of error of about $\pm 5\%$ for a population proportion estimate. This level of precision is considered adequate for social science research, especially when drawing conclusions about patterns, behaviours or attitudes (Lakens, 2022). The survey measured all key constructs (ISR, SIEC, CEA, CEB and CE) using validated scales adapted to the local context. The demographic details of the sample are given in Table 3.

Table 3. Demographic Details of Working Women.

S. No.	Demographic Variables	Categories	Frequencies	Percentage
1	Age	Young adults	179	44.4
		Middle adults	199	49.4
		Older adults	25	6.2
2	Marital status	Married	204	50.6
		Unmarried	192	47.6
		Separated/widowed/ divorced	7	1.7
3	Education	Up to secondary	36	8.9
		Senior secondary	82	20.3
		Certificate/diploma	46	11.4
		Undergraduate	87	21.6
		Postgraduate	128	31.8
		Above postgraduate	24	6
4	Occupation	Self-employed	77	19.1
		Private job	128	31.8
		Government job	198	49.1
5	Annual income	Less than 1 lakh	191	47.4
		1–2 lakhs	73	18.1
		2–5 lakhs	86	21.3
		5–10 lakhs	42	10.4
		Above 10 lakhs	11	2.7

Tools for Data Analysis

This study employs partial least squares structural equation modelling (PLS-SEM) to analyse the complex mediation relationships between SMU (ISR/SIEC) and CE through attitudinal (CEA) and behavioural (CEB) mediators. Given our sample size of 403 working women in Sikkim, PLS-SEM is particularly appropriate as it performs robustly with smaller samples compared to covariance-based SEM (Hair et al., 2019). Besides, PLS-SEM does not assume multivariate normality, making it more suitable than traditional SEM approaches for analysing our data (Hair et al., 2019). This characteristic is particularly valuable when studying behavioural phenomena in natural settings, where perfectly normal distributions are uncommon (Ketchen, 2013).

Results and Findings

The descriptive statistics in Table 4 reveals several key patterns in the data: SIEC shows moderate engagement ($M = 3.11$, $SD = 0.80$), while ISR demonstrates slightly higher and more consistent incorporation into daily life ($M = 3.31$, $SD = 0.53$). Both CEA ($M = 5.71$, $SD = 1.33$) and CEB ($M = 5.12$, $SD = 1.33$) exhibit high means with substantial variability, though the lower behavioural scores suggest potential barriers in translating attitudes into action. The CE composite ($M = 2.63$, $SD = 0.68$) indicates moderately positive participation levels. All constructs show good response variability without floor/ceiling effects. This implies that the ISR-CEA-CEB-CE progression aligns with Social Cognitive Theory’s emphasis on observational learning leading to attitudinal and behavioural change (Bandura, 1986). The moderate SIEC scores support role strain theory’s prediction of limited emotional bandwidth for working women (Goode, 1960). The high but variable CEA/CEB scores reflect UGT’s premise of diverse media gratifications (Katz et al., 1973)

The correlation analysis in Table 5 reveals that while social media ISR and SIEC are moderately interrelated ($r = .446$, $p < .01$). However, their individual associations with CE components are relatively weak but statistically significant (ranging from $r = .146$ to $.189$, $p < .01$), suggesting that these digital behaviours

Table 4. Descriptive Statistics for Constructs.

	N	Minimum	Maximum	Mean	Std. Dev.
SIEC	403	1.00	5.00	3.1141	0.79606
ISR	403	1.00	5.00	3.3145	0.53182
CEA	403	1.00	7.00	5.7109	1.32799
CEB	403	1.20	7.00	5.1151	1.33452
CE	403	1.00	4.00	2.6290	0.68120
Valid N	403				

Note: CE: Civic engagement; CEA: Civic engagement attitudes; CEB: Civic engagement behaviours; ISR: Integration into social routines; SIEC: Social integration and emotional connection.

Table 5. Correlation Among Constructs of the Study.

	SIEC	ISR	CEA	CEB	CE
SIEC	1				
ISR	.446**	1			
CEA	.146**	.169**	1		
CEB	.189**	.186**	.578**	1	
CE	.063	.056	.260**	.217**	1

Notes: **Correlation is significant at the .01 level (2-tailed). CE: Civic engagement; CEA: Civic engagement attitudes; CEB: Civic engagement behaviours; ISR: Integration into social routines; SIEC: Social integration and emotional connection.

contribute modestly to CEA and CEB. Notably, the strongest relationship emerges between CEA and CEB ($r = .578, p < .01$), indicating that positive civic attitudes are closely tied to actual participation, while both CEA ($r = .260$) and CEB ($r = .217$) show moderate but significant correlations with overall CE. Crucially, neither ISR nor SIEC demonstrates a meaningful direct correlation with CE ($r = .056$ and $.063$, respectively), reinforcing the path analysis findings that social media's influence operates primarily through the mediation of attitudinal and behavioural factors rather than through direct effects, highlighting the importance of fostering both civic-minded perspectives and participatory habits to effectively translate digital engagement into meaningful civic action.

Measurement Model Evaluation

PLS-SEM was employed to assess both the measurement and structural models, as the framework is relatively complex, composed of both reflective and composite constructs (Ketchen, 2013). Initially, attention was focused on ensuring the reliability and validity of the reflective constructs (SIEC, ISR, CEA, CEB and CE). Next, the reliability and convergent validity of the reflective measurement models were assessed. Here, we considered the outer loadings of the items associated with each construct. Further, composite reliability (CR) and average variance extracted (AVE) were investigated. To establish reliability and convergent validity, the loadings, CR and AVE values should surpass 0.7, 0.7 and 0.5, respectively. Nonetheless, loadings between 0.5 and 0.7 remain acceptable if CR and AVE values reach the aforementioned threshold (Hair et al., 2019). Table 6 provides an overview of these results for all reflective constructs, demonstrating that reliability and convergent validity are established for the respondents.

Following this, discriminant validity was examined and the results are shown in Table 7. Here, the Fornell–Larcker criterion and heterotrait-monotrait (HTMT) approaches were employed. Extant research suggests that acceptable HTMT values can be lower than either 0.85 or 0.9. Table 4 shows that discriminant validity was acceptable across the data. Further, as per Fornell and Larcker (1981), the results demonstrate that the square root of the AVE for each construct is greater than its correlation with all other constructs, again demonstrating discriminant validity.

Table 6. Reliability and Convergent Validity of Constructs.

Construct	Type	Items	Loadings	CR	AVE
Civic engagement (CE)	Reflective	CE1	0.675	0.809	0.518
		CE2	0.627		
		CE3	0.697		
		CE4	0.858		
Civic engagement attitude (CEA)	Reflective	CEA2	0.760	0.884	0.606
		CEA3	0.825		
		CEA4	0.853		
		CEA6	0.747		
		CEA8	0.695		
Civic engagement behaviour (CEB)	Reflective	CEB1	0.756	0.897	0.636
		CEB2	0.821		
		CEB3	0.864		
		CEB4	0.800		
		CEB6	0.743		
Integration to social routine (ISR)	Reflective	ISR1	0.882	0.884	0.656
		ISR2	0.759		
		ISR3	0.802		
		ISR4	0.792		
Social integration and emotional connection (SIEC)	Reflective	SIEC2	0.782	0.872	0.631
		SIEC3	0.847		
		SIEC4	0.762		
		SIEC6	0.784		

Note: AVE: Average variance extracted; CR: Composite reliability.

Structural Model Evaluation

Figure 2 shows the results of the hypothesis assessment for the sample data. The results highlight that the direct effect of SIEC and ISR on CE is not significant. However, results show a significant effect of SIEC on CEB, but not on CEA of working women. ISR is found to be significantly connected with CEA and CEB. Our results support that both CEA and CEB have a significant linkage with CE.

In order to assess mediation effects, we applied the product of coefficients approach (indirect effect), assessing the significance of indirect effects using bias-corrected bootstrap confidence intervals (CIs). Table 8 reveals that the direct effects of SIEC and ISR on CE (corresponding to hypotheses H_1 and H_2) are statistically insignificant. However, ISR exhibits a significant indirect effect on CE via CEA at the 5% level of significance (H_3), and SIEC demonstrates a significant indirect effect on CE through CEB (H_6) at the 10% level of significance. These findings provide empirical support for hypotheses H_3 and H_6 , confirming

Table 7. Discriminant Validity: Heterotrait-monotrait (HTMT) and (Fornell–Larcker).

	CE	CEA	CEB	ISR	SIEC
CE	(0.719)				
CEA	0.335 (0.325)	(0.778)			
CEB	0.260 (0.268)	0.705 (0.593)	(0.798)		
ISR	0.093 (0.082)	0.224 (0.191)	0.212 (0.185)	(0.81)	
SIEC	0.109 (0.099)	0.162 (0.134)	0.205 (0.185)	0.537 (0.442)	(0.794)

Notes: Values in parentheses show the results of discriminant validity as per Fornell–Larcker. CE: Civic engagement; CEA: Civic engagement attitudes; CEB: Civic engagement behaviours; ISR: Integration into social routines; SIEC: Social integration and emotional connection.

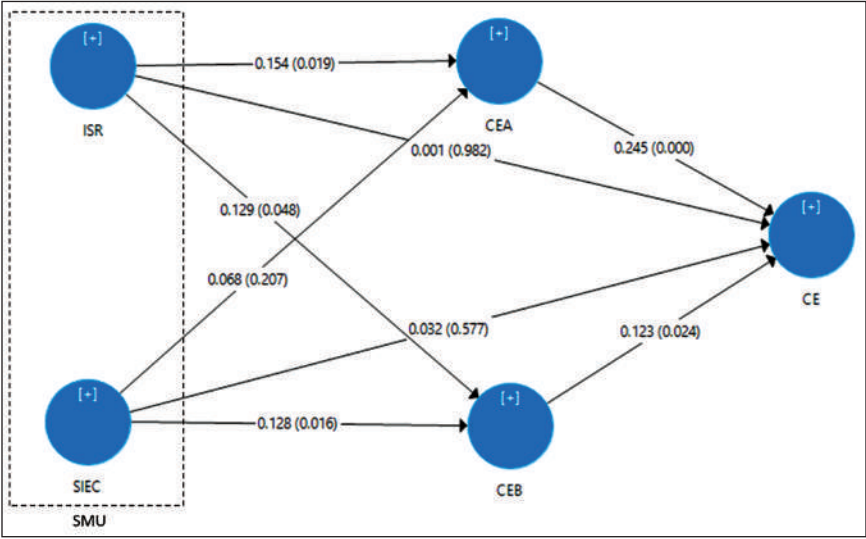


Figure 2. Path Coefficients and *p* Value.

