

PREFACE TO THE EDITION

It is our pleasure to present the latest issue of the **Eduschool International Journal of Commerce Review (EIJCR)**, featuring a collection of timely and thought-provoking review studies addressing significant developments in India's contemporary commercial, economic, financial, and regulatory landscape.

The present issue brings together five studies that collectively examine how digital transformation, regulatory reforms, sustainability imperatives, financial innovation, and changing market behaviour are reshaping the Indian economy and its institutions.

The issue opens with an examination of *gig and platform work in India*, focusing on the growing importance of digital labour platforms, the flexibility they provide, the challenges associated with algorithmic management, and the emerging framework for social security. The study highlights the need to balance technological and economic opportunities with fair earnings, worker protection, transparency, and inclusive labour policies.

The issue then turns to *Environmental, Social and Governance (ESG) disclosure*, reviewing the evolution of India's Business Responsibility and Sustainability Reporting framework. The article considers the transition towards mandatory and assured sustainability reporting while identifying continuing challenges relating to data quality, value-chain coverage, workforce diversity, comparability, assurance, and the risk of greenwashing.

Digital transformation is further explored through a review of *digital payments and financial inclusion in India*. The study examines the expansion of access facilitated by UPI, banking infrastructure, and digital technologies, while drawing attention to the distinction between access and meaningful usage. Persistent gender gaps, inactive accounts, consumer protection concerns, and the limited conversion of payment activity into credit, insurance, and savings emerge as important areas for future research.

The fourth contribution examines *GST and India's MSMEs*, with particular attention to compliance, formalisation, digital tax administration, and the 2025 rate reform. The study considers both the formalisation benefits of GST and the challenges faced by smaller enterprises, including working-capital pressures, input-tax-credit constraints, and the costs associated with transitioning from informal to formal business practices.

The final article focuses on *retail investor participation and trading behaviour in India's equity markets* from a behavioural-finance perspective. It explores the rapid expansion of retail participation, particularly in equity derivatives, and considers behavioural factors such as overconfidence, attention-driven trading, lottery preferences, and learning from random outcomes. The study also highlights the continuing importance of investor education, responsible fintech design, and regulatory intervention.

Taken together, the contributions in this issue demonstrate the interconnected nature of India's rapidly evolving commercial environment. Digital platforms are transforming employment and payments; regulatory frameworks are reshaping corporate accountability and taxation; and technological access is influencing both financial inclusion and investor participation. At the same time, these developments raise important questions about equity, sustainability, transparency, risk, and long-term economic welfare.

We hope that this issue of *EIJCR* will provide researchers, academicians, practitioners, policymakers, and students with useful perspectives on these emerging issues and encourage further empirical and interdisciplinary research. The research agendas identified across the articles also underline the continuing need to examine how India's economic and commercial transformations translate into inclusive and sustainable outcomes.

We sincerely thank all the authors, reviewers, editorial contributors, and other stakeholders whose efforts have made this issue possible. We look forward to presenting further scholarly contributions that advance knowledge and stimulate meaningful discussion in the fields of commerce, management, economics, finance, and related disciplines.

Dr. Shaik Kamruddin
Chief Editor

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EDUSCHOOL INTERNATIONAL JOURNAL OF COMMERCE REVIEW (EIJCR)

(Open Access, Double-Blind Peer Reviewed Journal)

ISSN Online:



Gig and Platform Work in India: Flexibility, Algorithmic Management and the Emerging Social Security Framework

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Article information

Received: 4th July 2026

Received in revised form: 7th August 2026

Accepted: 11th September 2026

Available online: 6th October 2026

Volume: 1

Issue: 2

DOI: <https://doi.org/10.5281/zenodo.23228880>

Abstract

Digital labour platforms have become a significant source of work in India, spanning delivery, ride-hailing, logistics and home services. NITI Aayog estimated 7.7 million gig workers in 2020-21 and projected 23.5 million by 2029-30. This growth raises questions about earnings, working conditions and social protection for workers outside traditional employment. This paper reviews international and Indian research on platform work and examines India's evolving regulatory response. Using a structured narrative review of peer-reviewed studies, official reports and legislation up to 2026, the paper organises the evidence around three themes: the value of flexibility, the effects of algorithmic management, and the design of social security. The review finds that platform work offers genuine flexibility that workers value, but that earnings are volatile and control is exercised through opaque algorithms. Independent assessments indicate that only two of eleven rated Indian platforms could show that workers earned the local minimum wage after costs, and none recognised a collective body of workers. India's policy response has accelerated: the Code on Social Security, 2020, which formally recognises gig and platform workers and requires aggregators to contribute 1 to 2 per cent of annual turnover to a social security fund, came into force in November 2025, and states such as Rajasthan and Karnataka have enacted their own laws. The paper discusses implications for platforms, policymakers and workers and proposes an agenda for research on earnings measurement, algorithmic transparency, women's participation and the effects of new welfare levies.

Keywords: - Gig Economy, Platform Work, Algorithmic Management, Social Security, India

I. INTRODUCTION

The rise of digital labour platforms has reshaped how many services are delivered and how work is organised. Platforms match customers with workers through mobile applications, set prices and allocate tasks using algorithms, and typically classify workers as independent partners rather than employees. In India, platform work has expanded rapidly in urban areas, providing income opportunities to millions of young workers, many of whom previously worked in the informal sector.

NITI Aayog (2022) estimated that India had 7.7 million gig workers in 2020-21 and projected that this number would reach 23.5 million by 2029-30. Its analysis indicated that about 47 per cent of gig work was in medium-skilled jobs, 22 per cent in high-skilled jobs and 31 per cent in low-skilled jobs. The growth of quick commerce, food delivery and app-based mobility since then has further increased the visibility of platform workers in Indian cities.

This expansion has created a policy dilemma. Platforms argue that flexible, independent work allows people to choose when and how much to work, lowers entry barriers and creates opportunities at scale. Critics point to income volatility, long working hours, safety risks, opaque deactivation practices and the absence of employment benefits. Because platform workers are generally not classified as employees, they have historically fallen outside India's labour protections.

India's response has moved from policy discussion to legislation. The Code on Social Security, 2020 recognised gig and platform workers as distinct categories and provided for aggregator contributions to a social security fund; the Code came

into force on 21 November 2025. Several states have enacted their own laws, beginning with Rajasthan in 2023 and followed by Karnataka in 2025.

This paper addresses the following research question: what does existing research reveal about the benefits and risks of platform work, and how well does India's emerging regulatory framework address them? It contributes by combining international evidence on flexibility and algorithmic management with Indian assessments of working conditions and a review of recent legislation. The rest of the paper is organised as follows. Section 2 reviews the literature, Section 3 describes the method, Section 4 presents the findings, Section 5 discusses implications, and Section 6 concludes.

II. LITERATURE REVIEW

2.1. Defining platform work

Platform work refers to paid work mediated by a digital platform that connects workers with clients. The International Labour Organization distinguishes between online web-based platforms, where tasks are performed remotely, and location-based platforms, where tasks such as delivery or transport are performed in a specific place (ILO, 2021). Vallas and Schor (2020) argue that platforms constitute a distinctive form of economic organisation: they retain control over pricing, task allocation and performance evaluation while shifting much of the risk and many of the costs of work to the worker.

Platform work is part of a broader growth in alternative work arrangements. Katz and Krueger (2019) document that such arrangements, including independent contracting and on-call work, grew in the United States between 1995 and 2015, although platform work itself accounted for a small share. In India, where informal work has long been the norm, the distinctive feature of platform work is not its informality but the way in which it is managed through technology.

2.2. The value of flexibility

A central argument for platform work is flexibility. Hall and Krueger (2018) find that Uber drivers in the United States valued the ability to set their own schedules and that many drove part time alongside other work. Chen et al. (2019) estimate that Uber drivers gained substantial surplus from the ability to adjust their working hours in real time, earning more than twice the surplus they would obtain under less flexible arrangements.

Flexibility does not guarantee equal outcomes, however. Studying over a million rideshare drivers, Cook et al. (2021) find a gender earnings gap of about 7 per cent even on a platform with gender-blind pay formulas, explained by differences in experience, driving speed and choices of where and when to work. This suggests that flexible platforms can reproduce earnings gaps through workers' constraints and choices rather than explicit discrimination.

2.3. Algorithmic management and control

Platforms coordinate large numbers of workers using algorithms that assign tasks, set prices, evaluate performance and impose penalties. Kellogg et al. (2020) describe this as a new contested terrain of control, in which algorithms direct, evaluate and discipline workers more comprehensively than traditional supervision. Rosenblat and Stark (2016) show that Uber drivers faced significant information asymmetries, as the platform controlled information about fares and destinations and used incentives and ratings to shape behaviour.

Wood et al. (2019), studying remote gig workers in Asia and Africa, find that algorithmic control coexisted with high levels of formal autonomy, but that workers also experienced low pay, social isolation, overwork and sleep deprivation. Their findings capture the central tension of platform work: workers enjoy flexibility in principle, but economic pressure and algorithmic incentives often limit their practical choices.

2.4. Research gap

The international literature offers robust evidence on flexibility and algorithmic management, mainly from the United States and Europe. Evidence on Indian platform workers is growing but relies heavily on independent assessments and policy reports rather than large-scale academic studies. Moreover, India's new legal framework has not yet been examined in light of this evidence. This review seeks to bring these strands together.

III. METHODS

The study adopts a structured narrative review design, combining peer-reviewed research with official reports, independent assessments and legislation. This design is appropriate because the relevant evidence spans economics, management, sociology and law, and because much of the Indian evidence is found in policy and practitioner sources.

3.1. Sources and selection

Academic studies were identified through Google Scholar, RePEc/IDEAS and SSRN using combinations of the terms "gig economy", "platform work", "algorithmic management", "flexible work", "Uber drivers", "social security" and "India". Official and policy sources included NITI Aayog's 2022 policy brief, the ILO's 2021 flagship report, the Fairwork India ratings and Union Budget documents. Legal sources included the Code on Social Security, 2020, its commencement notification and rules, and state legislation from Rajasthan and Karnataka. Studies were included if they (a) analysed platform or alternative work arrangements using quantitative or qualitative evidence; (b) appeared in peer-reviewed journals or official and recognised independent publications; and (c) were relevant to the Indian context. Selection was purposive, prioritising large-sample studies and systematic assessments.

3.2. Analysis

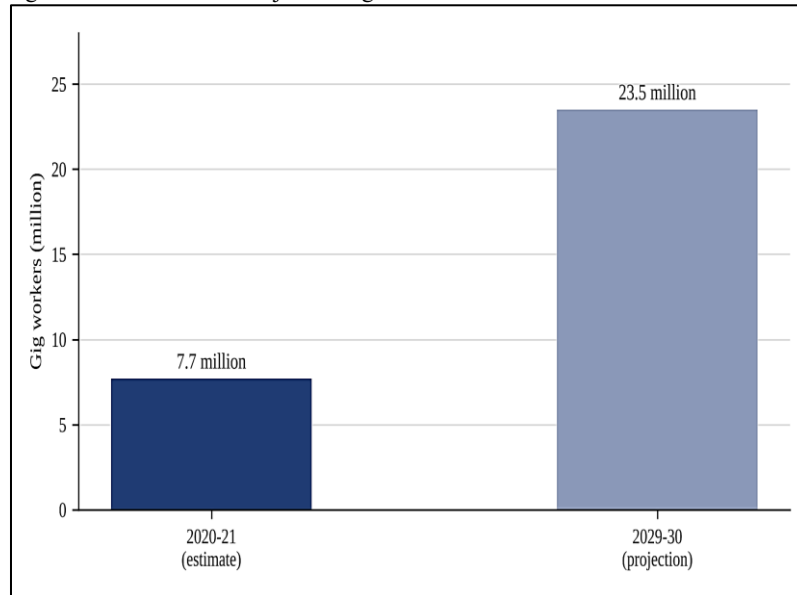
Studies were coded by setting, data, method and principal findings and grouped into themes. Legislation was analysed chronologically to trace the evolution of the regulatory framework. Because the study relies entirely on published material, no primary data were collected and ethical approval was not required.

