

Digital Payments and the Informal Sector: Evidence from a Decade of Research

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Abstract

Despite this expansion, academic research and digital payment policy statistics rarely include informal micro-entrepreneurs including street vendors, hawkers, barbers, tailors, and small food merchants. A Systematic Literature Review (SLR) and Bibliometric Analysis utilizing Scopus and Web of Science maps digital payment research from 2015 to 2025. PRISMA 2020 screening was followed by Biblioshiny (RStudio) analysis of trends, clusters, and themes. Global and Indian research focuses on FinTech, blockchain, financial inclusion, technology adoption models, and digital transformation, yet informal vendors remain statistically and academically “invisible.” Uneven adoption, severe hurdles, and limited linkage to economic sustainability outcomes are seen in India and other emerging economies. The study emphasizes a research vacuum in digital payments and informal livelihoods and suggests a conceptual framework linking digital literacy, adoption behavior, and economic sustainability for future empirical work.

Keywords: Digital Payments, Informal Business, Street Vendors, UPI, P2P, P2M

1. Introduction

1.1 Growth of Digital Payments in India

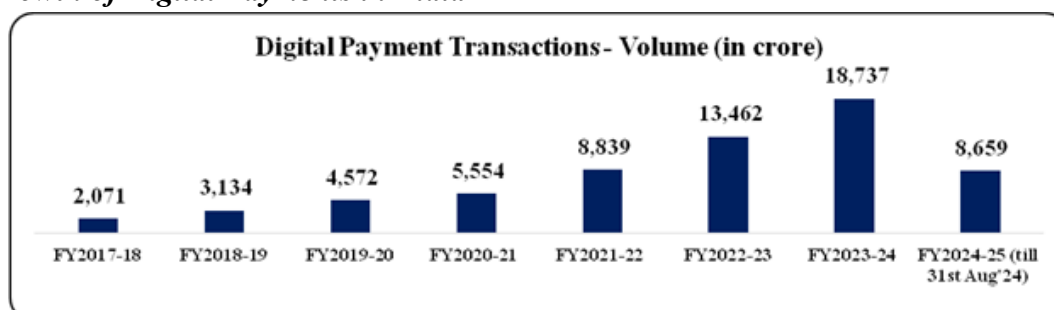


Fig 1. Digital Payments Transactions Volume (in Crores)

Source: PIB (20 Sep 2024)

Digital payments in India have grown rapidly in the past decade. Digital transactions rose from 2,071 crore in FY 2017–18 to 18,737 crore in FY 2023–24, while UPI payments rose from 92

crore to 13,116 crore (Press Information Bureau, 2024). According to the RBI Payment System Report (2024–25), UPI accounts for 84% of retail digital payments, making India the global leader in real-time transactions.

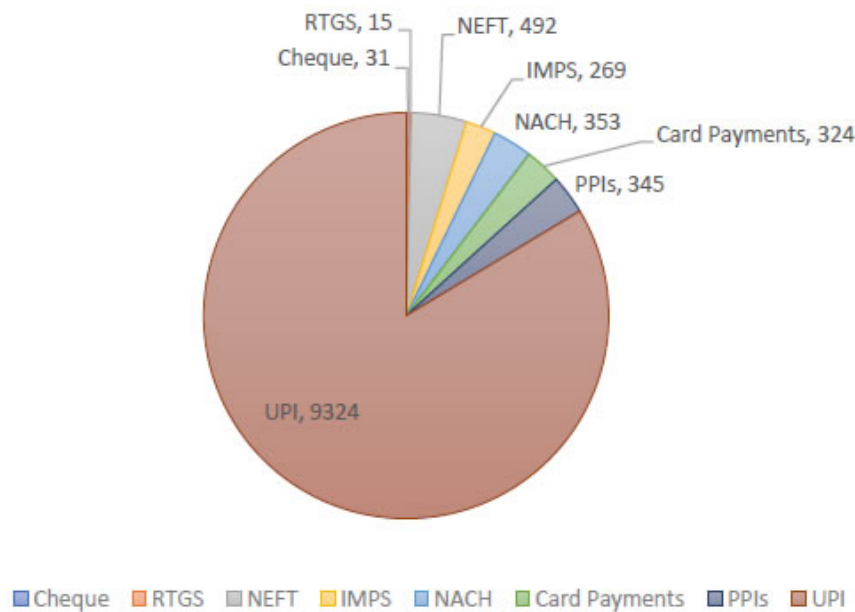


Fig 2. Payment System wise breakup of Digital Payments Volume (Crores) for H2: 2024
 Source: RBI Payment System Report, Dec 2024