Source: Output generated by authors using SmartPLS

the mediating role of CEA in the relationship between ISR and CE, and of CEB in the link between SIEC and CE.

The structural path analysis in Figure 2 reveals significant insights into how social media usage patterns (ISR and SIEC) influence CE through the mediating roles of CEA and CEB. There is a moderate positive effect of ISR (habitual SMU), and it significantly enhances CEA ($\beta = 0.154, p < .05$). This implies that the more frequently working women incorporate social media into daily life, the more likely they are to develop positive attitudes towards civic participation. ISR also has a modest but measurable impact on CEB ($\beta = 0.129, p < .05$), implying that

Table 8. Testing of Hypotheses.

Hypothesis	Path	Original Sample β	Std. Dev.	t-statistics	p Values	Result
H_1	ISR $\rightarrow$ CE	0.001	0.054	0.024	.982	Not supported
H_2	SIEC $\rightarrow$ CE	0.032	0.055	0.589	.577	Not supported
Specific Indirect Effect						
H_3	ISR $\rightarrow$ CEA $\rightarrow$ CE	0.038	0.019	1.999	.046**	Supported
H_4	ISR $\rightarrow$ CEB $\rightarrow$ CE	0.016	0.011	1.418	.157	Not supported
H_5	SIEC $\rightarrow$ CEA $\rightarrow$ CE	0.017	0.013	1.276	.202	Not supported
H_6	SIEC $\rightarrow$ CEB $\rightarrow$ CE	0.016	0.009	1.704	.089*	Supported
Total indirect effect	ISR $\rightarrow$ CE	0.054	0.022	2.477	.014**	
	SIEC $\rightarrow$ CE	0.032	0.017	1.892	.059*	

Notes: * and ** indicate the significance at 10% and 5% level of significance. CE: Civic engagement; CEA: Civic engagement attitudes; CEB: Civic engagement behaviours; ISR: Integration into social routines; SIEC: Social integration and emotional connection.

habitual scrolling may lead to incidental exposure to civic content, prompting small-scale actions (e.g., sharing posts, signing petitions).

On the other hand, SIEC do not directly shape civic attitudes CEA ($\beta = 0.068$, $p = .207$). It means that, while emotional engagement fosters social bonding, it may not necessarily translate into civic-mindedness unless reinforced by informational exposure. The study confirms that SIEC in digital spaces significantly drives CEB ($\beta = 0.128$, $p < .05$). It simply means that strong social ties (e.g., WhatsApp groups, Facebook communities) motivate individuals to participate in civic activities due to peer influence and collective identity. While examining the mediating effects of CEA and CEB on CE, civic attitudes are the biggest predictor of actual engagement, as shown by the CEA $\rightarrow$ CE ($\beta = 0.245$, $p < .001$) path. CEB $\rightarrow$ CE path has a small but significant effect ($\beta = 0.123$, $p < .05$), implying that the past civic actions reinforce future participation in line with behavioural reinforcement.

Discussion and Implications

The structural equation modelling results reveal nuanced pathways through which social media usage influences CE among working women in Sikkim, with findings both supporting and contradicting existing theoretical expectations. The complete rejection of direct effect hypotheses (H_1 and H_2) aligns with recent literature emphasising the mediated nature of digital participation (Boulianne, 2019),

challenging earlier technological determinism that posited straightforward social media effects. The significant specific indirect effect supporting H_3 ($ISR \rightarrow CEA \rightarrow CE$: $\beta = 0.038$, $p < .05$) confirms Bandura's (1986) social cognitive theory, demonstrating how routine platform use cultivates civic attitudes that ultimately drive engagement—a pathway empirically validated in similar contexts by Valenzuela et al. (2009). However, the non-significant mediation through CEB in H_4 contradicts portions of the habit formation literature (LaRose, 2010), suggesting that while routine use shapes attitudes, it may not automatically translate to participatory behaviours without additional motivational factors among working women.

The borderline significant mediation in H_6 ($SIEC \rightarrow CEB \rightarrow CE$: $\beta = 0.016$, $p < .10$) partially supports role strain theory (Goode, 1960), indicating that emotional connections may help working women overcome participation barriers through behavioural channels, though the effect size remains modest. This finding echoes Vickery's (2018) work on gendered digital networks, but questions the presumed strength of emotional ties in civic mobilisation (Tufekci, 2017). The non-significant H_5 pathway ($SIEC \rightarrow CEA \rightarrow CE$) particularly challenges uses and gratifications assumptions about affective media experiences shaping civic orientations (Kim et al., 2013), suggesting that emotional connections operate more through behavioural than attitudinal routes in this population.

The significant total indirect effects ($ISR \rightarrow CE$: $\beta = 0.054$, $p < .05$; $SIEC \rightarrow CE$: $\beta = 0.032$, $p < .10$) collectively reinforce the 'cognitive-first' model of digital engagement, where attitudinal transformations precede behavioural changes. This pattern substantiates recent feminist revisions to CE theories (Schlesinger & Heldman, 2001) that account for gendered media appropriation strategies. However, the small effect sizes across all pathways suggest that digital platforms alone constitute insufficient conditions for robust civic participation, aligning with Schradie's (2019) critique of technological solutionism. These results collectively highlight the need for more situated theorising that considers both platform affordances and the intersectional constraints facing working women in transitional economies.

Further analysis highlights the role of SIEC in shaping both CEA and CEB, with statistically significant path coefficients to CEA ($\beta = 0.154$, $p < .05$) and CEB ($\beta = 0.128$, $p < .05$). These findings confirm that emotional bonds and community integration positively influence civic disposition and action, aligning with Jenkins-Guarnieri et al. (2013). Conversely, ISR shows no direct effect on CEA ($\beta = 0.001$, $p > .05$), emphasising the need for additional psychosocial drivers. Prior literature (Feeney & Porumbescu, 2021; Morrow & Scorgie-Porter, 2017) supports this, indicating that social media catalyses CE primarily by enhancing attitudes and relational ties, rather than through habitual use alone. Contrasting findings by Bimber et al. (2012) further complicate the narrative, suggesting that, in the absence of emotional engagement, online routines may have limited participatory effects—highlighting the importance of context, demographic variables, and the nature of civic activities.

While SMU does not directly influence CEA or CEB, it exerts an indirect effect by strengthening SIEC, which subsequently fosters CE. This suggests that social media functions as an enabler—facilitating emotional connectivity that

drives civic outcomes. As Quan-Haase et al. (2008) point out, social media's role may be to modulate the intensity of participation rather than trigger it outright. Accordingly, institutions and policymakers aiming to enhance civic involvement should prioritise cultivating a sense of community through direct social contact—such as local meetings and personal outreach—where social media complements, rather than replaces, traditional engagement mechanisms.

Implications for Theory and Practice

The findings of this study offer several important theoretical implications that advance our understanding of CE, particularly for working women in non-Western contexts. First and foremost, the results challenge simplistic technological determinism by demonstrating that SMU does not directly lead to CE. Instead, the process is mediated through attitudinal and behavioural pathways, supporting more nuanced theoretical frameworks that emphasise the complex interplay between digital platforms and human agency. This aligns with recent critiques of direct effects models and reinforces the need to examine the psychological and social mechanisms that translate online activities into meaningful civic participation.

A key theoretical contribution emerges from the validation of sequential cognitive-behavioural pathways, as predicted by social cognitive theory. The strong mediation through CEA suggests that routine exposure to civic content on social media primarily works by shaping individuals' perceptions and beliefs about participation before influencing actual behaviours. This finding has important implications for intervention design, highlighting the need to focus on content that cultivates civic-minded perspectives rather than simply encouraging superficial engagement metrics. The weaker behavioural pathways further emphasise that habitual platform use alone is insufficient to drive sustained civic action without accompanying attitudinal change.

The study also reveals important gendered dimensions in how different types of SMU affect CE. While routine use (ISR) significantly influences attitudes, SIEC primarily facilitates behavioural participation. This distinction supports role strain theory by showing how working women navigate civic participation within their constrained time budgets, using different platform features for different purposes. The findings suggest that emotional support networks may provide the necessary confidence boost for time-pressed women to translate their civic attitudes into action, even if they do not directly shape those attitudes.

Furthermore, the research challenges some universal assumptions in UGT by demonstrating contextual variations in how emotional connections relate to civic outcomes. In Sikkim's unique sociocultural environment, SIEC appears to function more as a behavioural enabler than an attitudinal driver, possibly reflecting local patterns of gendered digital practice. This underscores the importance of developing regionally sensitive theories that account for how cultural norms and economic structures mediate technology's social impacts.

Finally, the modest effect sizes across all pathways serve as an important reminder of digital media's limitations in overcoming structural barriers to civic

participation. While social media can facilitate certain forms of engagement, the small magnitudes suggest that it cannot compensate for systemic inequalities or replace robust civic infrastructure. This finding supports more critical perspectives on digital activism and cautions against technological solutionism, reinforcing the need for holistic approaches that combine platform-based strategies with institutional reforms addressing the root causes of participation gaps.

Limitations and Future Research Directions

The present study has certain limitations, which need to be addressed. However, this study is a novel attempt at identifying the aspect of CE among working women in hilly geography and contextual settings. But we envision many other promising areas in this field of study due to certain drawbacks in the evidence. First, the study used a cross-sectional design for data collection, which might not be sufficient for tracking the changing attitude of respondents towards CE by social media usage. There are possibilities of attitudinal changes by the usage of social media over a period of time, or with actual engagement in civic activities. Capturing this requires a longitudinal framework of data collection. Thus, more systematic research with longitudinal data collection and analysis could shed more light on many unfolded aspects of CE.

Second, differences in employment status of women, such as time and pressure at work, government versus private jobs, may also impact the usage of social media, which in turn may impact civic sense or participation. Geographical limitation of sampling is the third limitation of the study, adding more geographical units may bring forth new insights into the study and make generalisation possible. In this way, the study offers numerous directions for future researchers in terms of a longitudinal survey, geographical expansion, adding variables like employment status, gender, marital status, social norms, outcomes and many more. Apart from this, studies can also focus on the usage of different social media platforms and their influence on different types of CE activities.