IV. RESULTS

4.1. Scale and composition of platform work

Figure 1 shows NITI Aayog's estimate and projection of the size of India's gig workforce. The projected tripling of the workforce over the decade implies that the design of social protection for platform workers will affect a large and growing share of urban employment.

Figure 1: Estimated and Projected Gig Workforce in India



Source: NITI Aayog (2022). Figures in million workers.

4.2. Synthesis of evidence on platform work

Table 1 summarises the principal studies and assessments reviewed. Three patterns emerge. First, workers value flexibility, and this value is economically significant. Second, platforms exercise substantial control through algorithms, often with limited transparency. Third, independent assessments in India indicate that basic standards of pay and representation are frequently unmet.

Table 1. Synthesis of Selected Studies and Assessments on Platform Work

Study	Setting and data	Principal finding
Rosenblat & Stark (2016)	United States; Uber driver interviews and forums	Platform controls information and shapes behaviour through incentives and ratings
Hall & Krueger (2018)	United States; Uber driver surveys and administrative data	Drivers value schedule flexibility; many work part time
Chen et al. (2019)	United States; Uber driver hours data	Real-time flexibility yields substantial surplus for drivers
Wood et al. (2019)	Asia and Africa; remote gig worker interviews and survey	Formal autonomy coexists with low pay, overwork and algorithmic control
Cook et al. (2021)	United States; over a million rideshare drivers	Gender earnings gap of about 7% despite gender-blind pay
NITI Aayog (2022)	India; workforce estimates and projections	7.7 million gig workers in 2020-21, projected 23.5 million by 2029-30
Fairwork (2024)	India; assessment of 11 platforms	Only two platforms met the minimum wage threshold after costs; none met fair representation

Source: Compiled by the author(s).

4.3. Working conditions in India

The Fairwork India ratings provide the most systematic assessment of working conditions on Indian platforms. In its 2024 assessment of 11 platforms against ten principles covering pay, conditions, contracts, management and representation, Fairwork (2024) found that the highest-scoring platforms received 6 out of 10 points, while the lowest received 1. Only two platforms could show that workers earned at least the local minimum wage after work-related costs, and none could show that workers earned a living wage. Seven platforms provided safety equipment and training, five provided accident insurance and seven had grievance mechanisms. No platform was awarded the point for fair representation, as none showed willingness to recognise a collective body of workers.

4.4. Evolution of the regulatory framework

Table 2 traces the main regulatory milestones. India's approach combines a national framework under the Code on Social Security with state legislation that imposes welfare levies on platforms.

Table 2. Evolution of Social Security Provisions for Gig and Platform Workers in India

Date	Instrument	Key provisions
2020	Code on Social Security, 2020 (Parliament)	Defines gig and platform workers; provides for schemes, a social security fund and aggregator contributions of 1–2% of annual turnover, capped at 5% of payments to workers
July 2023	Rajasthan Platform Based Gig Workers (Registration and Welfare) Act	First state law; registration of workers and a welfare fee on platform transactions
February 2025	Union Budget 2025-26	Identity cards, e-Shram registration and PM-JAY health coverage for about 1 crore platform workers
2025	Karnataka Platform-Based Gig Workers (Social Security and Welfare) Act	Welfare fund financed by a fee of 1–5% of worker payouts, initially set at 1%
21 November 2025	Commencement of the four labour codes	Code on Social Security, including gig and platform worker provisions, comes into force
May 2026	Social Security (Central) Rules, 2026	Operational rules, including eligibility based on 90 days with one aggregator or 120 days across aggregators

Source: Compiled by the author(s) from Government of India (2020), Government of Rajasthan (2023), Ministry of Labour and Employment (2025), Government of Karnataka (2025) and secondary legal analyses of the 2025 commencement and 2026 rules.

The regulatory approach has also faced legal contestation. Platforms challenged the Karnataka Act before the High Court, which in 2026 declined to stay its implementation while the challenge remains pending.

V. DISCUSSION

The findings suggest that platform work in India embodies the same tension documented internationally: flexibility that workers value, combined with algorithmic control and economic insecurity. The evidence from Hall and Krueger (2018) and Chen et al. (2019) cautions against regulation that eliminates flexibility, since this would remove a real benefit. At the same time, the Fairwork (2024) findings indicate that many Indian platform workers do not reliably earn the minimum wage after costs, and that mechanisms for collective voice are largely absent.

India's regulatory model is distinctive. Rather than reclassifying platform workers as employees, as some jurisdictions have attempted, it extends social security through a contributory fund financed by aggregators and through state welfare boards. This approach preserves the independent status of workers and much of their flexibility, while creating a channel for benefits such as accident insurance, health coverage and old-age support. It aligns with NITI Aayog's (2022) recommendation to develop social security through collaboration between platforms and government.

Several design questions remain. First, the coexistence of central and state levies raises the risk of overlapping obligations and administrative complexity for platforms operating nationally. Second, eligibility thresholds based on days of engagement may exclude workers who work intermittently or across many platforms. Third, social security contributions address income risks but do not resolve concerns about algorithmic management, such as opaque pay calculations and deactivation. Kellogg et al. (2020) and Rosenblat and Stark (2016) suggest that transparency obligations and fair appeal processes are needed alongside financial protections. Fourth, the gender evidence from Cook et al. (2021) indicates that flexibility alone may not ensure equal outcomes, which is relevant as platforms seek to expand women's participation.

For platforms, the implications include the need to strengthen earnings transparency, safety measures and grievance systems, which also influence worker retention and reputation. For policymakers, priorities include harmonising central and state requirements, building the data infrastructure needed to register workers and deliver benefits, and considering standards for algorithmic transparency. For workers and their associations, the new framework creates formal recognition that may support collective representation.

The review has limitations. Much of the academic evidence comes from ride-hailing in the United States, which may not reflect conditions in Indian delivery and home services. Indian evidence relies heavily on independent assessments with limited samples of platforms. The legislation reviewed is recent, and its effects have not yet been evaluated. Finally, as a narrative review, the study involves judgement in selecting and interpreting evidence.

VI. CONCLUSION

This paper reviewed research and policy on gig and platform work in India. It finds that platform work provides valued flexibility and a large number of income opportunities, but that earnings are often inadequate after costs, control is exercised through opaque algorithms, and collective representation is weak. India has responded with a social security framework that recognises platform workers and finances benefits through aggregator contributions, now in force nationally and supplemented by state laws.

Several areas merit further research. First, studies using platform or worker-reported data could measure net hourly earnings after costs across cities and services. Second, research could evaluate the effects of the Code on Social Security and state welfare levies on worker welfare, platform prices and employment. Third, studies of algorithmic management in India could examine how incentive structures, ratings and deactivation affect working hours and safety. Fourth, research on women's participation could identify barriers and the design features that support inclusion. Fifth, comparative work could assess how India's contributory model performs relative to reclassification approaches elsewhere. Addressing these questions would help ensure that the growth of platform work translates into decent work for India's expanding urban workforce.

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Mandatory ESG Disclosure in India: A Review of the Business Responsibility and Sustainability Reporting Framework and a Research Agenda

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Article information

Received: 7th July 2026

Received in revised form: 10th August 2026

Accepted: 12th September 2026

Available online: 6th October 2026

Volume: 1

Issue: 2

DOI: <https://doi.org/10.5281/zenodo.23230194>

Abstract

Environmental, social and governance (ESG) disclosure in India has moved from voluntary reporting to a mandatory, assured regime. Since 2022-23, the top 1,000 listed companies by market capitalisation have been required to file a Business Responsibility and Sustainability Report (BRSR), and since 2023-24 a subset of key indicators, known as BRSR Core, has been subject to independent assurance under a phased glide path. This paper reviews the theoretical foundations, empirical evidence and practitioner assessments relevant to this framework. Using a structured narrative review of peer-reviewed studies, regulatory circulars of the Securities and Exchange Board of India (SEBI) and recent reporting surveys, the paper examines four questions: why firms disclose, what mandatory disclosure achieves, how the BRSR regime has evolved, and what early reporting practice reveals. The review finds that international evidence links mandatory ESG disclosure to improved stock liquidity and information environments, while Indian evidence on the 2013 CSR spending mandate shows that compelled sustainability actions can carry costs for shareholders. Early BRSR practice shows near-universal reporting of energy use and emissions among large firms and widespread reasonable assurance of BRSR Core, but persistent gaps in data quality, value chain coverage, workforce diversity and comparability. Regulatory changes in 2024-25 eased value chain requirements and allowed assessment as an alternative to assurance. The paper proposes a research agenda on the capital market effects of BRSR, assurance quality, value chain disclosure, greenwashing and the reporting readiness of smaller listed firms.

Keywords: - ESG Disclosure, BRSR, Sustainability Reporting, Assurance, India

I. INTRODUCTION

Investors, lenders, regulators and customers increasingly expect companies to report on how they manage environmental and social risks and how they are governed. Across major economies, such reporting is shifting from voluntary, firm-designed sustainability reports towards mandatory disclosure under prescribed formats. The International Sustainability Standards Board issued its first two standards, IFRS S1 and IFRS S2, in June 2023 (IFRS Foundation, 2023), and several jurisdictions have since moved to adopt or adapt them.

India has been an early mover in this transition. The Securities and Exchange Board of India (SEBI) introduced the Business Responsibility and Sustainability Report (BRSR) through a circular dated 10 May 2021, making it voluntary for 2021-22 and mandatory for the top 1,000 listed entities by market capitalisation from 2022-23 (SEBI, 2021). The BRSR is structured around the nine principles of the National Guidelines on Responsible Business Conduct (Ministry of Corporate Affairs, 2019). In July 2023, SEBI went further by introducing BRSR Core, a set of key indicators grouped under nine ESG attributes that must be independently verified, and by announcing ESG disclosure requirements for the value chain (SEBI, 2023). Assurance of BRSR Core began with the top 150 listed entities in 2023-24 and is scheduled to extend to the top 1,000 by 2026-27.

These reforms raise questions that matter for commerce and management research. Does mandatory disclosure produce better information for investors, or mainly compliance costs? Can assurance make sustainability data reliable enough to influence capital allocation? And how are Indian firms actually responding? Although practitioner reports have begun to document BRSR practice, academic synthesis remains limited.