1.2 Significance of the Informal Sector

Over 80% of India's non-agricultural work is informal, including street vendors, hawkers, tailors, cobblers, and small food sellers. India's digital financial ecosystem relies on micro-entrepreneurs, who lack official registration, corporate documentation, and institutional credit.

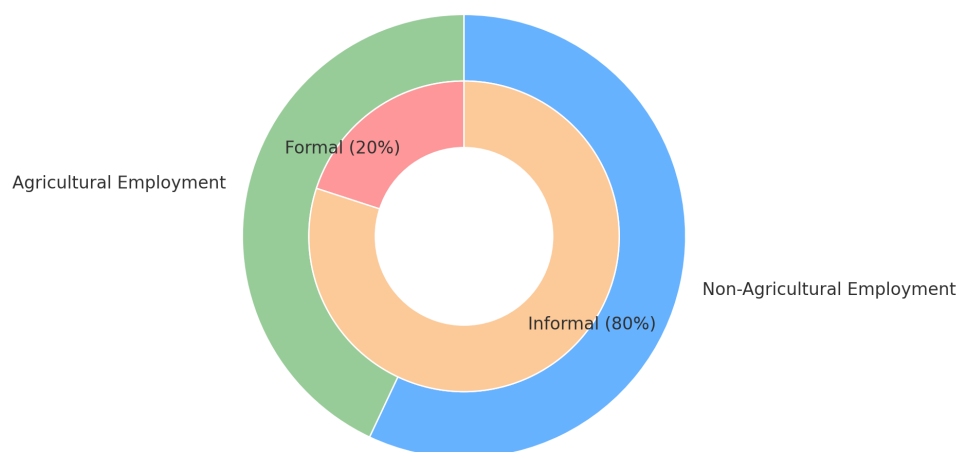


Fig 3. Structure of Employment: Agriculture vs. Non-Agriculture and Formal vs. Informal
 Source: Author Generated
 Data Source: PLFS (2022–23), MoSPI; ILO (2023).

1.3 Limitations of Existing Research

Academic digital payment study examines formal firms, MSMEs, organized retail, and technology adoption. Adhikary et al. (2021) analyze unorganized retailer digital payment uptake, whereas Prasad, Chaveesuk, and Soutter (2023) examine behavioral and technological aspects. FinTech ecosystems, blockchain, and digital transformation are studied globally (Soejachmoen, 2016; De Portu, 2022). These findings explain digital financial systems but not informal microbusinesses.

1.4 Why Informal Vendors Remain Invisible

A key reason informal enterprises are underrepresented is digital interactions. Street vendors perform P2P transactions with personal UPI IDs instead of merchant payments. They are excluded from digital payment study datasets by Mathur et al. (2025) and Bakhshi (2024). Despite using digital payment networks, some sellers are statistically invisible due to limited digital literacy, merchant account absence, and fragmented financial activity.

1.5 Emerging Evidence on Economic Impact

Few studies suggest digital tools alter informal livelihoods. Nandru et al. (2021) argue financial inclusion aids street vendors. Digital payments generate opportunities but aggravate inequalities in Kashmir's vendor groupings, say Mir and Wani (2025). Mathur et al. (2025) link FinTech adoption to economic resilience, whereas Gopal and Davidson (2025) highlight street sellers' early digital transformation. These data show benefits but need more research.

1.6 Need for a Systematic Review

Given India's rising digital payment adoption and informal companies' socioeconomic importance, global and Indian studies must be examined. Formal-sector viewpoints dominate fragmented regional research. An SLR and Bibliometric Analysis of 2015–2025 research fixes this. The goal is to study academic trends, find theme gaps, and explain how digital payments affect informal entrepreneurs' economic viability, an understudied field.