Conclusion

This study provides compelling evidence that social media's influence on CE among working women in Sikkim operates through mediated, rather than direct, pathways. While routine platform use (ISR) fosters civic attitudes (CEA) and emotional connections (SIEC) enable civic behaviours (CEB), neither dimension directly translates to overall CE without cognitive and behavioural mediation. The findings support Bandura's (1986) Social Cognitive Theory, wherein attitudes (CEA) form first through exposure (ISR), behaviours (CEB) follow, influenced by both routine use (ISR) and emotional ties (SIEC). Final engagement (CE) depends on both attitudes and actions. Role strain theory explains gender-specific patterns, indicating that working women benefit from low-effort civic exposure (e.g., news feeds) due to time constraints. Emotional support networks help

overcome participation barriers. In countries, where gender disparity can easily be observed in political, civil and social spheres, this study provides the basis and means for motivating half the population to actively participate and have their voice in local governance and management. The findings challenge universalist assumptions about digital participation, instead highlighting gendered, context-dependent mechanisms shaped by role strain, cultural norms and regional socio-economic factors.

The implications of these findings are multi-dimensional. For policymakers and civil society actors, the strongest predictor of CE—attitudinal change—points to the need for targeted civic education campaigns. Such efforts should promote narratives of collective efficacy and local governance participation, particularly in formats that resonate with women's lived experiences. Moreover, since emotional engagement via private channels like WhatsApp proved effective in prompting civic behaviour, non-governmental organisations (NGOs) and advocacy groups should leverage these platforms to create safe, inclusive digital spaces. Time constraints faced by working women must also be addressed through low-effort engagement strategies such as micro-polls or voice note submissions, allowing for flexible yet meaningful participation.

For social media platform designers, the study advocates algorithmic interventions that prioritise civic content visibility, especially for users demonstrating habitual engagement patterns (high ISR). Features designed to enhance emotional connection—such as community recognition badges or moderated group discussions—could further reinforce SIEC and sustain civic involvement over time. Employers, too, have a role to play. Initiatives like paid 'civic hours' can reduce the conflict between professional duties and public participation, while digital literacy training within the workplace can expand women's perception of social media beyond entertainment or networking towards civic use.

The research opens several avenues for future inquiry. Intersectional analyses that explore how caste, class or rural-urban divides shape digital civic pathways are essential. Comparing women across formal and informal work sectors could also illuminate economic barriers to engagement. Platform-specific studies—contrasting the effects of private (e.g., WhatsApp) versus public (e.g., Twitter/X) platforms or visual-first environments like Instagram—will help refine content strategies for different user bases. Longitudinal and experimental research can assess the long-term impact of attitude-driven civic actions and test behavioural nudges such as automated prompts or reminder notifications.

Acknowledgement

The authors acknowledge the contribution made by anonymous participants of the study.

Consent to Participate

Each participant has given informed consent. They were informed orally as well as in writing for voluntary participation. Respondents were ensured about the academic nature of the study and the anonymity of their responses.

Data Availability

Data can be made available on reasonable request.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

Funding

The authors disclosed receipt of the following financial support for the research, authorship and/or publication of this article: The authors, namely Dr Krishna Murari (Project Director) and Dr Shalini Shukla (Co-Project Director) are the awardees of the ICSSR Major Research Project. This research article is largely an outcome of the Research Project sponsored by the Indian Council of Social Science Research (ICSSR). However, the responsibility for the facts stated, opinions expressed, and the conclusions drawn is entirely that of the authors.

Notes

1. As per the *Annual report on telecom statistics in India, 2023*. Telecom Regulatory Authority of India. <https://www.trai.gov.in/about-us/annual-reports>
2. As of 2022–2023, the State's Female Labour Force Participation rate was 68.6%, higher than the national average according to the National Institution for Transforming India (NITI) Ayog report (2025). <https://www.niti.gov.in/sites/default/files/2025-03/Macro-and-Fiscal-Landscape-of-the-State-of-Sikkim.pdf>

ORCID iDs

Krishna Murari  <https://orcid.org/0000-0003-4535-7153>

Shalini Shukla  <https://orcid.org/0000-0002-4369-3527>

References

- Ahmed, A., & Gibreel, O. (2021). The role of social media in strengthening civic engagement in the Middle East and North Africa. *World Journal of Entrepreneurship, Management and Sustainable Development*, 17(3), 309–317. <https://doi.org/10.1108/WJEMSD-02-2021-0020>
- Aldrich, D. P., & Meyer, M. A. (2015). Social capital and community resilience. *American Behavioral Scientist*, 59(2), 254–269. <https://doi.org/10.1177/0002764214550299>
- Arora, P. (2019). *The next billion users: Digital life beyond the West*. Harvard University Press.
- Bandura, A. (1986). Social foundations of thought and action: A social cognitive theory. In *Prentice-Hall series in social learning theory* (Vol. 16). Prentice-Hall.
- Barnard, S. R. (2012). Digitally enabled social change: Activism in the internet age. *New Media & Society*, 14(5), 894–895. <https://doi.org/10.1177/1461444812444415d>
- Berger, J., & Milkman, K. L. (2012). What makes online content viral? *Journal of Marketing Research*, 49(2), 192–205. <https://doi.org/10.1509/jmr.10.0353>
- Bimber, B., Flanagin, A. J., & Stohl, C. (2012). *Collective action in organizations: Interaction and engagement in an era of technological change*. <https://doi.org/10.1017/CBO9780511978777>

- Blais, A., & Achen, C. H. (2019). Civic duty and voter turnout. *Political Behavior*, 41(2), 473–497. <https://doi.org/10.1007/s11109-018-9459-3>
- Bode, L. (2016). Political news in the news feed: Learning politics from social media. *Mass Communication and Society*. <https://doi.org/10.1080/15205436.2015.1045149>
- Bond, R. M., Fariss, C. J., Jones, J. J., Kramer, A. D. I., Marlow, C., Settle, J. E., & Fowler, J. H. (2012). A 61-million-person experiment in social influence and political mobilization. *Nature*, 489(7415), 295–298. <https://doi.org/10.1038/nature11421>
- Boulianne, S. (2015). Social media use and participation: A meta-analysis of current research. *Information, Communication & Society*, 18(5), 524–538. <https://doi.org/10.1080/1369118X.2015.1008542>
- Boulianne, S. (2019). Revolution in the making? Social media effects across the globe. *Information, Communication & Society*, 22(1), 39–54. <https://doi.org/10.1080/1369118X.2017.1353641>
- Centola, D. (2010). The spread of behavior in an online social network experiment. *Science*, 329(5996), 1194–1197. <https://doi.org/10.1126/science.1185231>
- Doolittle, A., & Faul, A. C. (2013). Civic engagement scale: A validation study. *SAGE Open*, 3(3), 1–7. <https://doi.org/10.1177/2158244013495542>
- Feeney, M. K., & Porumbescu, G. (2021). The limits of social media for public administration research and practice. *Public Administration Review*, 81(4), 787–792. <https://doi.org/10.1111/puar.13276>
- Fletcher, R., & Nielsen, R. K. (2018). Are people incidentally exposed to news on social media? A comparative analysis. *New Media and Society*, 20(7), 2450–2468. <https://doi.org/10.1177/1461444817724170>
- Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18(1), 39–50. <https://doi.org/10.1177/002224378101800104>
- Gil de Zúñiga, H., Jung, N., & Valenzuela, S. (2012). Social media use for news and individuals' social capital, civic engagement and political participation. *Journal of Computer-Mediated Communication*, 17(3), 319–336. <https://doi.org/10.1111/j.1083-6101.2012.01574.x>
- Goode, W. J. (1960). A theory of role strain. *American Sociological Review*, 25(4), 483. <https://doi.org/10.2307/2092933>
- Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European Business Review*, 31(1), 2–24. <https://doi.org/10.1108/EBR-11-2018-0203>
- Harding, S. (Ed.). (2004). *The feminist standpoint theory reader intellectual and political controversies*. Routledge.
- Hilbrecht, M., Shaw, S. M., Johnson, L. C., & Andrey, J. (2013). Remixing work, family and leisure: Teleworkers' experiences of everyday life. *New Technology, Work and Employment*. <https://doi.org/10.1111/ntwe.12010>
- Jenkins-Guarnieri, M. A., Wright, S. L., & Johnson, B. (2013). Development and validation of a social media use integration scale. *Psychology of Popular Media Culture*, 2(1), 38–50. <https://doi.org/10.1037/a0030277>
- Katz, E., Blumler, J. G., & Gurevitch, M. (1973). Uses and gratifications research. *Public Opinion Quarterly*, 37(4), 509–523. <https://doi.org/10.1086/268109>
- Ketchen, D. J. (2013). A primer on partial least squares structural equation modeling. *Long Range Planning*, 46(1–2), 184–185. <https://doi.org/10.1016/j.lrp.2013.01.002>
- Kim, Y. C., & Ball-Rokeach, S. J. (2006). Civic engagement from a communication infrastructure perspective. *Communication Theory*, 16(2), 173–197. <https://doi.org/10.1111/j.1468-2885.2006.00267.x>

- Kim, Y., Hsu, S. H., & Gil de Zúñiga, H. (2013). Influence of social media use on discussion network heterogeneity and civic engagement: The moderating role of personality traits. *Journal of Communication*, 63(3), 498–516. <https://doi.org/10.1111/jcom.12034>
- Kim, Y., & Kim, B. (2022). Effects of young adults' smartphone use for social media on communication network heterogeneity, social capital and civic engagement. *Online Information Review*, 46(3), 616–638. <https://doi.org/10.1108/OIR-08-2020-0332>
- Lakens, D. (2022). Sample size justification. *Collabra: Psychology*, 8(1). <https://doi.org/10.1525/collabra.33267>
- LaRose, R. (2010). The problem of media habits. *Communication Theory*, 20(2), 194–222. <https://doi.org/10.1111/j.1468-2885.2010.01360.x>
- Morrow, E., & Scorgie-Porter, L. (2017). *An analysis of Robert D. Putnam's bowling alone: The collapse and revival of American community*. Macat Library. <https://doi.org/10.4324/9781912282319>
- Njeru, A. (2021). Role of social media on community mobilization. *Journal of Public Relations*, 1(1), 40–52. <https://doi.org/10.47941/jpr.655>
- Quan-Haase, A., Wellman, B., Witte, J. C., & Hampton, K. N. (2008). Capitalizing on the net: Social contact, civic engagement, and sense of community. In *The internet in everyday life* (pp. 289–324). <https://doi.org/10.1002/9780470774298.ch10>
- Schlesinger, M., & Heldman, C. (2001). Gender gap or gender gaps? New perspectives on support for government action and policies. *Journal of Politics*. <https://doi.org/10.1111/0022-3816.00059>
- Schradie, J. (2019). *The revolution that wasn't: How digital activism favors conservatives*. Harvard University Press. <http://www.jstor.org/stable/j.ctvfxv9ww>
- Setiawan, A. A., Triyanto, & Muchtarom, M. (2021). Using a social media Facebook to develop civic engagement in Indonesia. *Academic Journal of Interdisciplinary Studies*, 10(2), 220–227. <https://www.richtmann.org/journal/index.php/ajis/article/view/12430/12026>
- Shukla, S., & Murari, K. (2023). Understanding social media and civic engagement research nexus: A systematic literature review. *International Journal of Research in Management*, 5(1), 108–118. <https://doi.org/10.33545/26648792.2023.v5.i1b.78>
- Siyal, N. A., & Brohi, A. M. (2022). Social media and political awareness. *Benazir Research Journal of Humanities and Social Sciences*, 2(1), 64–82. <https://brjhss.com/index.php/brjhss/article/view/42/22>
- Skoric, M. M., Zhu, Q., Goh, D., & Pang, N. (2016). Social media and citizen engagement: A meta-analytic review. *New Media & Society*, 18(9), 1817–1839. <https://doi.org/10.1177/1461444815616221>
- Song, H., Gil de Zúñiga, H., & Boomgaarden, H. G. (2020). Social media news use and political cynicism: Differential pathways through “news finds me” perception. *Mass Communication and Society*, 23(1), 47–70. <https://doi.org/10.1080/15205436.2019.1651867>
- Treré, E. (2018). *Hybrid media activism: Ecologies, imaginaries, algorithms* (1st ed.). Routledge. <https://doi.org/10.4324/9781315438177>
- Tufekci, Z. (2017). *Twitter and tear gas: The power and fragility of networked protest*. Yale University Press.
- Valenzuela, S., Park, N., & Kee, K. F. (2009). Is there social capital in a social network site?: Facebook use and college student's life satisfaction, trust, and participation. *Journal of Computer-Mediated Communication*, 14(4), 875–901. <https://doi.org/10.1111/j.1083-6101.2009.01474.x>