This paper addresses the following research question: what does existing theory and evidence suggest about the likely effects of India's mandatory BRSR regime, and what gaps does early reporting practice reveal? It contributes in three ways. First, it connects international research on mandatory ESG disclosure with Indian evidence on the 2013 CSR spending

mandate. Second, it documents the evolution of the BRSR framework up to the 2025 amendments. Third, it consolidates early evidence on reporting practice and derives a research agenda.

The rest of the paper is organised as follows. Section 2 reviews the literature, Section 3 describes the method, Section 4 presents the findings, Section 5 discusses implications, and Section 6 concludes.

II. LITERATURE REVIEW

2.1. Theoretical perspectives on sustainability disclosure

Three theories dominate explanations of why firms disclose ESG information. Stakeholder theory holds that firms depend on, and are accountable to, groups beyond shareholders, including employees, customers, suppliers and communities (Freeman, 1984). Disclosure is one way in which firms respond to the information needs of these groups. Legitimacy theory emphasises that organisations seek to appear consistent with social norms, and that disclosure can be used to gain, maintain or repair legitimacy (Suchman, 1995). Signalling theory, rooted in the economics of information asymmetry, suggests that firms with superior performance have incentives to disclose credibly so that outsiders can distinguish them from weaker firms (Spence, 1973).

These perspectives lead to different expectations about mandatory regimes. If disclosure is mainly a signal of quality, a mandate that compels all firms to report may reduce its signalling value but improve comparability. If disclosure is mainly a legitimacy device, firms may comply in form without changing behaviour, which places weight on assurance and enforcement. Christensen et al. (2021) synthesise these considerations and argue that the economic effects of mandatory sustainability reporting depend heavily on the standards adopted, the materiality concept used and the strength of enforcement.

2.2. Evidence on voluntary and mandatory ESG disclosure

Evidence on voluntary reporting suggests that disclosure can carry capital market benefits. Dhaliwal et al. (2011) find that firms initiating CSR reporting with superior social performance subsequently enjoyed a lower cost of equity capital. Khan et al. (2016) show that the link between sustainability and returns depends on materiality: firms performing well on issues material to their industry outperformed, whereas performance on immaterial issues did not predict returns. A large meta-review by Friede et al. (2015), aggregating evidence from more than 2,000 studies, reports that the majority find a non-negative relationship between ESG factors and corporate financial performance.

Studies of mandatory regimes have become more common as mandates have spread. Grewal et al. (2019) examine the European Union's directive on non-financial reporting and find that the average market reaction to its passage was negative, although firms with stronger pre-existing ESG disclosure reacted more favourably. Using mandates across many countries, Krueger et al. (2024) find that mandatory ESG disclosure improves stock liquidity, with stronger effects when mandates are implemented by governments rather than industry bodies, when they are not of the comply-or-explain type, and when enforcement is strong.

A recurring concern is the reliability and comparability of ESG data. Berg et al. (2022) document that ESG ratings from major providers diverge substantially, largely because they measure different attributes and measure the same attributes differently. Marquis et al. (2016) show that firms with greater environmental impact tend to disclose selectively, emphasising favourable information, unless they face strong scrutiny. These findings underline the importance of standardised formats and independent assurance.

2.3. Indian evidence on mandated sustainability actions

India offers unusual evidence on mandated sustainability behaviour because the Companies Act, 2013 requires qualifying firms to spend at least 2 per cent of average net profit on CSR. Manchiraju and Rajgopal (2017) find that the law caused a 4.1 per cent decline in the stock prices of affected firms, although firms with high advertising intensity did not experience a negative reaction, suggesting that firms already choose CSR levels that suit their interests. Dharmapala and Khanna (2018) find that the mandate raised CSR spending among firms that had spent little before, while some firms that had previously spent more than the threshold reduced their spending towards it.

Although the CSR mandate concerns spending rather than disclosure, it shows that compelled sustainability actions in India can impose costs and that regulatory thresholds can shape corporate behaviour in unintended ways. The BRSR regime differs in that it mandates transparency rather than specific actions, which, according to Krueger et al. (2024), is more likely to generate information benefits.

2.4. Research gap

The international literature on mandatory ESG disclosure is growing, and Indian evidence on the CSR mandate is well established. However, peer-reviewed research on BRSR itself is still at an early stage, and much of the available evidence comes from consultancy and industry reports. In particular, little is known about the capital market effects of BRSR, the quality of BRSR Core assurance, and the practical consequences of the 2024-25 amendments. This review seeks to bring these strands together.

III. METHODS

The study adopts a structured narrative review design. This approach is suitable because the relevant evidence spans academic journals, regulatory documents and practitioner surveys, which differ in method and purpose and cannot be combined in a statistical meta-analysis.

3.1. Sources and selection

Academic studies were identified through Google Scholar, RePEc/IDEAS and SSRN using combinations of the terms "mandatory ESG disclosure", "sustainability reporting", "CSR mandate", "BRSR", "assurance" and "India". Regulatory documents were obtained from SEBI circulars issued between 2021 and 2025 and related government guidelines. Practitioner evidence was drawn from recent large-sample analyses of BRSR filings published by professional bodies and audit firms. Studies were included if they :

- Analysed mandatory ESG or CSR disclosure or spending, or provided the theoretical basis for such analysis;
- Appeared in peer-reviewed journals, recognised working paper series, official publications or reports based on systematic analysis of company filings; and
- Were relevant to the Indian context. Selection was purposive, giving priority to studies with credible research designs and large samples.

3.2. Analysis

The regulatory documents were analysed chronologically to trace the evolution of the BRSR framework. Academic studies were coded by setting, data, method and principal findings, and grouped into themes. Practitioner reports were reviewed for quantitative indicators of reporting practice. Because the study relies entirely on published material, no primary data were collected and ethical approval was not required.

IV. RESULTS

4.1. Evolution of the BRSR framework

Table 1 traces the main regulatory milestones. The framework has moved in three phases: the introduction of a standardised report in 2021, the addition of an assured core and value chain disclosures in 2023, and a set of easing measures in 2024-25 that responded to industry concerns about cost and feasibility.

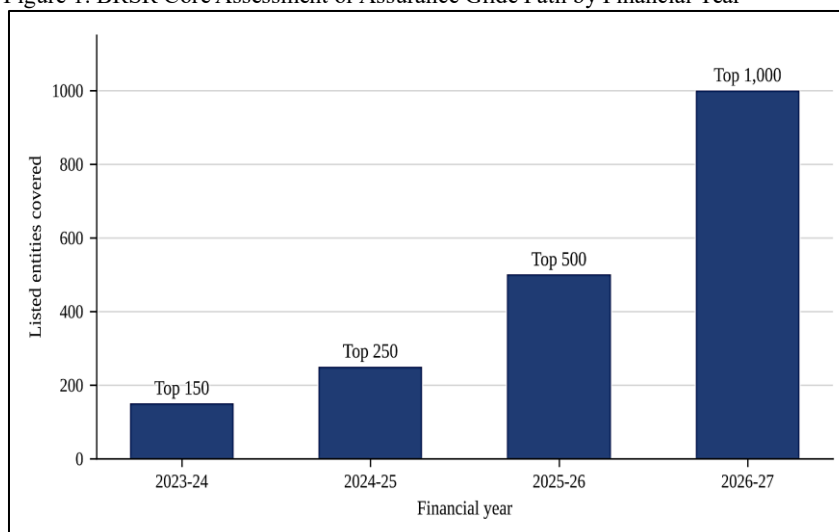
Table 1. Evolution of the BRSR Framework in India

Date	Instrument	Key provisions
2019	National Guidelines on Responsible Business Conduct (MCA)	Nine principles of responsible business conduct, later used to structure the BRSR
10 May 2021	SEBI circular SEBI/HO/CFD/CMD-2/P/CIR/2021/562	BRSR introduced; voluntary for 2021-22 and mandatory for top 1,000 listed entities from 2022-23
12 July 2023	SEBI circular SEBI/HO/CFD/CFD-SEC-2/P/CIR/2023/122	BRSR Core with nine ESG attributes; reasonable assurance phased in from top 150 entities (2023-24) to top 1,000 (2026-27); value chain disclosures announced
20 December 2024	SEBI amendments to LODR provisions	"Assurance" replaced by "assessment or assurance" for BRSR Core; value chain limited to partners with at least 2% of purchases or sales
28 March 2025	SEBI circular on ease of doing business	Value chain disclosures voluntary from 2025-26, with assessment or assurance voluntary from 2026-27; voluntary green credit disclosure introduced

Source: Compiled by the author(s) from Ministry of Corporate Affairs (2019) and SEBI (2021, 2023, 2024, 2025).

Figure 1. shows the assurance glide path for BRSR Core. The number of companies required to obtain assessment or assurance doubles in each of the last two years of the phase-in, which means that many mid-sized listed firms will face external verification of sustainability data for the first time in 2025-26 and 2026-27.

Figure 1. BRSR Core Assessment or Assurance Glide Path by Financial Year



Source: SEBI (2023) and KPMG (2026). Coverage refers to listed entities ranked by market capitalisation.

4.2. Synthesis of empirical evidence

Table 2 summarises the principal empirical studies reviewed. Two patterns stand out. First, international evidence on mandatory ESG disclosure points to information benefits, particularly in liquidity, although the initial market reaction to new mandates can be negative. Second, Indian evidence on the CSR spending mandate shows that requirements which compel actions, rather than disclosure, can reduce shareholder value and shift behaviour towards the regulatory threshold.

Table 2. Synthesis of Selected Empirical Studies

Study	Setting and data	Principal finding
Dhaliwal et al. (2011)	United States; firms initiating CSR reports	Initiators with strong CSR performance enjoyed a lower cost of equity
Khan et al. (2016)	United States; firm sustainability ratings by materiality	Good performance on material issues predicts higher returns; immaterial issues do not
Manchiraju & Rajgopal (2017)	India; Companies Act 2013 CSR mandate	Mandate caused a 4.1% stock price decline for affected firms
Dharmapala & Khanna (2018)	India; CSR spending before and after 2013 Act	Low spenders increased CSR; some high spenders moved down towards the threshold
Grewal et al. (2019)	European Union; non-financial reporting directive	Negative average market reaction; less negative for firms with strong prior disclosure
Berg et al. (2022)	Global; six major ESG rating providers	Ratings diverge substantially because of differences in scope and measurement
Krueger et al. (2024)	Global; mandatory ESG disclosure regimes	Mandates improve stock liquidity, especially when government-led and strongly enforced

Source: Compiled by the author(s).

4.3. Early evidence on BRSR reporting practice

Large-sample practitioner analyses provide the first systematic view of BRSR practice. In a review of BRSR filings by 300 companies representing about 70 per cent of India's market capitalisation, Sharma (2024) reports that nearly 96 per cent disclosed energy consumption and 94 per cent reported Scope 1 and Scope 2 emissions for 2022-23. About one-third obtained external assurance of environmental data before it became mandatory, and about one-quarter assessed environmental impacts in their value chains. Participation of differently abled persons in the workforce remained below 0.5 per cent.

A review of 94 NIFTY 100 companies for 2024-25 finds that all obtained reasonable assurance on BRSR Core, and none chose the newly permitted assessment option (KPMG, 2026). Fifty-seven companies voluntarily sought assurance beyond the mandatory core, and 41 aligned their disclosures with GRI standards. At the same time, 45 companies revised their comparative figures for the previous year, many because of methodology changes or new industry standards, and one company received a qualified assurance opinion. The time taken to complete sustainability assurance after the financial audit varied widely, with 30 companies requiring more than 50 days.