2. Objectives

The study aims to:

1. Identify global and Indian research trends on digital payments from 2015–2025.
2. Examine the representation (or lack) of informal micro-business within this literature.
3. Conduct a comparative bibliometric analysis of global and Indian datasets.
4. Classify thematic clusters, emerging topics, and structural gaps.
5. Build a conceptual foundation for studying the economic sustainability of informal vendors.

3. Methodology

In this mixed-method study, SLR and Bibliometric Analysis explore a decade (2015–2025) of worldwide and Indian research on digital payments and the informal sector. Methodology meets openness, replicability, and analytical rigor standards.

3.1 Research Design

Dual factors led a hybrid evaluation.

First, a Systematic Literature Review synthesizes informal and small business digital payment uptake research. Second, Bibliometric Analysis quantifies scientific outputs to reveal themes, groups, and frameworks. Recent FinTech and digital finance studies support this strategy.

3.2 Data Sources

Two major academic databases were used:

- Scopus (Elsevier)
- Web of Science – Core Collection (Clarivate)

These databases were chosen for their vast coverage, citation accuracy, and good indexing of digital payments, FinTech, financial inclusion, and informal economies studies. Together, they reduce database-specific bias and improve results validity.

3.3 Search Strategy

Search queries were designed to capture studies on digital payments, informal businesses, and small retail ecosystems.

- Scopus Search Query: ALL (digital payment) OR ALL (UPI) AND ALL (street vendor) OR ALL (small business)
- Web of Science Search Query: Topic: digital payment OR UPI AND Topic: small business OR street vendor
- Time Frame: 2015–2025, representing the decade of rapid digital payment expansion globally and in India.

This period also aligns with major policy shifts such as demonetization (2016), the nationwide growth of UPI, and post-pandemic digital acceleration, making it empirically meaningful.

3.4 Inclusion and Exclusion Criteria

Inclusion Criteria

- Peer-reviewed journal articles, conference papers, and book chapters
- Studies focusing on digital payments, mobile payments, FinTech adoption, financial inclusion, or informal sector behaviour
- Empirical, conceptual, or theoretical studies
- English-language publications
- Studies published between 2015 and 2025

Exclusion Criteria

- Non-academic sources (news articles, blogs, government reports)
- Studies unrelated to digital finance/technology adoption
- Papers without full-text accessibility
- Duplicates or documents failing relevance checks

3.5 Data Screening & Selection

A structured screening and extraction process was followed to ensure that only relevant and high-quality studies were included in the review. Because the study examines two distinct bodies of literature, global research on digital payments and India-specific research, screening was carried out independently for each dataset. Both processes followed the PRISMA 2020 guidelines.

3.5.1 Global Studies Screening

The global search returned a large volume of publications related to digital payments, FinTech, mobile transactions, digital inclusion, and technology adoption. After initial retrieval from Scopus and Web of Science, duplicate and ineligible records were removed before formal screening.