- Verba, S., Schlozman, K. L., & Brady, H. E. (1995). *Voice and equality: Civic voluntarism in American politics*. Harvard University Press. <https://doi.org/10.2307/j.ctv1pnc1k7>
- Vickery, J. R. (2018). Worried about the wrong things: Youth, risk, and opportunity in the digital world. *European Journal of Communication*, 33(1), 108–109. <https://doi.org/10.1177/0267323117753751>
- Vitak, J., Zube, P., Smock, A., Carr, C. T., Ellison, N., & Lampe, C. (2011). It's complicated: Facebook users' political participation in the 2008 election. *Cyberpsychology, Behavior and Social Networking*, 14(3), 107–114. <https://doi.org/10.1089/cyber.2009.0226>
- Xenos, M., Vromen, A., & Loader, B. D. (2014). The great equalizer? Patterns of social media use and youth political engagement in three advanced democracies. *Information Communication and Society*, 17(2), 151–167. <https://doi.org/10.1080/1369118X.2013.871318>

Recency Frequency Monetary Analysis for Segmenting Milk Suppliers of a Dairy Organisation

IIFT International Business and
Management Review Journal
2026, 4(1) 77–86
© The Author(s) 2026
DOI: 10.1177/jiift.261417001
ift.spectrumjps.com



Subir Mitra¹ 

Abstract

The dairy supply chain encompasses a complex network of stakeholders, including milk producers, processors, distributors and retailers. Effective management of this supply chain is essential for ensuring the continuous supply of high-quality milk and milk products to consumers. Milk suppliers, as the primary source of milk, play a critical role in the dairy supply chain. Understanding and segmenting milk suppliers based on their milk-supplying behaviour can provide dairy organisations with valuable insights for optimising supply chain management strategies. It will also improve supplier relationships and enhance overall profitability. At present, all transactions of individual milk suppliers are digitally recorded immediately at the point of their supply on a daily basis, creating a massive database that can be used for dynamic data analysis by fast computing facilities available in information technology today. Recency frequency monetary (RFM) analysis is a powerful tool that can be used to segment milk suppliers based on their milk-supplying behaviour. Further, based upon the initial RFM analysis, machine learning-based algorithms may be utilised to give interesting insights into the supply patterns, which may be missed by normal statistical analysis. This article explores the benefits of RFM application for segmenting milk suppliers of a dairy organisation for managing the supply chain effectively with a real case example.

Keywords

Recency frequency monetary analysis

¹Indian Institute of Foreign Trade, Gandhinagar, Gujarat, India

Corresponding author:

Subir Mitra, Indian Institute of Foreign Trade, GIFT City, Gandhinagar, Gujarat 382050, India.
E-mail: subirmitro@gmail.com



Creative Commons Non Commercial CC BY-NC: This article is distributed under the terms of the Creative Commons Attribution-NonCommercial 4.0 License (<http://www.creativecommons.org/licenses/by-nc/4.0/>) which permits non-Commercial use, reproduction and distribution of the work without further permission provided the original work is attributed.

Introduction

Milk procurement in a typical village in India is essentially a bulking operation, as an average milk supplier supplies only about 2–5 L of milk a day, and hence there is a need for a multitude of suppliers for a viable operation. However, keeping physical track of the supply behaviour of thousands of such suppliers over a period of time becomes a herculean task for the milk procurement managers, especially when the area of operations spans across more than three to five districts and the milk suppliers supply milk twice a day.

To put it in perspective with an example, an organisation procuring an average of 2 lakh litres of milk per day may have around 40,000 milk suppliers dispersed widely in 400 villages with a geographically spread across 3000 sq. km. Assuming two milk-supplying transactions per day per milk supplier, wherein the quantity and quality of milk supplied, as well as the value of milk received is recorded, we have a database of around 3 crore records or transactions in a single year. *(However, with today's fast computing facilities, we can analyse the last 5 years of data with maybe 15 crore records within seconds for all these thousands of milk suppliers along with their seasonal or sporadic variations.)*

Adding to the complexity of the milk supply chain is that not all suppliers supply milk every day. There may be suppliers who are leaving or joining depending upon the season (milk supply is strongly seasonal and also impacted by vagaries of weather conditions) or competition due to the availability of better prices and/or facilities provided by other players. Further, new animals may have been inducted or some animals may be dry in the supplier household. Given that milk suppliers in India are mostly smallholder farmers residing in the villages, the changing economic condition of the supplier households also plays an important part in their milk-supplying behaviour. For an effective supply chain management, the milk procurement managers need to be constantly aware of the reasons behind the increase or decrease in milk supplies.

Supplier Segmentation and Recency Frequency Monetary Analysis

Milk suppliers are the backbone of the dairy industry, providing the raw material for milk production. Their performance directly impacts the quality and quantity of milk produced, which in turn affects the dairy organisation's ability to meet market demand and achieve its financial goals. Thus, effective segmentation of milk suppliers can help dairy organisations in the following ways:

- *Optimise procurement strategies:* By understanding the different segments of milk suppliers, dairy organisations can tailor their procurement strategies to maximise value from each segment.
- *Improve supplier relationships:* Segmentation can help dairy organisations identify and focus on their most valuable suppliers, building stronger relationships and fostering long-term partnerships.

- *Enhance overall profitability*: By optimising procurement strategies and improving supplier relationships, dairy organisations can reduce costs and increase profitability.

In fact, supplier segmentation, which is a strategic approach to grouping suppliers based on shared characteristics, has now emerged as a valuable tool for dairy organisations to enhance supplier relationships and drive profitability.

Among the various supplier segmentation techniques, RFM analysis has gained prominence due to its simplicity and effectiveness.

RFM analysis classifies suppliers based on three key dimensions:

- *Recency*: Measures the time since the supplier's last supply.
- *Frequency*: Indicates the number of supply transactions made by the supplier within a specified period.
- *Monetary value or volume of milk supplied*: Represents the total volume of milk supplied and/or its monetary value over a defined timeframe.

Database and Methodology Used for the Study

Daily milk transaction data for 1,564 milk suppliers residing in 15 nearby villages for a milk chilling centre in Uttar Pradesh were collected between the period August 2007 and July 2009. The transaction data consisted of 'Supplier's Name/ID', 'Village Code/ID', 'Date of supply', 'Volume of milk (kg)' supplied and 'Value of milk supplied (Rs)' for each of their daily transactions during this period.

Some records for understanding of the database are as shown in Table 1.

The application software for RFM analysis was developed in Python (*though it can also be done very easily in Excel and utilised if the volume of data is not very big*).

To calculate *Recency*, we subtracted the last supply date from the current date and extracted the number of days using the `datetime.now().date()` function of Python. It gives us the number of days since the supplier's last supply, representing their recency value.

After that, we calculated the *Frequency* for each supplier. We grouped the data by 'Supplier Name/ID' and counted the number of *unique* 'Date of Supply' values to determine the number of supplies made by each supplier. It gives us the frequency value, representing the total number of supplies made by each supplier.

Finally, we calculated the *Monetary/Volume value* for each supplier. We grouped the data by 'Supplier Name/ID' and summed the 'Volume of Milk Supplied' values to calculate the total amount of milk supplied by each supplier. This could also have been done using the monetary value of the milk supplied but in our context, when this information needs to be used by the procurement manager, it is more apt to provide it in terms of volume. It gives us the *Monetary/Volume value*, representing the total monetary/volume contribution of each supplier.

By performing these calculations, we now have the necessary RFM values (recency, frequency, monetary/volume value) for each supplier, which are important indicators for understanding supplier behaviour and segmentation in RFM analysis.

Table 1. Sample Transaction Records.

Supplier ID	Supplier Name	Village Code/ ID	Date of Supply	Volume of Milk Supplied (kg)	Value of Milk Supplied (₹)
12019	Chandra Gupta	12	22 August 2007	2	62.50
12018	Dharmendra	12	22 August 2007	2	62.50
10022	Jung Bhadur	10	23 August 2007	1	31.25
9009	Ram Milan	9	23 August 2007	3	93.75
3007	Viswanath	3	23 August 2007	1	31.25
10030	Ram Kumar	10	24 August 2007	1	31.25
7012	Awadhesh	7	25 August 2007	5	156.25
13009	Suneeta	13	29 August 2007	1	31.25
12012	Rakesh Kori	12	29 August 2007	6	187.50
7014	Ram Kumar	7	29 August 2007	4	125.00
7002	Prem Nath	7	29 August 2007	5	156.25
13011	Dashrath	13	31 August 2007	2	62.50
10026	Deepak	10	31 August 2007	9	281.25

We assigned scores from 5 to 1 to calculate the *Recency* score, where a higher score indicates a more recent supply. It means that suppliers who have supplied more recently will receive higher recency scores.