4.4. Persistent gaps

Taken together, the evidence points to four gaps. The first is data quality and comparability: frequent restatements and differences in reporting boundaries, with some firms reporting on a standalone basis and others on a consolidated basis, limit comparison across firms and over time (KPMG, 2026). The second is value chain coverage, which remains limited and has now become voluntary. The third is the social dimension, where indicators such as workforce diversity show little progress (Sharma, 2024). The fourth is readiness beyond the largest firms: the evidence so far comes mainly from top-100 and top-300 companies, while the glide path extends assurance to firms ranked 251 to 1,000, which are likely to have weaker reporting systems.

V. DISCUSSION

The findings suggest that India's BRSR regime is well designed in several respects that the literature associates with effective disclosure. It is government-mandated, applies a standard format, and is not a comply-or-explain regime for its core indicators, all features that Krueger et al. (2024) associate with stronger liquidity benefits. The addition of assured core indicators responds directly to the concerns about reliability and selective disclosure raised by Berg et al. (2022) and Marquis et al. (2016). Early practice indicates that large Indian companies have embraced assurance, and many go beyond the minimum requirements.

At the same time, the Indian experience with the CSR spending mandate offers a caution. Manchiraju and Rajgopal (2017) and Dharmapala and Khanna (2018) show that prescriptive requirements can impose costs and lead firms to treat regulatory thresholds as targets. Although BRSR mandates disclosure rather than spending, a similar risk exists if firms treat BRSR Core as the ceiling of their sustainability reporting rather than a floor. The 2024-25 amendments, which made value chain disclosures voluntary and permitted assessment instead of assurance, reduce compliance burdens but may also reduce comparability if firms choose different routes.

The findings carry implications for several groups. For regulators, the priority is to monitor reporting quality as assurance extends to smaller firms, and to align BRSR with the ISSB standards to support comparability with international investors. For companies, investment in data systems, internal controls over sustainability information and integration of financial and sustainability reporting timelines can reduce restatements and assurance delays. For investors and analysts, BRSR

Core provides a more reliable basis for ESG assessment than voluntary reports or divergent third-party ratings, though users should remain alert to differences in reporting boundaries.

The review has limitations. Peer-reviewed evidence on BRSR itself is scarce, so the paper relies partly on practitioner reports, which may differ in methodology and sample selection. The study selection, although guided by explicit criteria, involves judgement, and the review does not estimate pooled effects. Finally, much of the international evidence comes from developed markets, and its applicability to India's ownership structures and enforcement environment should be tested directly.

VI. CONCLUSION

This paper reviewed theory, evidence and practice relevant to India's Business Responsibility and Sustainability Reporting framework. It finds that the regime incorporates several features associated with effective mandatory disclosure, and that large Indian companies have achieved high levels of environmental reporting and widespread assurance. However, data comparability, value chain coverage, the social dimension and the readiness of smaller listed firms remain significant gaps.

Several areas merit further research. First, event studies and difference-in-differences designs could estimate the effect of BRSR and BRSR Core assurance on liquidity, cost of capital and analyst coverage, exploiting the market capitalisation thresholds and the phased glide path. Second, research on assurance quality could compare assurance and assessment routes, assurance provider types and the incidence of restatements. Third, studies could examine whether value chain disclosure, now voluntary, is adopted selectively by firms with favourable supplier profiles. Fourth, content analysis could test for greenwashing by comparing BRSR narratives with assured quantitative indicators. Fifth, surveys of firms ranked below the top 250 could assess their capacity to meet assurance requirements. Addressing these questions would help determine whether India's mandatory disclosure regime translates into more sustainable corporate behaviour and better-informed capital markets.

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EDUSCHOOL INTERNATIONAL JOURNAL OF COMMERCE REVIEW (EIJCR)

(Open Access, Double-Blind Peer Reviewed Journal)

ISSN Online:



From Access to Usage: Digital Payments and Financial Inclusion in India – A Review of Evidence and Emerging Gaps

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Article information

Received: 3rd July 2026

Received in revised form: 8th August 2026

Accepted: 14th September 2026

Available online: 6th October 2026

Volume: 1

Issue: 2

DOI: <https://doi.org/10.5281/zenodo.23230837>

Abstract

India has built one of the world's largest public digital payment infrastructures, anchored in the Unified Payments Interface (UPI), universal bank account programmes and biometric identity. This paper reviews the empirical and policy literature on whether this infrastructure has translated into meaningful financial inclusion, and supplements the review with secondary data from the Reserve Bank of India (RBI), the National Payments Corporation of India (NPCI) and the World Bank's Global Findex 2025. Using a structured narrative review of peer-reviewed studies, working papers and official statistics published between 2016 and 2026, the paper organises the evidence around four themes: the expansion of access, the drivers of adoption, the economic effects of digital payments, and the risks and exclusions that persist. The review finds that access has expanded dramatically: UPI processed 24.51 billion transactions in August 2026, the RBI Financial Inclusion Index rose to 70.0 in March 2026, and the share of account owners with inactive accounts fell from 35 per cent in 2021 to 16 per cent in 2024. Causal studies associate digital payment adoption with higher household income, new business formation and improved access to FinTech credit. However, usage remains uneven, with persistent gender gaps, an inactivity rate four times that of comparable economies, and limited conversion of payment activity into credit, insurance and savings. The paper argues that India's next policy challenge is to move from access to productive usage, and it proposes an agenda for research on usage depth, gender, consumer protection and the payments-to-credit pathway.

Keywords: - Digital Payments, Financial Inclusion, Unified Payments Interface, FinTech, India

I. INTRODUCTION

Financial inclusion, understood as the availability and use of affordable formal financial services by individuals and firms, is widely regarded as an enabler of poverty reduction, household resilience and enterprise growth. For most of its post-independence history, India approached this goal through supply-side measures such as bank nationalisation, priority sector lending and rural branch expansion. Since 2014, however, the strategy has shifted towards digital public infrastructure: the Pradhan Mantri Jan Dhan Yojana (PMJDY) opened basic accounts at scale, Aadhaar provided a biometric identity layer, and the Unified Payments Interface (UPI), launched in 2016, created an interoperable real-time payment rail that any bank or app can join.

The scale of this transformation is striking. Annual UPI transaction volume rose from 1.78 crore in 2016-17 to more than 24,162 crore in 2025-26, and the number of banks live on the platform grew from 44 to 703 over the same period. In August 2026, UPI processed 24.51 billion transactions worth ₹29.82 lakh crore, its highest monthly volume to date. The RBI's Digital Payments Index, which was set at 100 in March 2018, reached 516.76 by September 2025.

Yet rapid growth in transactions does not automatically mean that the excluded have been included. A transaction count can rise because existing users transact more often, while large segments of the population remain outside the system or hold accounts they rarely use. The World Bank's Global Findex 2025 reports that about 16 per cent of Indian account owners have

inactive accounts, compared with an average of 4 per cent in other low- and middle-income economies (Klapper et al., 2025). This tension between spectacular aggregate growth and uneven individual usage motivates the present review.

The paper addresses the following research question: to what extent has India's digital payments expansion translated into meaningful financial inclusion, and what gaps remain? It contributes in three ways. First, it brings together evidence from economics, finance and information systems that is usually discussed in separate literatures. Second, it updates the discussion with the most recent official data available as of 2026, including the Global Findex 2025 and the RBI Financial Inclusion Index for March 2026. Third, it identifies specific gaps that can guide future empirical work in commerce and management research.

The remainder of the paper is organised as follows. Section 2 reviews the theoretical and empirical literature. Section 3 describes the review method and data sources. Section 4 presents the findings, Section 5 discusses their implications, and Section 6 concludes with directions for further research.

II. LITERATURE REVIEW

2.1. Conceptual foundations

Two strands of theory frame the study of digital payments. The first concerns individual adoption. The Technology Acceptance Model holds that perceived usefulness and perceived ease of use shape a person's intention to use a technology (Davis, 1989), while the Unified Theory of Acceptance and Use of Technology (UTAUT) adds social influence and facilitating conditions as determinants of intention and use (Venkatesh et al., 2003). Diffusion of innovations theory complements these models by explaining how adoption spreads through a population over time, from early adopters to the late majority (Rogers, 2003).

The second strand concerns market structure. Payment systems are two-sided platforms: their value to consumers depends on how many merchants accept them, and vice versa (Rochet & Tirole, 2003). Such network externalities create coordination problems, because no single merchant gains from accepting a payment method that few customers use. This insight is important for India, because it suggests that the timing and scale of adoption can depend on aggregate shocks and public coordination, not only on individual preferences.

Financial inclusion itself is increasingly defined in multidimensional terms. Ozili (2018) argues that digital finance can widen access for individuals, providers and governments, but warns that it also introduces risks related to cost, fraud, data and financial stability. The RBI's Financial Inclusion Index reflects this view by combining Access, Usage and Quality dimensions, weighted at 35, 45 and 20 per cent respectively, rather than relying on account ownership alone.

2.2. Building access: accounts and infrastructure

The most direct evidence on account expansion comes from studies of PMJDY. Using administrative account-level data, Agarwal et al. (2017) document 255 million new accounts opened under the programme, of which about 77 per cent maintained a positive balance. They find that usage was initially infrequent but gradually converged towards that of comparable banked households, and that regions more exposed to the programme saw increases in lending. D'Silva et al. (2019) describe how India layered identity, accounts and interoperable payments into a "stack" of public digital infrastructure, arguing that this design lowered the cost of serving low-income customers.

International evidence suggests that such access can matter for welfare. In Kenya, Suri and Jack (2016) estimate that access to the M-PESA mobile money system raised per capita consumption and lifted about 2 per cent of households out of poverty, with stronger effects for female-headed households. These findings have been influential but also contested; Bateman et al. (2019) question both the causal identification and the generalisability of the results, cautioning against treating digital finance as a standalone solution to poverty.

2.3. Drivers of adoption

Studies of Indian consumers largely confirm the adoption models. In a survey of 491 Indian consumers, Patil et al. (2020) find that performance expectancy, intention to use and grievance redressal significantly predict actual mobile payment use, and they highlight trust and effective complaint handling as factors specific to the Indian context. These findings imply that the quality of consumer protection, not only convenience, shapes sustained usage.

At the aggregate level, the 2016 demonetisation provided a natural experiment. Chodorow-Reich et al. (2020) show that districts facing more severe cash shortages experienced sharper short-run contractions in economic activity but faster adoption of alternative payment technologies. Crouzet et al. (2023) find that the temporary cash contraction led to a persistent increase in retailers' adoption of an electronic wallet, and estimate that adoption would have been about 45 per cent lower without complementarities between adopters. Together, these studies show that network effects are central to payment adoption and that large shocks can shift an economy to a new equilibrium.

2.4. Economic effects of digital payments

A growing body of work examines whether digital payments change real economic outcomes. Using district-level UPI transaction data, Dubey and Purnanandam (2023) find that districts with higher post-UPI cashless payment intensity saw greater household income growth and new business formation, with larger effects for the self-employed and in areas with lower financial development. Purnanandam (2025) situates these findings in a broader account of UPI as public infrastructure that lowers transaction costs for small merchants.