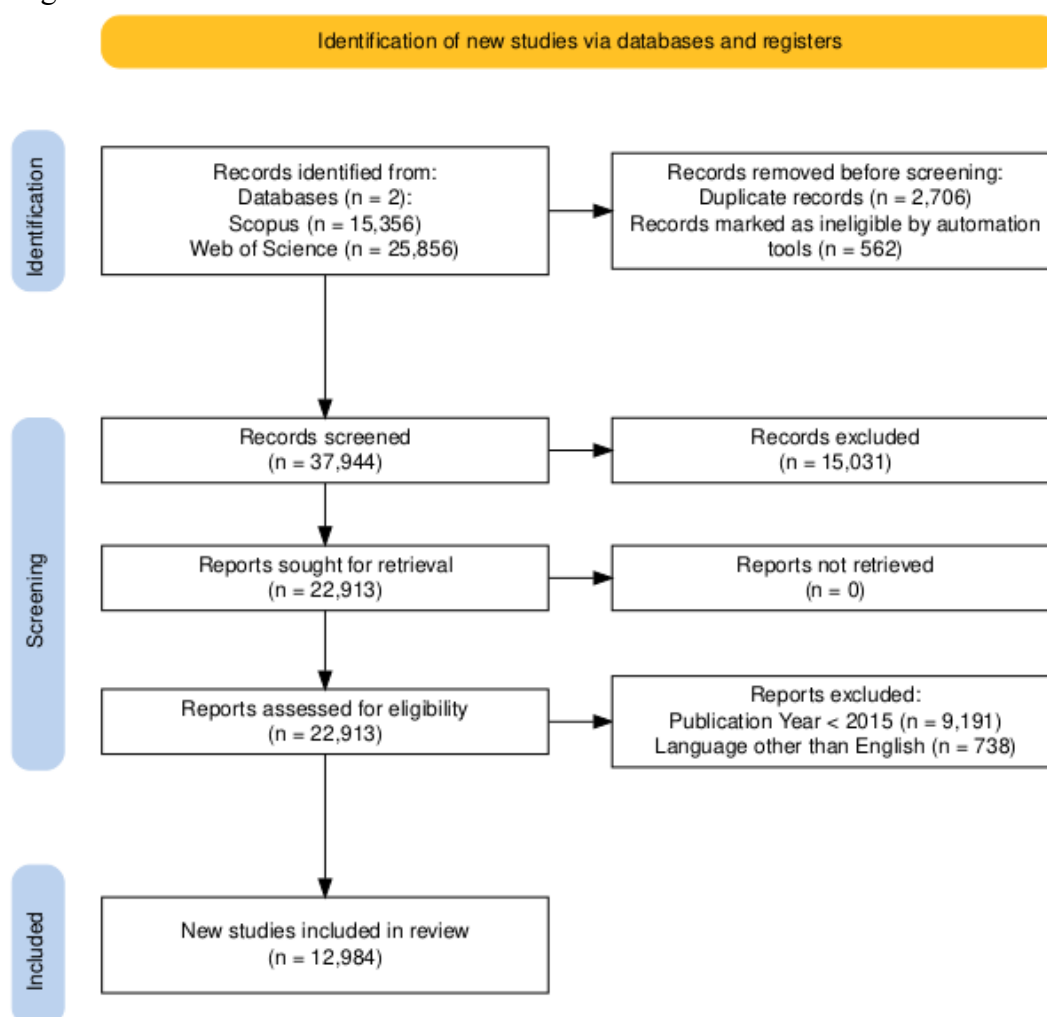


Fig 4. PRISMA 2020 Statement for Global Studies

Source: Author Generated

Scopus (15,356) and Web of Science (25,856) found 41,212 records. We deleted 2,706 duplicate entries and 562 automation-flagged records before screening. Title and abstract filtering eliminated 15,031 irrelevant records from 37,944.

These reports were examined for eligibility. At this step, 9,191 pre-2015 articles and 738 non-English studies were removed.

The bibliometric and qualitative synthesis included 12,984 global studies.

3.5.2 Indian Studies Screening

A parallel screening process was implemented for research in India. A total of 2,482 records were identified, comprising 1,779 from Scopus and 703 from Web of Science. After the removal of 92 duplicates and 8 automation-flagged entries, a total of 2,382 records remained for title and abstract evaluation. These were excluded due to being beyond the defined scope. Eligibility assessments eliminated 1,047 publications prior to 2015 and 395 records in languages other than English. The final dataset comprises 818 studies conducted in India.