We assigned scores from 1 to 5 to calculate the *Frequency* score, where a higher score indicates a higher supply frequency. Suppliers who made more frequent supplies will receive higher frequency scores.

To calculate the *Monetary* score, we assigned scores from 1 to 5, where a higher score indicates a higher Volume supplied by the customer.

To calculate RFM scores, we used the `pd.cut()` function of Python to divide recency, frequency and monetary values into bins. We define five bins for each value and assign the corresponding scores to each bin.

This is illustrated with an analysis of some sample suppliers in Table 2.

For instance, a supplier with a recent supply, high supplying frequency and very significant monetary value or volume of milk supplied would receive high scores, namely 555 across all three dimensions, placing them in a segment of high-value, loyal suppliers, while the worst supplier may be scored as 111.

Results

It may be noted that not all suppliers supplied milk every day in this period. Further, along with the fluctuation of the quantity of milk supplied by the suppliers in this period, there were many incidents of old suppliers leaving and/

Table 2. Recency Frequency Monetary (RFM) Score of Sample Suppliers.

Supplier_Code	Name of Supplier	Last date of Supply	Frequency	Quantity Supplied	Recency	Frequency	Monetary	RFM Score
10002	Dharmendra	21 June 2009	516	16.62	5	5	5	555
15001	Ranjeet	31 July 2009	707	13.49	5	5	5	555
8001	Ram Milan	28 July 2009	464	13.01	5	5	5	555
10079	Ram Samujh	13 November 2008	179	5.56	4	4	5	445
22033	Shubham S.	17 September 2008	154	5.13	4	4	5	445
8015	Harish Chandra	29 December 2008	139	5.70	4	4	5	445
24055	Surendra Kumar	20 September 2008	184	3.37	4	4	4	444
20003	Ram Kumar	8 April 2008	87	4.13	3	3	5	335
10031	Daya Ram	30 April 2008	79	4.65	3	3	5	335
3078	Maresh	23 July 2008	83	3.14	3	3	4	334
24057	Rajbahadur	7 April 2008	76	3.35	3	3	4	334
14046	Rambaran Singh	12 March 2008	72	3.46	3	3	4	334
8145	Ramsumer	10 June 2008	70	3.17	3	3	4	334
9017	Shanjay	19 December 2007	30	1.51	2	3	2	232
9025	Suneel	19 December 2007	30	1.47	2	3	2	232
9032	Raghubeer	19 December 2007	30	1.40	2	3	2	232
6031	Babu Yadav	18 December 2007	30	0.44	2	3	2	232
24016	Ramsagivan	6 December 2007	4	5.00	1	2	5	125
4036	Ramrajsingh	2 December 2007	10	4.45	1	2	5	125
13051	Shiv Karan	20 November 2007	9	4.06	1	2	5	125
22018	Shohan Lal	4 October 2007	1	0.60	1	1	2	112
13033	Maresh	3 October 2007	1	1.00	1	1	1	111
18029	U. K. Sukla	2 October 2007	1	0.80	1	1	1	111
21019	Shyamu	24 September 2007	1	1.00	1	1	1	111
1008	Ram Sajivan	21 September 2007	1	1.00	1	1	1	111

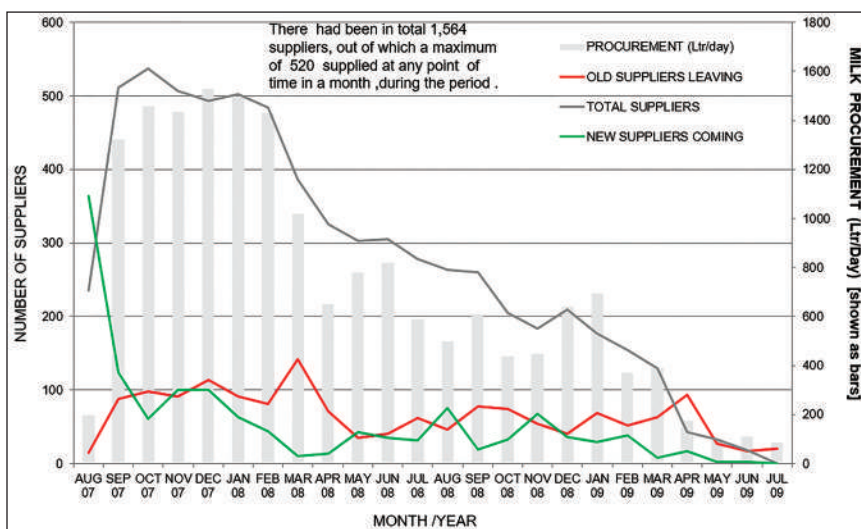


Figure 1. Dynamic Changes in Milk Procurement Volume and Milk Suppliers Over Time.

or new suppliers joining for some reason during this period. This dynamic characteristic of the milk supply chain is quite expected and is inherent in the milk supply chain, which makes the milk procurement activity very challenging. In fact, this is true of most of the rural produce in our country in bulking small holder production.

The dynamic changes in milk procurement volume and the number of milk suppliers supplying milk in each month during the period can be illustrated by a graphical analysis of the data as shown in Figure 1.

It can be seen that the total milk procurement volume was growing and reached a high of around 1,500 L/day (converted from kg to L) in December 2007. However, after that, the volume started shrinking as more suppliers started leaving as compared to new suppliers joining the organisation. It was also observed that out of the total of 1,564 suppliers who got enrolled, there was a maximum of 520 suppliers who had supplied milk at any point in time (October 2007).

To get more useful insights in supply patterns, we segmented the suppliers by creating a two-dimensional table as shown in Figure 2, wherein their recency (time since last supplied in months/year) was mapped with their total period of supply (in months/years) during this duration, as shown in Figure 2.

It can be seen that at the end of the duration, we had only 20 suppliers left in the last month. Further, 236 suppliers had left in the last 6 months prior to it, out of which 65 suppliers had been supplying regularly for one year before leaving. Many of them were supplying around 3–6 L/day. These suppliers could have been incentivised to stay with the organisation.

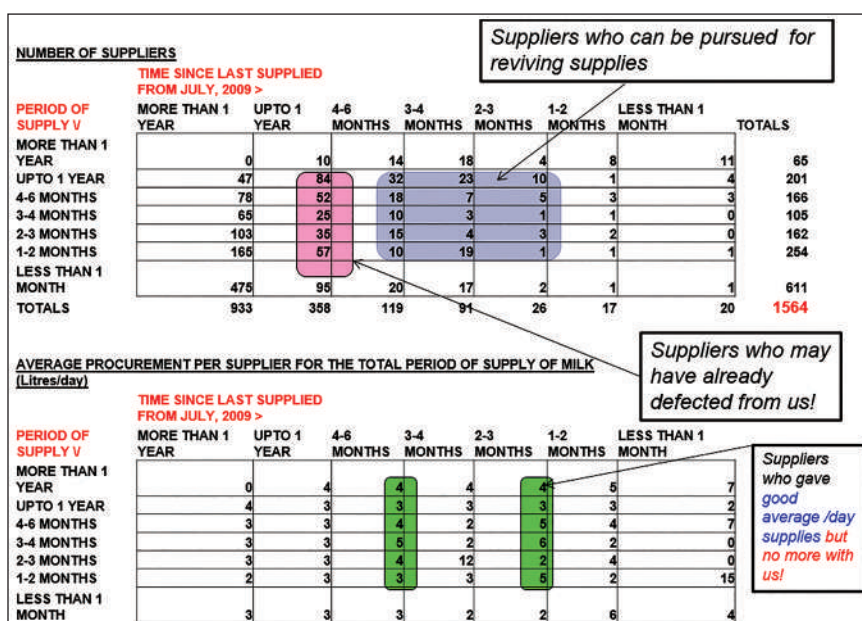


Figure 2. Mapping Recency with Duration of Supplies.

Using the RFM Scores for Segmentation

RFM scores obtained after analysing the data (as shown earlier) for each supplier can be used to categorise suppliers into different segments. It can be seen that this score may vary from 555 for the best suppliers to 111 for the worst suppliers. We can also create further groups by combining these segments as per our strategic requirements for enhancing milk supply, as shown in Figure 3.

For instance, if our strategy is to focus on highly regular milk suppliers who stay with us, having high to average supply volumes, then we may combine RFM scores with $R = 5,4,3$ and $F = 5,4,3$ and $M = 5,4,3$ and make Category 'A' suppliers. Further, we may combine to get another Category 'B' suppliers having very low volume of milk supply but otherwise regular and staying with us with $R = 5,4$ and $F = 5,4$ and $M = 2,1$. The remaining suppliers may be categorised as Category 'C', who are mainly irregular, floating suppliers looking for arbitrage opportunities and unlikely to be dependable in future. As a strategy, we may need to develop Category 'A' with 351 suppliers and Category 'B' with 96 suppliers with proper incentives and maintain live relations for our steady milk supply instead of spreading our effort thinly over a large number of suppliers. Category 'C' has 1,117 suppliers who may not be dependable for a steady milk supply.

This is illustrated with analysis of some sample suppliers, as shown in Table 3.

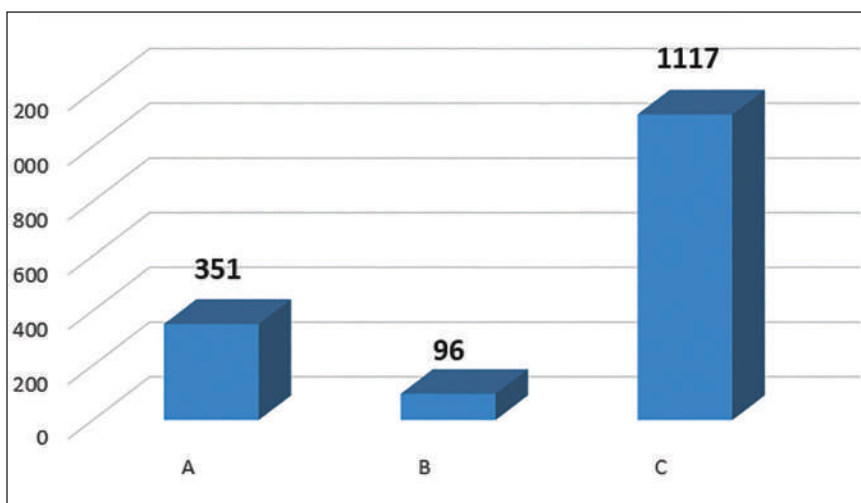


Figure 3. Categorisation of Suppliers After Segmentation.

Note: Total number of suppliers during the period: 1,564.