A second channel operates through credit. Ghosh et al. (2026) show, using loan-level data from an Indian FinTech lender, that borrowers' use of cashless payments improves their access to credit and predicts lower default, because digital transaction records provide verifiable information about cash flows. This "payments-to-credit" pathway is particularly relevant for small firms and individuals without formal credit histories.

2.5. Research gap

The literature thus offers strong evidence on access expansion, adoption dynamics and selected economic effects. However, three gaps stand out. First, most studies predate the Global Findex 2025 and the latest RBI indices, so the relationship between recent payment growth and broader inclusion outcomes has not been reassessed. Second, studies tend to examine either aggregate transactions or individual adoption, with less attention to the depth and distribution of usage. Third, the risks of digital inclusion, such as fraud, exclusion of women and digitally inexperienced users, and over-reliance on a single payment channel, are discussed in policy reports more often than in academic research. This review seeks to address these gaps.

III. METHODS

The study adopts a structured narrative review design supplemented by descriptive analysis of secondary data. A narrative review is appropriate because the relevant evidence spans different disciplines, methods and publication types, which limits the feasibility of a formal meta-analysis.

3.1. Search and selection

Literature was identified through searches of Google Scholar, RePEc/IDEAS, SSRN and the publication pages of the RBI and the World Bank, using combinations of the terms "digital payments", "UPI", "financial inclusion", "mobile payment adoption", "demonetisation", "Jan Dhan" and "India". Studies were included if they (a) examined digital payments or financial inclusion in India, or provided widely cited international evidence relevant to the Indian case; (b) were published between 2016 and 2026, with earlier works retained only where they supply the core theoretical framework; and (c) appeared in peer-reviewed journals, recognised working paper series or official publications. Opinion pieces and studies without a clear empirical or conceptual contribution were excluded. Selection was purposive, prioritising studies with credible identification strategies or large samples.

3.2. Secondary data

To situate the literature in current conditions, the review draws on the following official sources: the RBI Digital Payments Index (RBI-DPI) series from March 2018 to September 2025; the RBI Financial Inclusion Index (FI-Index) for March 2021 to March 2026; NPCI's UPI transaction statistics, including figures for 2025-26 and August 2026; the World Bank's Global Findex 2021 and 2025; and fraud statistics from the RBI Annual Report 2025-26.

3.3. Analysis

The selected studies were coded by research setting, data, method and principal findings, and then grouped into four themes: access, adoption, economic effects, and risks and exclusions. Secondary data were analysed descriptively to compare earlier and latest values for each indicator. Because the study relies on published sources, no primary data were collected and ethical approval was not required.

IV. RESULTS

4.1. Expansion of access and activity

Table 1 summarises the main indicators. Every measure of access and activity improved substantially over the review period. The RBI-DPI rose more than fivefold from its March 2018 base, the FI-Index increased from 53.9 in March 2021 to 70.0 in March 2026, and annual UPI volume rose roughly 13,000-fold between 2016-17 and 2025-26.

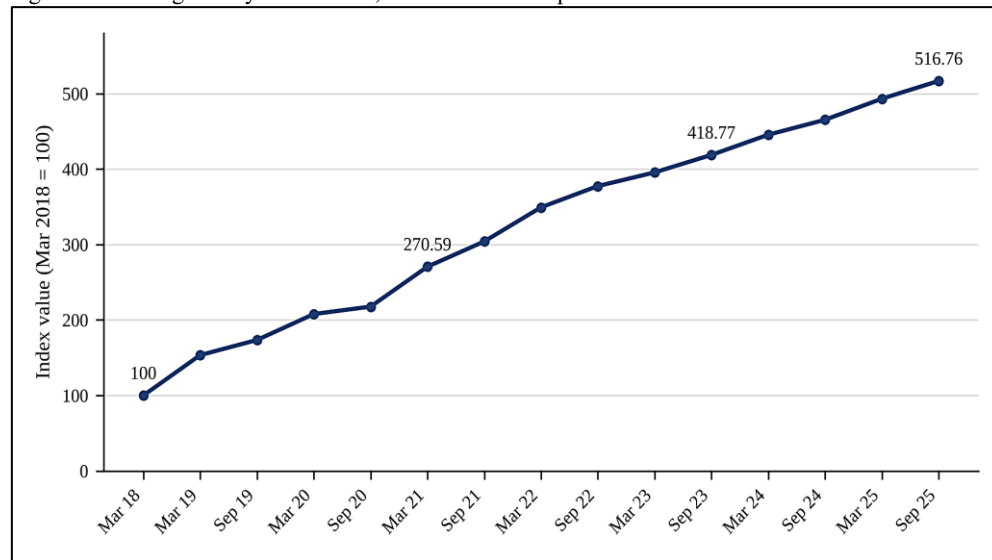
Table 1. Key Indicators of Digital Payments and Financial Inclusion in India

Indicator	Earlier value	Latest value	Source
RBI Digital Payments Index	100 (Mar 2018)	516.76 (Sep 2025)	RBI
RBI Financial Inclusion Index (0–100)	53.9 (Mar 2021)	70.0 (Mar 2026)	RBI
Annual UPI transactions	1.78 crore (2016-17)	24,162 crore (2025-26)	NPCI; MoF
Banks live on UPI	44 (2016-17)	703 (2025-26)	NPCI; MoF
Monthly UPI volume (peak)	21.7 billion (Jan 2026)	24.51 billion (Aug 2026)	NPCI
Account owners with inactive accounts	35% (2021)	16% (2024)	World Bank Findex
Card/internet/digital fraud cases reported	28,836 (2023-24)	293 (2025-26)	RBI Annual Report

Source: Compiled by the author(s) from RBI (2025, 2026a, 2026b, 2026c), NPCI (2026), Ministry of Finance (2026), Demirgüç-Kunt et al. (2022) and Klapper et al. (2025). Fraud figures reflect cases reported by banks under the RBI's classification and should be interpreted with caution, as changes in reporting thresholds and categories affect year-on-year comparisons.

Figure 1 plots the RBI-DPI series. Growth has been steady rather than episodic, with the index rising in every published period since its inception, including during the pandemic years.

Figure 1: RBI Digital Payments Index, March 2018 to September 2025



Source: RBI (2025, 2026b). Base: March 2018 = 100.

4.2. Synthesis of key empirical studies

Table 2 synthesises the principal empirical studies reviewed. Three patterns emerge. First, access programmes succeeded in opening accounts at scale, but early usage was low. Second, adoption of digital payments is strongly shaped by network effects and was accelerated by the demonetisation shock. Third, where rigorous causal evidence exists, digital payments are associated with positive economic outcomes, especially for small enterprises and the self-employed.

Table 2. Synthesis of Selected Empirical Studies

Study	Setting and data	Principal finding
Agarwal et al. (2017)	India; PMJDY account-level data	255 million new accounts; usage initially low but converging; more lending in exposed regions
Suri & Jack (2016)	Kenya; household panel surveys	M-PESA access raised consumption and reduced poverty, especially for female-headed households
Chodorow-Reich et al. (2020)	India; district data on demonetisation	Cash shortage reduced activity but accelerated adoption of alternative payments
Patil et al. (2020)	India; survey of 491 consumers	Performance expectancy, intention and grievance redressal predict use
Crouzet et al. (2023)	India; e-wallet data after demonetisation	Persistent adoption rise; complementarities explain about 45% of adoption
Dubey & Purnanandam (2023)	India; district-level UPI data	Higher cashless intensity linked to income growth and new businesses
Ghosh et al. (2026)	India; FinTech loan-level data	Cashless payment use improves credit access and predicts lower default

Source: Compiled by the author(s).

4.3. Persistent gaps in usage and quality

Despite these gains, the evidence points to four persistent gaps. The first is inactivity. Although the share of inactive accounts fell sharply between 2021 and 2024, India's rate remains about four times the average of other low- and middle-income economies (Klapper et al., 2025). Lack of money, distance from the bank and low trust are commonly reported reasons for not using accounts.

The second is gender. Account ownership among Indian women has broadly reached parity with men, but women remain less likely to make or receive digital payments and are more likely to hold inactive accounts (Klapper et al., 2025). Many women's accounts are opened to receive government transfers rather than for everyday transactions.

The third is the limited conversion of payment activity into other financial services. The FI-Index places the largest weight on usage, and the March 2026 improvement was driven mainly by higher usage, which is encouraging. However, the research by Ghosh et al. (2026) indicates that the credit benefits of digital payments depend on lenders' ability to use transaction data, and such data-sharing arrangements remain at an early stage for most small borrowers.

The fourth concerns risk. Card, internet and digital payment frauds accounted for the largest number of reported bank frauds in 2023-24 and 2024-25, before advances-related frauds took the largest share in 2025-26 (RBI, 2026a). While the reported number of digital payment fraud cases declined sharply, consumer-facing scams that do not appear in bank-reported statistics remain a concern for new and less experienced users.

V. DISCUSSION

The findings support a cautiously positive answer to the research question. India's digital payments expansion has clearly widened access and deepened activity, and rigorous studies link it to measurable economic gains. The fact that the FI-Index's latest improvement came mainly from the usage dimension suggests that the system is beginning to move beyond account opening. In this respect, the Indian experience is consistent with the two-sided platform view: once public infrastructure solved the coordination problem among banks, apps, merchants and consumers, adoption became self-reinforcing (Crouzet et al., 2023; Rochet & Tirole, 2003).

At the same time, the review shows that aggregate transaction growth can overstate inclusion. A large share of UPI activity reflects frequent low-value payments by people who were already connected, while inactivity and gender gaps show that a meaningful minority remains on the margins. This distinction between the extensive margin (who is included) and the intensive margin (how deeply they participate) is often blurred in public discussion, and it deserves explicit treatment in both research and policy.

The findings carry several implications. For policymakers, the priority should shift from expanding access to improving the quality and usefulness of inclusion, through targeted digital and financial literacy for women and first-time users, faster grievance redressal, and stronger safeguards against fraud. The evidence from Patil et al. (2020) that grievance redressal predicts actual use suggests that consumer protection is not only a welfare concern but also a driver of adoption. For banks and FinTech firms, the payments-to-credit pathway offers a commercial opportunity to serve thin-file borrowers, provided that data are shared with informed consent and adequate privacy protection. For merchants, particularly micro and small enterprises, digital payment records can become an asset for accessing formal finance.

The review also has limitations. As a narrative review, it does not produce pooled effect sizes, and the selection of studies, although guided by explicit criteria, involves judgement. Several important studies are working papers that may change before final publication. The secondary indicators are aggregate measures that cannot reveal individual-level dynamics, and fraud statistics in particular are sensitive to changes in reporting definitions. Finally, the international evidence from Kenya may not transfer directly to India's bank-led model.

VI. CONCLUSION

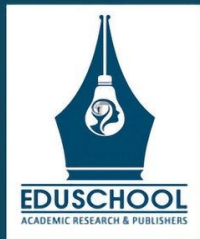
This paper reviewed the evidence on digital payments and financial inclusion in India and combined it with the latest official data. It finds that India has achieved near-universal account access and world-leading payment volumes, and that digital payments are associated with higher household income, new business formation and better access to credit. However, inactive accounts, gender disparities, limited progression from payments to credit and insurance, and evolving fraud risks show that inclusion remains incomplete.