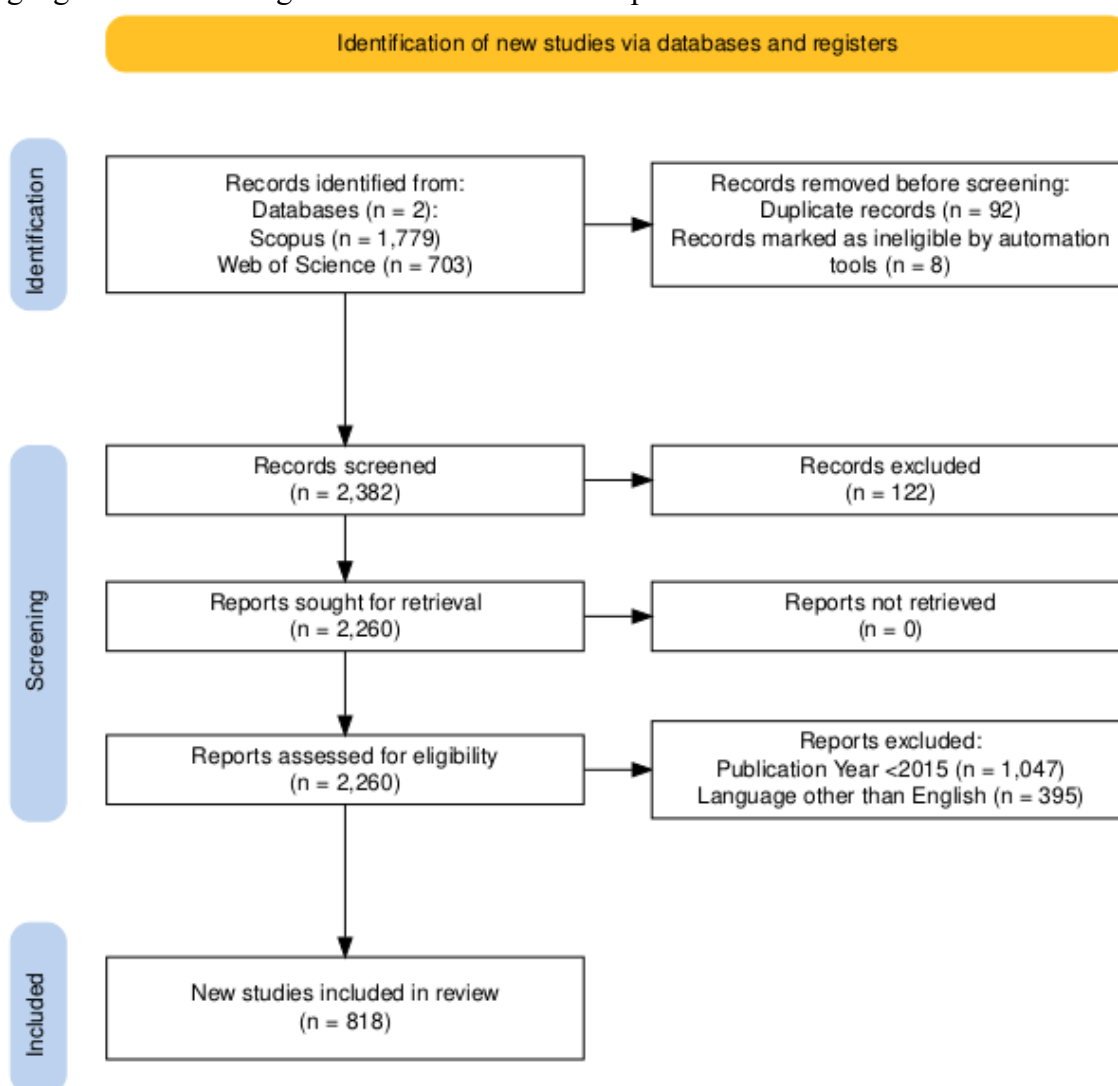


Fig 5. PRISMA 2020 Statement for Indian Studies

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4. Literature Findings

4.1 Table 1. Indian Perspective

Author(s) & Year	Context	Purpose	Method	Key Findings	Relevance to Informal Vendors
Adhikary et al. (2021)	India	Influence of digital payments on unorganized retailers	Quantitative	Adoption improves performance; influenced by usefulness, ease of use	Applies to small vendors operating without formal structure
Ligon et al. (2019)	Jaipur	Low adoption among small merchants	Field experiment	Perceived risk, lack of incentives limit adoption	Similar constraints among street vendors
Prasad et al. (2023)	India	Vendor acceptance of payment apps	PLS-SEM	Trust and facilitating conditions are major drivers	Insights transferable to informal vendors
Bakhshi et al. (2024)	India	Barriers to FinTech adoption by street vendors	ISM model	Digital literacy, perceived risk major obstacles	Direct evidence for informal sector
Nandru et al. (2021)	Andhra Pradesh	Financial inclusion & vendor well-being	Survey	Inclusion improves financial well-being	Illustrates benefits of digital trails
Mir & Wani (2025)	Kashmir	Inequalities in digital access	Qualitative	Connectivity & literacy gaps hinder adoption	Highlights rural/urban digital divide
Gopal & Davidson (2025)	India	Digital transformation of vendors	Case-based	Vendors in early adoption stage	Direct relevance