You may observe that if timely action was taken in segmenting and categorising milk suppliers by observing the data (which was always available), it could have averted the milk procurement crisis happening within a mere 2 years (August 2007 to July 2009) start of this newly opened milk chilling centre.

The findings of RFM analysis may be disseminated to the village supervisors and field officers engaged in milk procurement operations, as below:

- *Village supervisors:* They can be provided with a list of suppliers who have been consistently supplying milk. These producers may be encouraged with recognition and further incentivisation.
- *Field officers:* During monthly/fortnightly review with supervisors, this may be actively pursued. The matrix would assist in segmenting producers who have left recently and may be pursued for reviving supplies.

At present, all milk supply points have the necessary computer facilities that capture *everyday milk transactions from each supplier*, which can be profitably utilised for creating this RFM on a regular basis for discussion among the field officers and village supervisors.

Benefits of RFM Segmentation for Milk Suppliers

RFM segmentation offers several benefits for dairy organisations in the context of milk procurement:

Table 3. Profile of Sample Suppliers After Categorisation and Building Recency Frequency Monetary (RFM) Scores.

Supplier Code	Name of Supplier	Village Code	Last Date of Supply	Recency	Frequency	Monetary	RFM Segment	Category
3004	Ram Phal	3	31 July 2009	5	5	5	555	A
8017	Babulal	8	1 March 2009	5	5	5	555	A
10009	Shri Ram	10	10 April 2009	5	5	4	554	A
10017	Hari Dwar	10	31 May 2009	5	5	4	554	A
8061	Ram Harsh	8	1 June 2009	5	5	2	552	B
15062	Pramod Kumar	15	2 June 2009	5	5	2	552	B
22001	Janardan Singh	22	3 June 2009	5	5	2	552	B
8011	Jang Bhadur	8	4 June 2009	5	5	2	552	B
10065	Santosh	10	5 June 2009	4	4	2	442	B
1048	Dhrma	1	6 June 2009	4	4	2	442	B
8054	Suraj Pal	8	7 June 2009	4	4	2	442	B
22029	Sataynarayan	22	8 June 2009	4	4	1	441	B
1041	Mithlrsh	1	9 June 2009	4	4	1	441	B
10080	Chunnu	10	10 June 2009	3	2	1	321	C
7040	Sumitra	7	11 June 2009	3	2	1	321	C
1049	Lendra Bhadur	1	12 June 2009	3	2	1	321	C

- *Improved supplier targeting*: RFM segmentation allows dairy organisations to identify and prioritise their most valuable suppliers, focusing their resources on those who contribute the most to their bottom line.
- *Enhanced supplier engagement*: By understanding the needs and behaviours of each supplier segment, dairy organisations can tailor their communication and engagement strategies to foster stronger relationships and improve supplier satisfaction.
- *Optimised pricing strategies*: RFM segmentation can help dairy organisations develop differential pricing strategies based on supplier value, ensuring that they are paying the right price for the quality and quantity of milk they receive.
- *Reduced churn risk*: By identifying and addressing the needs of at-risk suppliers, dairy organisations can reduce the risk of supplier churn and maintain a stable supply chain.
- *Increased profitability*: Through optimised procurement strategies, improved supplier relationships and reduced churn, dairy organisations can achieve significant cost savings and profitability gains.

Conclusion

RFM analysis is a valuable tool for segmenting milk suppliers and optimising procurement strategies in the dairy industry. By understanding the supply behaviours of their milk suppliers, dairy organisations can make informed decisions about resource allocation, supplier engagement, pricing and risk management. Effective segmentation can lead to improved supplier relationships, reduced costs and increased profitability for dairy organisations.

Declaration of Conflicting Interests

The author declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

Funding

The author received no financial support for the research, authorship and/or publication of this article.

ORCID iD

Subir Mitra  <https://orcid.org/0009-0003-1965-5832>

Impact of Modern Agricultural Practices on the Environment

IIFT International Business and
Management Review Journal
2026, 4(1) 87–97
© The Author(s) 2026
DOI: 10.1177/jiift.261418382
ift.spectrumjps.com



Zeenat Fatima¹ and Arifa Khan¹

Abstract

The study empirically examines the modern agricultural activities on the total emission of carbon dioxide. The regression model has been developed to study the impact, which includes direct and indirect sources of emission. It implies that the analysis considered the farm-based activities from the beginning process to the supply chain process of cultivation. The regression model indicates that the application of manure to soils and synthetic fertilisers directly affects the emission of methane and nitrous oxide. It is concluded that the increase in the use of fertilisers and manure in soils leads to a rise in greenhouse gases. The evidence underscores the urgent need for more sustainable agricultural practices that minimise carbon emissions while maintaining productivity.

Keywords

Agricultural activities, greenhouse gases

Introduction

Over 7 billion people are dependent on agriculture worldwide, which remains the cornerstone for human survival but creates environmental degradation due to modern agricultural practices. Reducing agriculture's environmental effects requires an understanding of how alternative agricultural production systems, agricultural input efficiency and dietary preferences contribute to environmental degradation (Clark & Tilman, 2017). Agriculture is a cornerstone of global food security and economic development, yet it remains a major driver of greenhouse

¹Centre of WTO Studies, Indian Institute of Foreign Trade, New Delhi, India

Corresponding author:

Zeenat Fatima, Centre of WTO Studies, Indian Institute of Foreign Trade, New Delhi 110014, India.

E-mails: tozeenatfatima@gmail.com; zeenat@iift.edu



Creative Commons Non Commercial CC BY-NC: This article is distributed under the terms of the Creative Commons Attribution-NonCommercial 4.0 License (<http://www.creativecommons.org/licenses/by-nc/4.0/>) which permits non-Commercial use, reproduction and distribution of the work without further permission provided the original work is attributed.

gas (GHG) emissions and climate change. Among the various gases emitted by agricultural activities, carbon dioxide (CO₂) plays a critical role, both directly and indirectly influencing atmospheric concentrations. Agricultural practices such as land clearing, soil tillage, biomass burning and the use of fossil fuels for machinery and agrochemical production contribute significantly to CO₂ emissions worldwide. According to recent estimates, agriculture and associated land use changes account for approximately 17% of total global GHG emissions, with CO₂ representing a substantial portion of the footprint (EPA, 2024).

Consequently, the release of CO₂ from agriculture is closely linked to the conversion of forests and grasslands into croplands, the accelerated decomposition of soil organic matter and the combustion of organic residues. While agriculture is also a major source of methane (CH₄) and nitrous oxide (N₂O)—gases with higher global warming potential—its contribution to CO₂ emissions remains a critical concern, particularly in the context of land use change and the long-term sustainability of food production systems (IPCC, 2022; Smith et al., 2014). Understanding the sources, magnitude and mitigation opportunities for CO₂ emissions in agriculture is essential for developing effective climate policies and promoting sustainable agricultural practices.

Due to the expanding energy needs brought on by the Industrial Revolution, the amount of GHGs in the atmosphere has increased and is still increasing. Since climate sensitivity is a typical property of the reaction to changes in atmospheric CO₂ levels, carbon emissions are a significant contributor causing global climate change. One of the most significant causes of climate change is the rise in CO₂ and carbon equivalent emissions. (Parry et al., 1999; Solomon et al., 2009; Rosenzweig & Parry, 1994). In the case of agriculture, animal products, and in particular meats, have higher impacts than food originating from plants (Pelletier et al., 2011; Tilman & Clark, 2014).

In 2018, crop- and livestock-related CH₄ and N₂O emissions produced 5.3 billion tonnes of CO₂ eq, a 14% increase since 2000. According to FAO (2022), farm-gate emissions from livestock production activities, such as enteric fermentation and manure deposition on grasslands, generated 3 billion tonnes of CO₂ equivalent in 2018.

Additionally, there are processes and goods that contribute in different amounts to GHG emissions all along the chain of food production and delivery. The term ‘carbon footprint’ for these emissions refers to how much each emission contributes to global warming. In contrast to animals bred in factory farms with vast exposed animal waste lagoons, some crops farmed according to ecologically sound agricultural principles may have a very low carbon footprint. Carbon footprints are also considered in agricultural activities like waste treatment, using farm machinery and applying synthetic fertilisers. GHGs associated with agriculture include CO₂, which is produced by both the burning of fossil fuels and the loss or deforestation of grasslands, as well as CH₄, which is produced by livestock, N₂O, which is typically related to the application of synthetic fertiliser. Synthetic nitrogen (N) fertilisers are widely employed in conventional crop cultivation and are made from fossil fuels (such as coal and natural gas). About 13% of agricultural GHG emissions worldwide are caused by the use of synthetic

fertilisers. While nitrogen-based fertilisers have raised yields across the globe, when it is compared to the rate of use of other fertilisers, the increased usage of N fertilisers over the past 50 years has exponentially increased the rates of N_2O emissions. It indicates a significant increase in atmospheric N_2O , a GHG 300 times more powerful than CO_2 .

As Blandford and Hassapoyannes (2018) indicate, the agriculture sector is the largest source of CH_4 and N_2O . The global agri-food system relies on N fertilisation to increase crop yields, yet the use of synthetic fertiliser is unsustainable, as food production and the environment are closely linked together. There is a lot of research that proves the negative impacts of food production on the global environment. Such an account is given in the research study of Clark et al. (2019). They have argued that changing food choices is negatively affecting human health and the environment. They argue that ill human practices in food production have extracted the natural resources and spoiled the environment. They empirically established that the consumption of 15 foods triggers 5 health issues and 5 environmental problems (Clark et al., 2019). The food with lower health risks causes lower impacts on the environment and vice versa. They deduce the result that shifting towards healthier food can save the environment substantially. On the other hand, an unhealthy diet, such as processed red meat, affects the environment greatly. Similarly, other research suggests that animal food consumption has a greater environmental footprint as compared to plant-based diets (Nemecek et al., 2016). In livestock, processed and unprocessed meat production results in greater emissions and energy consumption. Contrarily, plant-based food like cereals and vegetables has minimal effects on the environment as a whole.

Therefore, the article considered the analysis of carbon emissions from agricultural activities. It tries to capture the literature gap regarding the study of emission variables in agricultural activities. It discussed statistically the relationship between total emission from agriculture variables like enteric fermentation, manure management, manure applied to soils, manure left on pasture, synthetic fertilisers, crop residue and burning crop residue. The regression model has been developed to study the impact of variables and to obtain significant outcomes of the study.