The central conclusion is that India's next challenge is to move from access to productive usage. Several areas merit further research. First, micro-level studies using linked payment and credit data could quantify how far digital transaction histories improve credit access for women, farmers and micro-enterprises. Second, longitudinal surveys could track how first-time users progress from receiving transfers to making payments, saving and borrowing. Third, research on consumer protection could assess the incidence and cost of digital fraud among new users, including scams outside bank-reported statistics. Fourth, regional and state-level studies, including in states such as Kerala with high literacy and remittance flows, could explain why usage differs across places with similar access. Addressing these questions would help ensure that India's digital payment success translates into durable financial well-being.

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Goods and Services Tax and India's MSMEs: Compliance, Formalisation and the 2025 Rate Reform

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Article information

Received: 2nd July 2026

Received in revised form: 5th August 2026

Accepted: 10th September 2026

Available online: 6th October 2026

Volume: 1

Issue: 2

DOI: <https://doi.org/10.5281/zenodo.23233150>

Abstract

The Goods and Services Tax (GST), introduced in India on 1 July 2017, replaced fragmented central and state indirect taxes with a destination-based value added tax. Its effects on micro, small and medium enterprises (MSMEs) remain debated. This paper reviews international research on value added taxation and informality together with Indian evidence on GST and MSMEs, and examines the 2025 reform that rationalised GST into a two-rate structure. Using a structured narrative review of peer-reviewed studies, working papers and official data, the paper organises the evidence around three themes: the formalisation effects of value added taxes, the compliance burden on small firms, and the role of digital tax administration. The review finds that GST has expanded the formal tax base substantially: registered taxpayers rose from 65 lakh in 2017 to more than 1.51 crore by 2025, and gross collections doubled from ₹11.37 lakh crore in 2020-21 to ₹22.08 lakh crore in 2024-25. International evidence shows that the invoice trail in value added taxes encourages compliance along supply chains, but also that tax registration choices spread through supplier networks, disadvantaging unregistered small firms. Indian survey evidence points to working capital strain from blocked input tax credits and the costs of formalising informal practices. The 2025 reform, with rates of 5 and 18 per cent and faster registration and refunds, addresses some of these concerns. The paper proposes a research agenda on supply chain inclusion, working capital, e-invoicing and the effects of the rate reform.

Keywords: - Goods and Services Tax, MSMEs, Formalisation, Tax compliance, India

I. INTRODUCTION

Micro, small and medium enterprises occupy a central place in India's economy. They account for a large share of manufacturing output, exports and non-farm employment, and many operate at the boundary between the formal and informal sectors. The Udyam Registration Portal and the Udyam Assist Platform, which register enterprises for access to government support, together covered nearly 9 crore enterprises by July 2026, many of them informal micro-enterprises outside the GST and income tax systems.

The Goods and Services Tax, introduced on 1 July 2017, was one of the most significant reforms of India's tax system. It subsumed a large number of central and state levies, including excise duty, service tax and state value added taxes, into a unified destination-based tax with seamless input tax credit across the supply chain. Its proponents expected it to create a common national market, reduce cascading taxes and encourage formalisation by linking the tax liability of each firm to verified invoices from its suppliers.

The tax base has expanded considerably. The number of registered GST taxpayers grew from 65 lakh in 2017 to more than 1.51 crore by 2025, and gross collections doubled from ₹11.37 lakh crore in 2020-21 to ₹22.08 lakh crore in 2024-25. At the same time, MSMEs have reported significant difficulties, including frequent changes in rules, compliance costs, technological requirements and delays in input tax credit and refunds.

In September 2025, the GST Council approved a major rationalisation of rates, replacing the earlier multi-rate structure with a merit rate of 5 per cent and a standard rate of 18 per cent, together with a demerit rate of 40 per cent for selected goods, effective 22 September 2025. The reform also introduced faster registration and provisional refund measures aimed partly at small businesses.

This paper addresses the following research question: what does existing evidence suggest about the effects of GST on MSMEs, and to what extent does the 2025 reform address the challenges identified? It contributes by linking international

research on value added taxation and informality with Indian evidence on GST, and by situating the 2025 reform within this evidence. The rest of the paper is organised as follows. Section 2 reviews the literature, Section 3 describes the method, Section 4 presents the findings, Section 5 discusses implications, and Section 6 concludes.

II. LITERATURE REVIEW

2.1. Value added taxation and economic structure

The value added tax has spread to more than 160 countries. Keen and Lockwood (2010) find that its adoption has generally been associated with an increase in the effectiveness of revenue collection, although the gains vary with the structure of the economy and are weaker in countries with large agricultural or informal sectors. The design of a value added tax matters for small firms because the tax is collected in stages: each registered firm charges tax on its sales and claims credit for tax paid on its inputs.

This structure creates what De Paula and Scheinkman (2010) describe as chain effects. Because a registered firm can claim input tax credit only on purchases from registered suppliers, firms that are formal tend to buy from and sell to other formal firms, while informal firms cluster together. Informality can therefore spread along supply chains, and the decision of one firm to register affects the incentives of its trading partners.

2.2. Thresholds and the compliance burden

Most value added tax systems exempt small firms below a turnover threshold. Kanbur and Keen (2014) show that thresholds create several groups of firms, including those that are legitimately below the threshold, those that should register but do not, and those that register but under-report. The choice of threshold involves a trade-off between the administrative and compliance costs of covering many small firms and the revenue and competitive distortions that arise when firms remain outside the system.

India's GST includes such features. Firms with turnover below specified thresholds need not register, while a composition scheme allows small firms to pay tax at a low flat rate on turnover with simpler compliance but without input tax credit. Quarterly return filing with monthly payment was introduced in 2021 for smaller taxpayers. These provisions reduce compliance costs, but firms that remain outside the regular system may lose business from registered buyers who cannot claim credit on their purchases.

2.3. Information, enforcement and digital administration

A distinctive feature of the value added tax is the paper trail created by invoices. Using a randomised experiment in Chile, Pomeranz (2015) shows that increasing the perceived probability of audit raised reported transactions, with effects transmitted up the supply chain through the invoice trail, which confirms that the tax has a self-enforcing element. Naritomi (2019) finds that a Brazilian programme rewarding consumers for requesting receipts increased reported retail sales, demonstrating the value of third-party information. Okunogbe and Pouliquen (2022) show that the introduction of electronic tax filing in Tajikistan reduced bribe payments and compliance costs for firms, although effects on revenue varied.

India has invested heavily in digital tax administration. GST returns are filed online, input tax credit is matched against supplier filings, and electronic invoicing is mandatory for businesses with aggregate turnover above ₹5 crore since 1 August 2023. These systems strengthen the information trail but also raise the technological and procedural demands on smaller firms.

2.4. Indian evidence on GST and MSMEs

Evidence from India's earlier state value added taxes and from GST highlights the importance of supply chains. Using data on 4.8 million supplier-client pairs from West Bengal, Gadenne and Nandi (2023) find that the tax system distorted firms' sourcing decisions and that firms' registration choices were strategically linked to those of their trading partners. They argue that exempting inter-firm sales of small firms could benefit SMEs at little cost in revenue.

Survey evidence documents the experience of small firms under GST. Ghosh (2022) finds that GST introduced formal practices into the daily operations of MSMEs but also disrupted established informal arrangements, with adverse effects on vulnerable enterprises and their workers. In a survey of 400 MSMEs, Sureka and Bordoloi (2024) find that blocked credits and difficulties in claiming input tax credit raised working capital requirements and operating costs.

2.5. Research gap

The international literature provides a strong framework for understanding how value added taxes affect informality and compliance, and Indian studies document the experience of MSMEs. However, most Indian evidence is based on surveys from the early years of GST, and the 2025 rate reform has not yet been examined. This review seeks to integrate these strands and assess the reform in light of the evidence.

III. METHODS

The study adopts a structured narrative review design, combining peer-reviewed research and working papers with official data and Council decisions. This design is appropriate because the evidence spans public finance, development economics and small business research, and because recent policy changes are documented mainly in official sources.

3.1. Sources and selection

Academic studies were identified through Google Scholar, RePEc/IDEAS and SSRN using combinations of the terms "value added tax", "GST", "informality", "tax compliance", "MSME", "input tax credit", "e-invoicing" and "India". Official sources included GST collection statistics, government statements on the taxpayer base and Udyam registrations, and the

decisions of the 56th meeting of the GST Council. Studies were included if they (a) analysed value added taxation, informality, compliance or GST using quantitative or qualitative evidence; (b) appeared in peer-reviewed journals, recognised working paper series or official publications; and (c) were relevant to the Indian context. Selection was purposive, prioritising studies with credible research designs.

3.2. Analysis

Studies were coded by setting, data, method and principal findings and grouped into themes. Official data were analysed descriptively, and the 2025 reform was assessed against the challenges identified in the literature. Because the study relies entirely on published material, no primary data were collected and ethical approval was not required.

IV. RESULTS

4.1. Expansion of the GST base

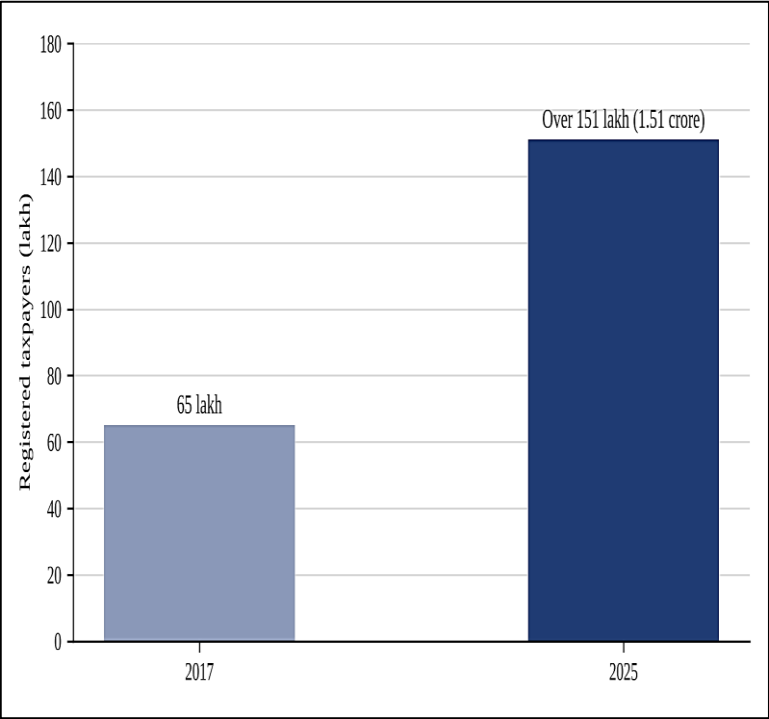
Table 1 summarises key indicators. Both the number of registered taxpayers and gross collections have grown substantially since GST was introduced, which is consistent with formalisation of at least part of the economy. Figure 1 illustrates the growth in the registered taxpayer base.