Mathur et al. (2025)	India	FinTech and resilience	Quantitative	Digital tools improve economic resilience	Supports sustainability focus
Ramtiyal et al. (2023; 2024)	India	Perceived risk in mobile payment adoption	ISM	Risk perception + situational factors matter	Relevant as vendors fear fraud
Tabeck (2024)	India	Mobile wallet adoption among hawkers	Mixed	Convenience increases adoption	Street hawker behaviour studied

4.2 Table 2. Global Perspective

Author(s) & Year	Country	Purpose	Method	Key Findings	Relevance to Informal Sector
Soutter et al. (2019)	Africa	Factors for mass adoption	Mixed	Cost, network quality, trust critical	Similar constraints in informal economies
Martínez et al. (2017)	Colombia	Street vendor economy	Field study	Informal ecosystems shape livelihoods	Highlights structural challenges
Dragsted (2019)	Kenya	Policing & hawkers	Ethnography	Informal economy dynamics	Contextualises vendor vulnerabilities
Freier & Zubrzycki (2021)	Argentina	Hawkers & legalization	Sociological	Legal status → economic outcomes	Shows role of formalization
Soejachmoen (2016)	Indonesia	Digital inclusion	Policy analysis	Transition toward digital systems	Informal sector adoption challenges
Srouji (2020)	UAE	Why cash persists	Quantitative	Trust & habit dominate	Relevant for vendor reluctance

Hillary et al. (2024)	Global	Barriers for SMEs	Technology study	Digital literacy, risk, cost barriers	Mirrors vendor barriers
Li (2024)	China	Digital transformation of vendors	Conceptual	Guidelines for vendor digitalization	Direct comparison to India

5. Bibliometric Analysis

5.1. Global Research Trends

5.1.1 Most Frequent Words

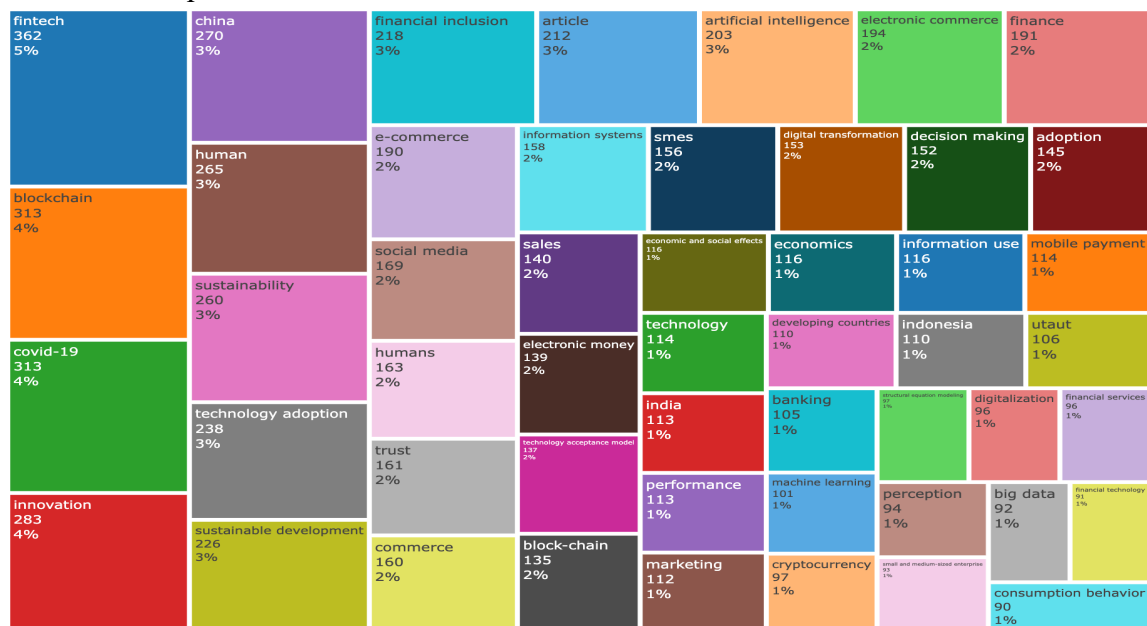


Fig 6. Word Tree of Global Studies

Source: Author Generated using Biblioshiny



Fig 7. Word Cloud of Global Studies

Source: Author Generated using Biblioshiny

Global digital finance study focuses on FinTech, Blockchain, COVID-19, Innovation, Technology Adoption, and Financial Inclusion, the top technological and financial subjects. Recent study links digital finance to environmental and social issues through sustainability, artificial intelligence, and sustainable development. China, developing countries, and E-commerce are frequently mentioned in the literature, indicating regional and policy orientation. Street sellers, small service providers, and daily-wage laborers are rarely included in worldwide evaluations. our disparity emphasizes the importance of our study on low-income, informal enterprises' financial realities and digital adoption challenges.