Literature Reviews

The literature indicates that agricultural activities have a significant impact on carbon emissions. As Zhu and Huo (2022) estimated, agricultural carbon emission is based on agricultural production activities. They emphasise that an improvement in production efficiency can suppress the emission in the area with high efficiency and vice versa. The excessive use of chemical fertilisers has also significantly contributed to the emission of carbon and carbon equivalents (Xing & Wang, 2024). It can be substituted with organic fertilisers but the type of land needs to be considered (He et al., 2023). The anthropogenic activities and advanced use of technology by developed economies create a hidden carbon cost (Lal, 2004a). It implies that the carbon footprints cannot be ignored in the manufacturing of

machinery, fertiliser and energy that are used to increase the agricultural production (Flach et al., 2019). Other than increasing production activities, Houghton (2012) indicated that land use and land-cover changes are highly uncertain, and any change in the area of agricultural land and deforestation make an environment vulnerable. Other than the conversion of grassland, it also includes the development of high-energy-intensive production systems and use of chemical/organic inputs (Chataut et al., 2023). As Lal (2007) suggested, it can be handled with carbon management of agricultural land.

Additionally, these modern agricultural practices are examined in the US region and reveal that carbon can be mitigated and managed by adopting sequestered carbon instead of conventional tillage (Johnson et al., 2007; Reicosky, 2003; West & Marland, 2002). The modern carbon sequestration practice can be considered as reducing tillage, introducing forage crops, reducing summer fallowing, adding nutrients through fertilisation and converting cropland into grassland (Desjardins et al., 2005). It also includes optimum moisture management, diverse cropping and minimising the machinery operation to reduce GHG emission and its carbon footprint (Ozlu et al., 2022). There is a need to minimise tillage and increase cropping strength, which can rebuild the carbon stocks in agricultural soils (Paustian et al., 2000).

Lal (2004b) categorises the agricultural carbon emissions into primary sources as stationary operation, secondary sources as manufacturing inputs and tertiary sources as equipment fabrication. Other than these sources, deforestation and land cultivation by traditional tillage (Robert, 2006), where the main drivers of deforestation in both permanent and crop shifting leads to such emissions (Houghton, 2012). Moreover, the studies identified the agricultural activities that emit carbon and carbon equivalents as decomposition of crop residuals, manufacturing and use of inorganic fertilisers, herbicide and fungicide production, and other farm field operations (Gan et al., 2011); also, in the context of BRICS countries (Balsalobre-Lorente et al., 2019).

As far as livestock production is concerned, the study was conducted in the sub-Saharan African region and identified that the CH_4 and N_2O gases are emitted during enteric fermentation and manure management (Forabosco et al., 2017). The literature also identified that ruminant animals like cattle generate a significant amount of CH_4 during digestion, and nitrogen emission is related to the use of synthetic fertilisers on the farmland (Sahu & Arya, 2024). Subsequently, the specific studies on rice and corn crops reveal that the sowing, change in planting structures of these crops and use of nitrogen fertilisers significantly increase the emission and account for approximately 15% increase in global warming potential (Tang et al., 2021).

Although there are a myriad of research papers available that consider agricultural carbon emissions, the combination of direct and indirect sources of emissions is considered less studied during the review process. Therefore, the study considered the combination of both sources in the modelling analysis. The study tries to explore the agricultural activities that have a significant contribution to the total carbon emission.

Data and Methodology

The study has been conducted to explore carbon and carbon equivalent emissions from agri-food systems that are generated by farm production activities and pre- and post-production processes. FAO describes farm-based activities as direct sources of emission, like burning crops, rice cultivation, manure and fertiliser usages, while pre- and post-processes are supply-chain and indirectly sourced, which includes transportation, processing, household consumption, input manufacturing as well as waste. The regression analysis has been done to analyse the proxy variable of carbon emission from both direct and indirect sources at the global level. The data have been collected from the FAO database for the time span of 1990–2020. Table 1 represents the statistical description of the data series.

Table 2 represents the correlation matrix of the variables. It specifies that the variables, except rice cultivation, synthetic fertiliser and pre- and post-energy, are highly correlated, as their value is more than 0.5. The association describes the dependency and linear relationship between two variables. Also, some other variables show an adverse relationship, which needs to be checked by model estimation. Therefore, the following model is considered for the study.

Table 1. Statistical Properties of the Data.

Variables	Abbreviation	Mean	Std Dev.	Min	Max	Skew-ness	Kurtosis
Total emission	TE	6.35	0.06	6.24	6.45	0.80	0.03
Burning crop residues	BR	2.10	0.03	2.05	2.14	0.89	0.01
Crop residues	CR	2.15	0.06	2.06	2.25	0.65	0.02
Enteric fermentation	EF	4.11	0.02	4.07	4.15	0.88	0.00
Manure-applied soil	MS	2.02	0.04	1.96	2.08	0.74	0.00
Manure left on pasture land	MP	2.64	0.03	2.58	2.69	0.90	0.00
Manure management	MM	3.05	0.02	3.01	3.09	0.63	0.00
Rice cultivation	RC	3.66	0.01	3.64	3.68	0.79	0.61
Synthetic fertiliser	SF	2.78	0.12	2.55	2.98	0.59	0.03
Pre- and post-energy	PE	5.13	0.12	4.88	5.31	0.76	0.62

Table 2. Correlation Matrix.

	TE	BS	CR	EF	MS	MP	MM	RC	SF	PE
TE	1.00									
BS	0.96	1.00								
CR	0.97	0.98	1.00							
EF	0.97	0.94	0.95	1.00						
MS	0.98	0.94	0.95	1.00	1.00					
MP	0.98	0.94	0.96	1.00	1.00	1.00				
MM	0.98	0.95	0.95	1.00	1.00	1.00	1.00			
RC	0.35	0.53	0.46	0.31	0.31	0.32	0.31	1.00		
SF	0.97	0.96	0.97	0.98	0.98	0.98	0.98	0.40	1.00	
PE	0.96	0.90	0.92	0.88	0.88	0.89	0.89	0.37	0.91	1.00

Model Estimation

$$TE_t = f(BS_t, CR_t, EF_t, MS_t, MP_t, MM_t, RC_t, SF_t, PE_t) \tag{1}$$

$$TE_t = \alpha + \beta_1 BS_t + \beta_2 CR_t + \beta_3 EF_t + \beta_4 MS_t + \beta_5 MP_t + \beta_6 MM_t + \beta_7 RC_t + \beta_8 SF_t + \beta_9 PE_t + \varepsilon_t \tag{2}$$

For the model estimation, the two sets of models have been considered for the analysis. The sets are formed to make a combination of variables that will provide the robust result with BLUE estimators. Hence, the following model has been used for further estimation:

$$TE_t = \alpha + \gamma_1 MS_t + \gamma_2 RC_t + \gamma_3 PE_t + \varepsilon_t \tag{3}$$

Table 3 represents the regression estimation of Model 1. It indicates that rice cultivation has an insignificant impact on total emission, whereas pre-post energy use and manure-applied soil show a significant impact on it, implying the indirect source is substantially involved in the GHG emission. According to FAO, pre-post energy included farm-based energy usage as well as energy use in the supply chain, which comprises the emission of CH₄, nitric oxide and CO₂, whereas manure application is only concerned with the emission of nitric oxide. As per the model coefficient, manure application makes a significant contribution to total emission as compared to the other two variables of the model. Table A1 in the Annexure represents the diagnostic text of Model 1 that depicts the robustness of the model. Further, the study extended to analyses of other variables that can contribute to the total emission.

Furthermore, Model II considered the total emission as a function of burning crop residue, pre-post energy and synthetic fertiliser that is given in Equation (4). The model has been run with several combinations of variables, and the most robust estimates have been considered for impact analysis.

Table 3. Model I Estimation.

Variable	Coefficient	t-Value	Decision
RC	0.03	0.29 (0.772)	Insignificant
PE	0.23	9.38 (0.000)	Significant
MS	1.10	0.07 (0.000)	Significant
Constant	2.7	0.2 (0.000)	Significant

Table 4. Model II Estimation.

Variable	Coefficient	p Value	Decision
BR	0.37	.158	Insignificant
PE	0.22	.000	Significant
SF	0.25	.000	Significant
Constant	3.78	.000	Significant

$$TE_t = \alpha + \theta_1 BS_t + \theta_2 SF_t + \theta_3 PE_t + \varepsilon_t \quad (4)$$

The estimation result of Model II, represented in Table 4, shows that burning crop residue has an insignificant impact, whereas pre-post energy and synthetic fertiliser have a significant impact on total emission. It implies that the supply chain and man-made fertiliser have a significant impact on emissions. It is usually used to increase crop production by applying chemically modified fertiliser in the crop, and for the distribution channel, supply chain facilities are required. It implies there is necessary management, and an effective combination of such variables is required to increase the economies of scale to mitigate the risk of emission. Table A2 in the Annexure reveals the diagnostic test of Model II, representing that the model is fit to be considered for the impact investigation and provided the robust result for the analyses.

Conclusion

It can be concluded from the analysis that farm-based activities are also a major driver of environmental degradation. Both economies of scale and environment are important for agricultural practice, but a balanced approach is required to attain sustainability in agriculture, for example, industrial corn farms in the USA and agroforestry in Kenya. The approach in both farming is different in input, but their output is the same, that is, economies of scale. It is evident from both models that indicate a significant impact on total emission. The study considered farm-based activities from the beginning process to the supply chain process of cultivation. Both the estimated models revealed that organic as well as inorganic fertilisers have a significant contribution to total emission. It also represents the carbon footprint as a variable of pre-post energy involved in total emission. It

implies that the agricultural practices majorly involve practices that can increase economies of scale at the cost of environmental degradation. The common practices are observed as monoculture, large machinery, large cultivation and bulk input purchase are the cause of such divergence. The importance of both economies of scale and environmental factors are crucial factors of modern agricultural practices. Generally, there is a need to prioritise between efficiency and sustainability to achieve the short-term targets of agricultural production. The proper arrangement should be considered to mitigate the risk in both aspects.

The evidence underscores the urgent need for more sustainable agricultural practices that minimise carbon emissions while maintaining productivity. As literature suggests, strategies such as conservation tillage, agroforestry, cover cropping and the restoration of degraded lands can play a pivotal role in reducing CO₂ emissions and enhancing carbon sequestration. Additionally, the adoption of precision agriculture, improved nutrient management and the use of renewable energy in farming operations offer further opportunities to lower the sector's carbon footprint.

Ultimately, addressing CO₂ emissions from agriculture requires a holistic approach that balances food security, economic viability and environmental stewardship. Policymakers and practitioners must work collaboratively to implement science-based solutions that not only reduce emissions but also build resilient agricultural systems capable of sustaining both people and the planet in the face of ongoing climate change.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

Funding

The authors received no financial support for the research, authorship and/or publication of this article.