Table 1. Key Indicators of GST and MSME Formalisation in India

Indicator	Earlier value	Latest value	Source
Registered GST taxpayers	65 lakh (2017)	Over 1.51 crore (2025)	Government statements
Gross GST collections	₹11.37 lakh crore (2020-21)	₹22.08 lakh crore (2024-25)	Government data
Average monthly gross collection	₹1.68 lakh crore (2023-24)	₹1.84 lakh crore (2024-25)	Government data
Enterprises on Udyam and Udyam Assist	–	Nearly 9 crore (July 2026)	Ministry of MSME
E-invoicing threshold (aggregate turnover)	₹500 crore (Oct 2020)	₹5 crore (Aug 2023)	CBIC notifications

Source: Compiled by the author(s) from official GST statistics and government statements as reported in 2025-2026, Ministry of MSME statements (2026) and CBIC notifications.

Figure 1: Registered GST Taxpayers, 2017 and 2025



Source: Government data as reported in June 2025. Figures in lakh taxpayers.

4.2. Synthesis of evidence

Table 2 synthesises the principal studies reviewed. Two patterns stand out. First, the information trail created by value added taxes promotes compliance, especially when supported by digital systems. Second, the same chain structure that encourages compliance can disadvantage small firms that remain outside the system and can impose working capital costs on those inside it.

Table 2. Synthesis of Selected Studies on Value Added Taxation and Small Firms

Study	Setting and data	Principal finding
De Paula & Scheinkman (2010)	Brazil; firm-level survey	Informality spreads along supply chains through value added tax chain effects
Keen & Lockwood (2010)	Cross-country panel	VAT adoption generally raised revenue effectiveness, less so with large informal sectors
Kanbur & Keen (2014)	Theoretical analysis	Thresholds create distinct groups of compliant and non-compliant firms
Pomeranz (2015)	Chile; randomised audit experiment	Invoice trail transmits enforcement up the supply chain
Naritomi (2019)	Brazil; consumer receipt incentive programme	Third-party information from consumers raised reported sales
Ghosh (2022)	India; survey of MSMEs	GST introduced formal practices but disrupted informal arrangements of vulnerable firms
Gadenne & Nandi (2023)	India; 4.8 million supplier-client pairs	Tax system distorts sourcing; registration choices linked across networks
Sureka & Bordoloi (2024)	India; survey of 400 MSMEs	Blocked input tax credit raises working capital needs and costs

Source: Compiled by the author(s).

4.3. The 2025 rate reform

The 56th meeting of the GST Council on 3 September 2025 approved a rationalised structure with a merit rate of 5 per cent, a standard rate of 18 per cent and a demerit rate of 40 per cent for selected goods, effective 22 September 2025. The Council also approved trade facilitation measures relevant to small firms. Registration is to be granted automatically within three working days for low-risk applicants and those with expected monthly output tax liability below ₹2.5 lakh. Provisional refunds of 90 per cent were introduced for zero-rated supplies and cases of inverted duty structure from 1 November 2025, and registration procedures were simplified for small suppliers selling through e-commerce operators across states. The GST Appellate Tribunal was also scheduled to begin operations.

Measured against the literature, these changes address several MSME concerns. A simpler rate structure reduces classification disputes and compliance complexity. Faster refunds for inverted duty structures respond directly to the working capital problems documented by Sureka and Bordoloi (2024). Automated registration lowers entry costs into the formal system. However, the reform does not directly address the supply chain disadvantage faced by small unregistered and composition firms, which cannot pass input tax credit to registered buyers (Gadenne & Nandi, 2023).

V. DISCUSSION

The findings suggest that GST has contributed to a substantial expansion of India's formal tax base, consistent with international evidence on the self-enforcing properties of value added taxes (Pomeranz, 2015). The doubling of collections and the more than doubling of registered taxpayers indicate that the design of GST, combined with digital administration, has drawn many firms into the formal system.

At the same time, the chain structure of GST has distributional consequences for small firms. As De Paula and Scheinkman (2010) and Gadenne and Nandi (2023) show, firms that remain outside the system may be excluded from supply chains led by registered firms, while firms inside the system face compliance and working capital costs. The Indian survey evidence from Ghosh (2022) and Sureka and Bordoloi (2024) suggests that these costs have been significant for vulnerable enterprises. The challenge for policy is to preserve the enforcement benefits of the invoice trail while reducing the burden on small firms.

The findings carry implications for several groups. For policymakers, the 2025 reform is a step towards simplicity, but further measures could include timely and predictable refunds, clearer rules on blocked credits, and approaches that allow small composition firms to participate more fully in supply chains. For MSMEs, investment in digital accounting and timely filing can reduce the risk of credit mismatches and improve access to formal buyers and credit, since GST records increasingly serve as evidence of business activity. For large firms and e-commerce platforms, supporting the compliance of small suppliers can strengthen supply chain resilience.

The review has limitations. Much of the Indian evidence is based on surveys with limited samples, and causal evidence on GST and MSME outcomes remains scarce. Official figures on collections and taxpayers do not distinguish growth due to formalisation from growth due to inflation, economic expansion and enforcement. The 2025 reform is recent, and its effects cannot yet be assessed. Finally, as a narrative review, the study involves judgement in selecting and interpreting evidence.

VI. CONCLUSION

This paper reviewed evidence on the effects of GST on India's MSMEs. It finds that GST has substantially expanded the formal tax base and that its invoice-based design and digital administration promote compliance. However, the chain structure of the tax and its procedural demands have imposed costs on small firms, particularly through blocked input tax

credit, working capital strain and the disadvantage faced by firms outside the regular system. The 2025 rate rationalisation and associated facilitation measures address several of these concerns but leave others unresolved.

Several areas merit further research. First, studies using GST return and e-invoice data could measure how supply chain links between registered and unregistered firms have changed since 2017. Second, research could estimate the effects of the 2025 rate reform on prices, compliance and MSME margins using difference-in-differences designs across affected products. Third, studies could examine whether faster refunds have eased working capital constraints for exporters and firms with inverted duty structures. Fourth, research could assess the use of GST data in lending to MSMEs and its effects on credit access. Fifth, comparative analysis of the composition scheme could identify ways to include small firms in input tax credit chains without excessive compliance burden. Addressing these questions would help ensure that GST supports both revenue and the growth of India's small enterprises.

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Retail Investor Participation and Trading Behaviour in India's Equity Markets: A Behavioural Finance Review

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Article information

Received: 8th July 2026

Received in revised form: 5th August 2026

Accepted: 15th September 2026

Available online: 6th October 2026

Volume: 1

Issue: 2

DOI: <https://doi.org/10.5281/zenodo.23234370>

Abstract

Retail participation in India's equity markets has expanded at an unprecedented pace. The number of demat accounts crossed 150 million for the first time in March 2024 and reached about 234 million by July 2026, driven by low-cost digital brokerages, simplified onboarding and strong market returns. Much of the new activity, however, has flowed into equity derivatives, where outcomes for individuals have been poor. Studies by the Securities and Exchange Board of India (SEBI) show that 93 per cent of more than one crore individual futures and options traders made losses between 2021-22 and 2023-24, with aggregate losses exceeding ₹1.8 lakh crore, and that 91 per cent made losses in 2024-25. This paper reviews the behavioural finance literature that helps explain these outcomes and examines the policy response. Using a structured narrative review of peer-reviewed studies and SEBI publications, it organises the evidence around three themes: the drivers of retail participation, the behavioural biases that shape trading decisions, and the effects of regulation. The review finds that overconfidence, attention-driven trading, lottery preferences and learning from random outcomes, all well documented internationally and in India, are consistent with the observed pattern of frequent, loss-making derivative trading. SEBI's October 2024 measures were followed by a 20 per cent decline in unique traders, although aggregate losses rose in 2024-25. The paper discusses implications for regulators, brokers and investor education and proposes a research agenda on fintech design, investor learning and long-term wealth outcomes.

Keywords: - Retail Investors, Behavioural Finance, Equity derivatives, Overconfidence, SEBI

I. INTRODUCTION

Household participation in equity markets is often regarded as a sign of financial deepening. When households invest directly in shares and mutual funds, they gain access to the long-term returns of corporate growth, and firms gain a broader base of domestic capital. In India, where household savings have traditionally been concentrated in bank deposits, gold and real estate, the recent shift towards market-linked investments represents a significant structural change.

The scale of this shift is striking. India's demat account tally crossed 150 million for the first time in March 2024, and by July 2026 it had reached about 234 million, with monthly additions of around 2.9 million accounts. This expansion was supported by digital onboarding through electronic know-your-customer processes, the rise of discount brokerages offering low or zero brokerage on delivery trades, and the strong performance of Indian equities after 2020.

Not all of this participation, however, has taken the form of long-term investment. A large share of new retail activity has been concentrated in equity derivatives, particularly short-dated index options. SEBI's studies paint a stark picture: 93 per cent of more than one crore individual traders in equity futures and options (F&O) incurred losses between 2021-22 and 2023-24, with aggregate losses exceeding ₹1.8 lakh crore (SEBI, 2024a). In 2024-25, 91 per cent of individual traders again made net losses, and their aggregate net loss rose by 41 per cent to ₹1,05,603 crore (SEBI, 2025).

Why do so many individuals persist in an activity that leaves most of them worse off? Standard finance theory, which assumes rational investors with consistent preferences, offers limited answers. Behavioural finance, by contrast, has documented systematic patterns in how individual investors trade, many of which appear relevant to the Indian experience. This paper addresses the following research question: what does behavioural finance research suggest about the drivers of retail trading outcomes in India, and how effective has the regulatory response been? It contributes by linking international

and Indian evidence on investor behaviour to SEBI's recent data and policy measures, and by identifying priorities for further research.

The rest of the paper is organised as follows. Section 2 reviews the literature, Section 3 describes the method, Section 4 presents the findings, Section 5 discusses implications, and Section 6 concludes.

II. LITERATURE REVIEW

2.1. Household finance and participation

Campbell (2006) frames household finance as a field concerned with how households use financial markets to achieve their objectives, and he notes that many households make investment mistakes, including non-participation, under-diversification and excessive trading. These mistakes are more common among less wealthy and less educated households. Lusardi and Mitchell (2014) show that financial literacy is low in many countries and that it is strongly associated with better financial decisions, including retirement planning and avoidance of high-cost borrowing.

Emerging economies present distinct challenges. Badarizna et al. (2019) document that households in emerging markets hold a larger share of wealth in physical assets and face greater frictions in accessing formal financial products. As these frictions fall, rapid entry by first-time investors with limited market experience is to be expected, and this makes the quality of early investment experiences particularly important.

2.2. Behavioural biases in individual trading

A large literature shows that individual investors trade too much. Barber and Odean (2000), using data on more than 60,000 US households, find that those who traded most frequently earned substantially lower net returns than those who traded least, primarily because of transaction costs. They attribute this pattern to overconfidence. In a related study, Barber and Odean (2001) find that men traded more than women and earned lower net returns as a result, consistent with gender differences in overconfidence.

Evidence from Taiwan provides a particularly relevant benchmark. Using complete trading records for the Taiwanese market, Barber et al. (2009) show that individual investors suffered large aggregate losses from trading, much of which accrued to institutions, and that a substantial portion of these losses arose from aggressive orders and transaction costs. The parallel with SEBI's finding that proprietary traders and foreign portfolio investors earned profits while individuals lost money in F&O is notable.