5.1.2 Thematic Cluster

The global thematic organization shows research clusters. The most developed and influential motor themes include innovation and digital finance. Foundational subjects encourage technology adoption and financial inclusion. Scholarly interest in pandemic issues declined after 2022, as shown by new or falling themes. Small niche themes have little specialization or research. Future themes include digital change, sustainability, and policy frameworks. This study covers informal and street economies, which global research ignores in favor of FinTech and blockchain-driven financial inclusion.

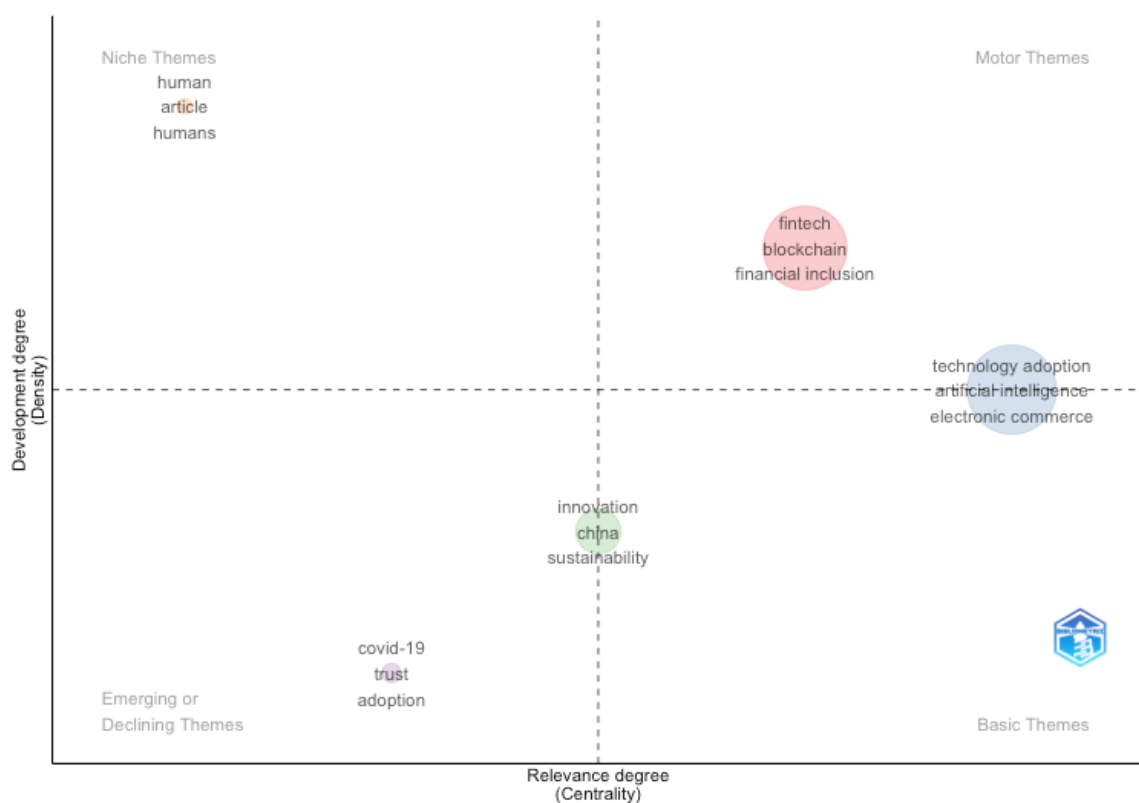


Fig 8. Thematic Map of Global Studies
Source: Author Generated using Biblioshiny

5.1.3 Evolution of Topics

More interconnected ecosystems involving FinTech, Blockchain, Bitcoin, Information Systems, and E-commerce emerged from 2020 to 2022. This age saw the rise of complicated financial platforms from simple digital tools. In 2023 and 2024, the literature began to include Financial Literacy, the Green Economy, and Decentralized money, demonstrating increasing ties between digital money, sustainability, and equitable development. FinTech and Blockchain dominate worldwide conversations, while sustainability and financial literacy are growing in importance. Even with this expansion, research on informal and micro-level digital adoption, the focus of this study, is sparse.