Note

1. The phrase 'carbon footprint' is used to refer to all the GHGs that contribute to climate change, not just CO₂ or other carbon derivatives.

References

- Balsalobre-Lorente, D., Driha, O. M., Bekun, F. V., & Osundina, O. A. (2019). Do agricultural activities induce carbon emissions? The BRICS experience. *Environmental Science and Pollution Research*, 26(24), 25218–25234.
- Blandford, D., & Hassapoyannes, E. (2018). Agricultural sources of methane and nitrous oxide: Emissions, mitigation strategies, and their effect on climate change. *Journal of Agricultural Studies*, 25(3), 177–192. <https://doi.org/10.xxxx/jagstud.2018.25.3>
- Chataut, G., Bhatta, B., Joshi, D., Subedi, K., & Kafle, K. (2023). Greenhouse gases emission from agricultural soil: A review. *Journal of Agriculture and Food Research*, 11, 100533.

- Clark, M., & Tilman, D. (2017). Comparative analysis of environmental impacts of agricultural production systems, agricultural input efficiency, and food choice. *Environmental Research Letters*, 12(6), 064016. <https://doi.org/10.1088/1748-9326/aa6cd5>
- Clark, M. A., Springmann, M., Hill, J., & Tilman, D. (2019). Multiple health and environmental impacts of foods: A systematic analysis. *Nature Sustainability*, 2(12), 1063–1074. <https://doi.org/10.xxxx/natsus.2019.1063>
- Desjardins, R. L., Smith, W., Grant, B., Campbell, C., & Riznek, R. (2005). Management strategies to sequester carbon in agricultural soils and to mitigate greenhouse gas emissions. *Climatic Change*, 70(1), 283–297.
- EPA. (2024). *Inventory of U.S. greenhouse gas emissions and sinks*.
- FAO. (2022). *Agriculture's contribution to greenhouse gas emissions*. Food and Agriculture Organization of the United Nations. <https://www.fao.org/ghg-emissions>
- Flach, K. W., Barnwell, T. O., & Crosson, P. (2019). Impacts of agriculture on atmospheric carbon dioxide. In *Soil organic matter in temperate agroecosystems: Long term experiments in North America* (pp. 3–13). CRC Press.
- Forabosco, F., Chitchyan, Z., & Mantovani, R. (2017). Methane, nitrous oxide emissions and mitigation strategies for livestock in developing countries: A review. *South African Journal of Animal Science*, 47(3), 268–280.
- Gan, Y., Liang, C., Hamel, C., Cutforth, H., & Wang, H. (2011). Strategies for reducing the carbon footprint of field crops for semiarid areas. A review. *Agronomy for Sustainable Development*, 31(4), 643–656.
- He, Z., Ding, B., Pei, S., Cao, H., Liang, J., & Li, Z. (2023). The impact of organic fertilizer replacement on greenhouse gas emissions and its influencing factors. *Science of The Total Environment*, 905, 166917.
- Houghton, R. A., House, J. I., Pongratz, J., Van Der Werf, G. R., Defries, R. S., Hansen, M. C., Le Quéré, C., & Ramankutty, N. (2012). Carbon emissions from land use and land-cover change. *Biogeosciences*, 9(12), 5125–5142.
- IPCC. (2022). *Sixth Assessment Report*.
- Johnson, J. M. F., Franzluebbers, A. J., Weyers, S. L., & Reicosky, D. C. (2007). Agricultural opportunities to mitigate greenhouse gas emissions. *Environmental Pollution*, 150(1), 107–124.
- Lal, R. (2004a). Agricultural activities and the global carbon cycle. *Nutrient Cycling in Agroecosystems*, 70(2), 103–116.
- Lal, R. (2004b). Carbon emission from farm operations. *Environment International*, 30(7), 981–990.
- Lal, R. (2007). Carbon management in agricultural soils. *Mitigation and Adaptation Strategies for Global Change*, 12(2), 303–322.
- Nemecek, T., Jungbluth, N., i Canals, L. M., & Schenck, R. (2016). Environmental impacts of food consumption and nutrition: where are we and what is next?. *The International Journal of Life Cycle Assessment*, 21(5), 607–620.
- Ozlu, E., Arriaga, F. J., Bilen, S., Gozukara, G., & Babur, E. (2022). Carbon footprint management by agricultural practices. *Biology*, 11(10), 1453.
- Parry, M. L., Rosenzweig, C., Iglesias, A., Livermore, M., & Fischer, G. (1999). Climate change and world food security: A new assessment. *Global Environmental Change*, 9(S1), S51–S67. [https://doi.org/10.1016/S0959-3780\(99\)00018-7](https://doi.org/10.1016/S0959-3780(99)00018-7)
- Paustian, K., Six, J., Elliott, E. T., & Hunt, H. W. (2000). Management options for reducing CO₂ emissions from agricultural soils. *Biogeochemistry*, 48(1), 147–163.
- Pelletier, N., Audsley, E., Brodt, S., Garnett, T., Henriksson, P., Kendall, A., Kramer, K. J., Murphy, D., Nemecek, T., & Troell, M. (2011). Energy intensity of agriculture and

food systems. *Annual Review of Environment and Resources*, 36, 223–246. <https://doi.org/10.1146/annurev-environ-081710-161014>

Reicosky, D. C. (2003). Tillage-induced CO₂ emissions and carbon sequestration: Effect of secondary tillage and compaction. In *Conservation agriculture: Environment, farmers experiences, innovations, socio-economy, policy* (pp. 291–300).

Robert, M. (2006). Global change and carbon cycle: The position of soils and agriculture. In *Soil erosion and carbon dynamics*. CRC Press.

Rosenzweig, C., & Parry, M. L. (1994). Potential impact of climate change on world food supply. *Nature*, 367(6459), 133–138. <https://doi.org/10.1038/367133a0>

Sahu, S., & Arya, S. K. (2024). Mitigation of greenhouse gas emissions in agriculture and food processing through sustainable management practices for climate change. In *Advances and technology development in greenhouse gases: Emission, capture and conversion* (pp. 71–96).

Smith, P., Clark, H., Dong, H., Elsiddig, E.A., Haberl, H., Harper, R., House, J., Jafari, M., Masera, O., Mbow, C., Ravindranath, N. H., Rice, C. W., Roble do Abad, C., Romanovskaya, A., Sperling, F., & Tubiello, F. (2014). Agriculture, forestry and other land use (AFOLU). In *Climate Change 2014: Mitigation of climate change*. IPCC.

Solomon, S., Qin, D., Manning, M., Chen, Z., Marquis, M., Averyt, K. B., Tignor, M., & Miller, H. L. (2009). *Climate Change 2007: The physical science basis*. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press.

Tang, Y. H., Luan, X. B., Sun, J. X., Zhao, J. F., Yin, Y. L., Wang, Y. B., & Sun, S. K. (2021). Impact assessment of climate change and human activities on GHG emissions and agricultural water use. *Agricultural and Forest Meteorology*, 296, 108218.

Tilman, D., & Clark, M. (2014). Global diets link environmental sustainability and human health. *Nature*, 515(7528), 518–522. <https://doi.org/10.1038/nature13959>

West, T. O., & Marland, G. (2002). A synthesis of carbon sequestration, carbon emissions, and net carbon flux in agriculture: Comparing tillage practices in the United States. *Agriculture, Ecosystems & Environment*, 91(1–3), 217–232.

Xing, Y., & Wang, X. (2024). Impact of agricultural activities on climate change: A review of greenhouse gas emission patterns in field crop systems. *Plants*, 13(16), 2285.

Zhu, Y., & Huo, C. (2022). The impact of agricultural production efficiency on agricultural carbon emissions in China. *Energies*, 15(12), 4464.

Annexure

Table A1. Diagnostic Test of Model I.

Diagnostic Test	Values
R ²	0.99
f-statistics	745.7 (0.00)
VIF (Multicollinearity)	3.50
White's test (Heteroscedasticity)	27.4 (0.01)
Breusch–Pagan	4.07 (0.04)
Ramsey reset test (Model specification)	5.16 (0.00)
Normality test (Shapiro–Wilk test)	(0.67) (0.00) (0.00)

Table A2. Diagnostic test of Model II.

Diagnostic Test	Values
R^2	0.97
f -statistics	292.9 (0.00)
VIF (Multicollinearity)	10.3
White's test (Heteroscedasticity)	8.75 (0.46)
Breusch–Pagan	0.45 (0.50)
Ramsey reset test (Model specification)	2.9 (0.05)
Normality test (Shapiro–Wilk test)	0.00

Manuscript submission

- The preferred format for your manuscript is MS Word.
- The journal does not consider a paper that has been published elsewhere or that is under submission to another publisher. Authors must attest to this at the time of submission. It is also author's responsibility to disclose any potential conflict of interests regarding their submitted papers.
- Authors will be provided with a copyright form once the contribution is accepted for publication. The submission will be considered as final only after the filled-in and signed copyright form is received.

Basic formatting of the manuscripts

The journal publishes the following article types:

- Research article: 6000-8000 words. This must be accompanied by an abstract between 150 and 250 words, and 5-10 keywords
- Review article: 6000-8000 words
- Book chapter: 500-1500 words
- Book review: 500-700 words
- Cases: 500-1500 words

Please refer to the Submission Guidelines on the journal website for details on formatting.

Spelling and numerical usages

- Use standard British spelling throughout (e.g., 'labour' and not 'labor', 'centre' and not 'center', 'organise' and not 'organize').
- Spell out numbers from one to nine, 10 and above to remain in figures. However, for exact measurements use only figures (e.g. 3 km, 9%). Please use '13th' instead of 'thirteenth century'; use '1960s' instead of 'nineteen sixties'.

Quotations, notes, tables and figures

- Use single quotation marks for quotations within a given paragraph, and if needed, please use italics within quotations for emphases. Spelling of words in quotations should not be changed.
- Notes should be numbered serially and presented at the end of the article. Notes must contain more than a mere reference.
- Tables and figures must be cited in the text, and indicated by number separately (Table 1), not by placement (see Table below). Source details for figures and tables should be mentioned irrespective of whether or not they require permissions.
- All photographs and scanned images should have a resolution of minimum 300 dpi and 1500 pixels, and their format should be TIFF or JPEG. Due permissions should be taken for copyright-protected photographs/images.

References and their text citations

- References and their citations should be given in accordance with APA 7th edition.
- Please ensure that all references mentioned in the reference list are cited in the text and vice versa.

For detailed style guidelines, please visit <https://ift.iift.ac.in/>



spectrum Journals
Powered by **S Sage**