Other biases shape what investors trade and when. Prospect theory holds that people evaluate outcomes relative to a reference point and are more sensitive to losses than to equivalent gains (Kahneman & Tversky, 1979). One consequence is the disposition effect, the tendency to sell winning investments too early and hold losing ones too long (Shefrin & Statman, 1985), which Odean (1998) confirms in brokerage data. Kumar (2009) shows that some individual investors exhibit a preference for lottery-like stocks with low prices and high skewness, accepting low average returns in exchange for a small chance of a large gain. Out-of-the-money options share these lottery-like features.

2.3. Technology, attention and learning

Digital platforms have changed how individuals trade. Barber et al. (2022) find that users of the Robinhood app in the United States engaged in more attention-induced trading than other retail investors, and that stocks heavily bought by these users subsequently earned negative returns averaging 4.7 per cent over 20 days. They attribute part of this effect to app design features that make certain stocks more salient.

Indian evidence shows that investors may also learn the wrong lessons from experience. Using random allocations of shares in oversubscribed initial public offerings, Anagol et al. (2021) find that investors who were randomly allocated IPO shares that subsequently rose in value increased their trading in other stocks, while those allocated shares that fell reduced it. Because the allocations were random, the results suggest that investors interpret luck as evidence of their own skill, which is consistent with overconfidence driven by early outcomes.

2.4. Research gap

The behavioural finance literature is extensive, and SEBI has published detailed data on trading outcomes. However, academic work connecting the two in the Indian derivatives context remains limited, and the effects of the 2024 regulatory measures have not yet been examined in peer-reviewed research. This review seeks to bridge this gap.

III. METHODS

The study adopts a structured narrative review design, combining peer-reviewed research with official regulatory data. This design is appropriate because the evidence spans different methods and settings and because the most recent Indian data are available only in regulatory publications.

3.1. Sources and selection

Academic studies were identified through Google Scholar, RePEc/IDEAS and SSRN using combinations of the terms "individual investors", "retail trading", "overconfidence", "disposition effect", "lottery stocks", "fintech trading", "derivatives" and "India". Regulatory evidence was drawn from SEBI studies on individual traders in equity derivatives published between 2023 and 2025 and from the SEBI circular of October 2024 on the equity index derivatives framework. Market participation data were drawn from depository statistics as reported by market sources. Studies were included if they

- Analysed individual investor behaviour or outcomes using trading data, experiments or surveys, or provided the theoretical basis for such analysis

- Appeared in peer-reviewed journals or official publications
- Were relevant to the Indian context. Selection was purposive, prioritising large-sample studies with credible identification.

3.2. Analysis

Studies were coded by setting, data, method and principal findings and grouped into themes. Regulatory data were analysed descriptively to compare outcomes across periods before and after the 2024 measures. Because the study relies entirely on published material, no primary data were collected and ethical approval was not required.

IV. RESULTS

4.1. Scale of participation and outcomes

Table 1 summarises the main indicators. Participation has risen sharply, but outcomes in the derivatives segment have been consistently poor. The share of loss-making individual traders has remained around nine in ten across every SEBI study, and losses are concentrated: over the three years to 2023-24, the top 3.5 per cent of loss-makers lost an average of ₹28 lakh each, while only about 1 per cent of traders earned profits above ₹1 lakh.

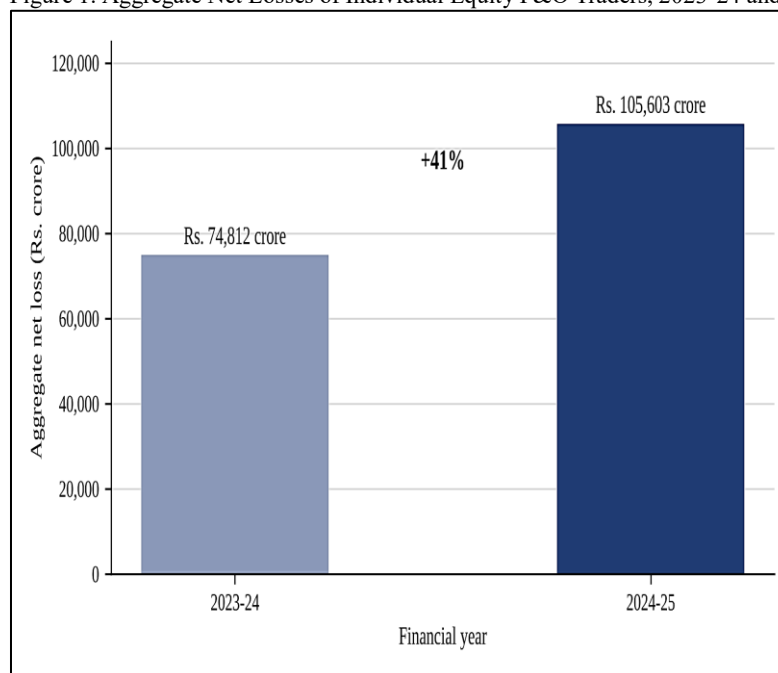
Table 1. Retail Participation and Equity Derivatives Outcomes in India

Indicator	Value	Period	Source
Demat accounts	150 million (first crossed)	March 2024	Market reports
Demat accounts	234.4 million	July 2026	360 ONE Capital
Individual F&O traders making losses	93% of over 1 crore traders	2021-22 to 2023-24	SEBI (2024a)
Aggregate losses of individual F&O traders	Over ₹1.8 lakh crore	2021-22 to 2023-24	SEBI (2024a)
Average loss per trader	About ₹2 lakh	2021-22 to 2023-24	SEBI (2024a)
Individual traders with net losses	91%	2024-25	SEBI (2025)
Aggregate net loss of individual traders	₹74,812 crore to ₹1,05,603 crore	2023-24 to 2024-25	SEBI (2025)
Unique individual index derivative traders	Down 20% year on year	Late 2024-25	SEBI (2025)

Source: Compiled by the author(s) from SEBI (2024a, 2025) and market reports on depository statistics (Business Standard, 2024; 360 ONE Capital, as reported in 2026). Losses include transaction costs where stated by SEBI.

Figure 1 compares the aggregate net losses of individual F&O traders in 2023-24 and 2024-25. Losses widened by 41 per cent in 2024-25, even though the share of loss-making traders was unchanged and participation declined in the latter part of the year.

Figure 1: Aggregate Net Losses of Individual Equity F&O Traders, 2023-24 and 2024-25



Source: SEBI (2025). Figures in ₹ crore.

4.2. Synthesis of behavioural evidence

Table 2 synthesises the principal studies reviewed. The evidence consistently shows that individual investors who trade frequently underperform, that overconfidence and attention play central roles, and that investors draw inferences about their skill from outcomes that are largely random.

Table 2. Synthesis of Selected Empirical Studies on Individual Investor Behaviour

Study	Setting and data	Principal finding
Odean (1998)	United States; brokerage accounts	Investors sell winners more readily than losers (disposition effect)
Barber & Odean (2000)	United States; 66,465 household accounts	Most active traders earn the lowest net returns, consistent with overconfidence
Barber & Odean (2001)	United States; brokerage accounts by gender	Men trade more than women and earn lower net returns
Barber et al. (2009)	Taiwan; complete market trading records	Individuals lose substantially from trading; institutions gain
Kumar (2009)	United States; individual portfolios	Some investors prefer lottery-like stocks despite low average returns
Anagol et al. (2021)	India; random IPO allocations to 1.5 million investors	Random gains raise subsequent trading, suggesting investors mistake luck for skill
Barber et al. (2022)	United States; Robinhood users	App users engage in attention-induced trading followed by negative returns

Source: Compiled by the author(s).

4.3. The regulatory response

On 1 October 2024, SEBI announced six measures to strengthen the equity index derivatives framework (SEBI, 2024b). From 20 November 2024, the minimum contract size for index derivatives was raised from ₹5 lakh to ₹15 lakh, weekly expiries were limited to one benchmark index per exchange, option premiums were to be collected upfront from buyers, an additional extreme loss margin of 2 per cent was applied to short options on expiry day, and calendar spread benefits were removed on expiry day. Intraday monitoring of position limits followed in April 2025.

The early evidence on these measures is mixed. SEBI (2025) reports that the number of unique individual traders in index derivatives fell by about 20 per cent year on year in the latter part of 2024-25, and that losses declined in the final quarter of the year. However, aggregate net losses for 2024-25 as a whole were 41 per cent higher than in 2023-24, and the share of loss-making traders remained above 90 per cent. The measures appear to have reduced participation at the margin without, so far, changing outcomes for those who continue to trade.

V. DISCUSSION

The findings indicate that the pattern of retail derivatives trading in India is closely consistent with what behavioural finance research would predict. Short-dated options combine low upfront cost, high leverage and lottery-like payoffs, which appeal to investors with a preference for skewness (Kumar, 2009). Frequent trading driven by overconfidence erodes returns through transaction costs (Barber & Odean, 2000), and app-based trading may amplify attention-driven decisions (Barber et al., 2022). The Indian evidence from IPO lotteries suggests that early wins, even when random, can encourage further trading (Anagol et al., 2021). The concentration of profits among proprietary traders and foreign portfolio investors mirrors the transfer from individuals to institutions documented in Taiwan (Barber et al., 2009).

These findings carry implications for several groups. For regulators, the results suggest that measures which raise entry costs may reduce participation but are unlikely on their own to change the behaviour of committed traders. Complementary approaches could include suitability assessments for derivatives trading, prominent disclosure of individual loss statistics at the point of trade, and limits on features that encourage impulsive trading. For brokers, particularly app-based platforms, the evidence on attention-induced trading highlights a responsibility to avoid design choices that gamify trading. For investor educators, the evidence indicates that financial literacy programmes should address behavioural biases directly, including overconfidence and the tendency to learn from luck, rather than focusing only on product knowledge (Lusardi & Mitchell, 2014). Behavioural tools such as default options and well-timed reminders may also help (Thaler & Sunstein, 2008).

The broader picture is not wholly negative. Growth in demat accounts and long-term investment products indicates that many new investors are building market-linked savings. The central policy challenge is to channel growing participation towards diversified, long-term investing while limiting harm from speculative trading.

The review has limitations. Most of the behavioural evidence comes from developed markets, and its applicability to Indian investors requires direct testing. SEBI's studies report aggregate statistics and do not allow analysis of individual behaviour or causal attribution of outcomes to specific biases. The period since the 2024 measures is short, and later data may reveal different effects. Finally, as a narrative review, the study involves judgement in the selection and interpretation of evidence.

VI. CONCLUSION

This paper reviewed behavioural finance evidence relevant to India's rapid growth in retail market participation and the poor outcomes of individual derivatives traders. It finds that overconfidence, attention-driven trading, lottery preferences and learning from random outcomes provide a coherent explanation for why around nine in ten individual F&O traders lose money. SEBI's 2024 measures reduced participation but have not yet improved outcomes for those who continue to trade.

Several areas merit further research. First, account-level studies using broker or exchange data could test which biases best predict losses among Indian traders, and how this varies by age, gender, income and region. Second, research on platform

design could examine how features such as notifications, leaderboards and simplified order screens affect trading frequency and outcomes. Third, longitudinal studies could track whether investors who incur derivatives losses exit markets entirely or shift towards long-term investing. Fourth, evaluations of the 2024 measures using difference-in-differences designs could estimate their causal effects as more data become available. Fifth, field experiments could test whether loss disclosures or suitability prompts reduce harmful trading. Addressing these questions would help ensure that India's expanding investor base translates into durable household wealth.

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