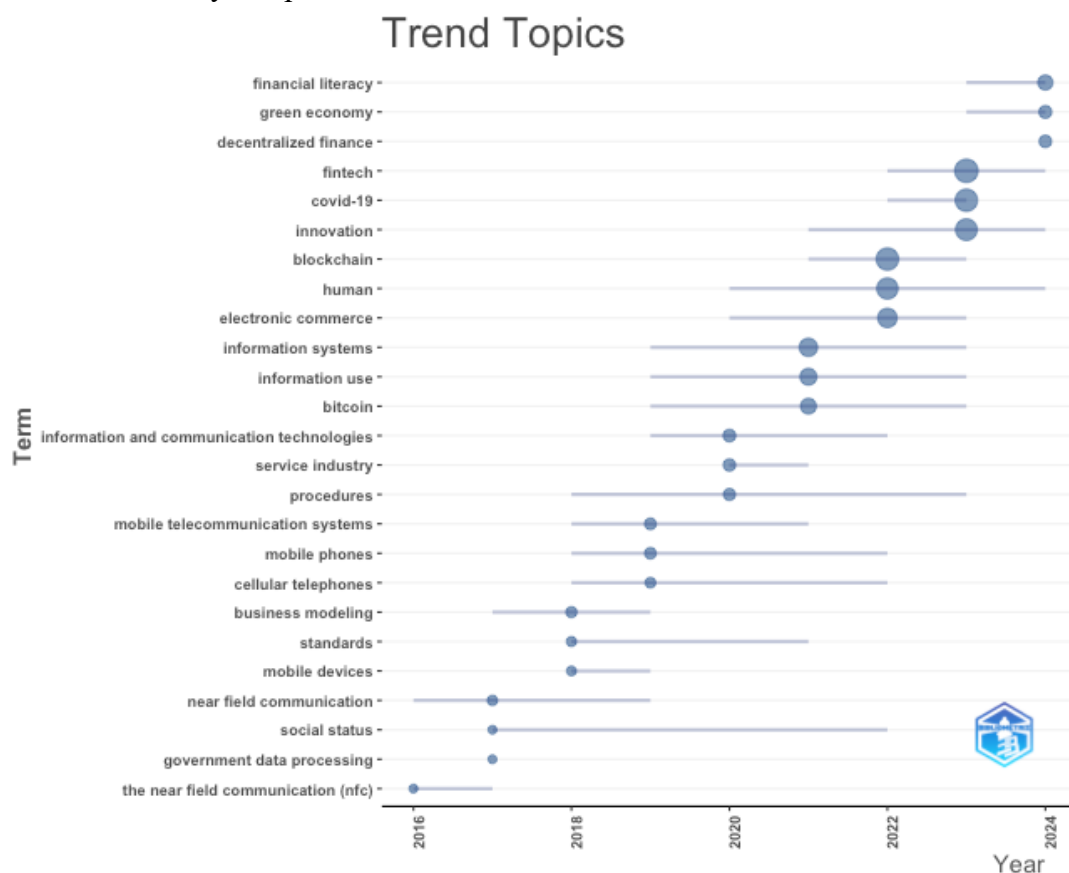


Fig 9. Trending Topics from 2015 to 2025 of Global Studies

Source: Author Generated using Biblioshiny

5.1.4 Country Scientific Production

The world map shows digital payments, FinTech, and financial inclusion studies worldwide. The US, China, India, and UK contribute most due to their large academic networks and advanced technology ecosystems. High publication activity in China and India indicates expanding interest in digital finance and inclusion in quickly growing economies. The U.S. and U.K. dominate innovation, regulatory, and technological framework talks in Europe and North America. Africa, Latin America, and Southeast Asia have huge informal sectors and could benefit from digital financial instruments, but research output is limited.

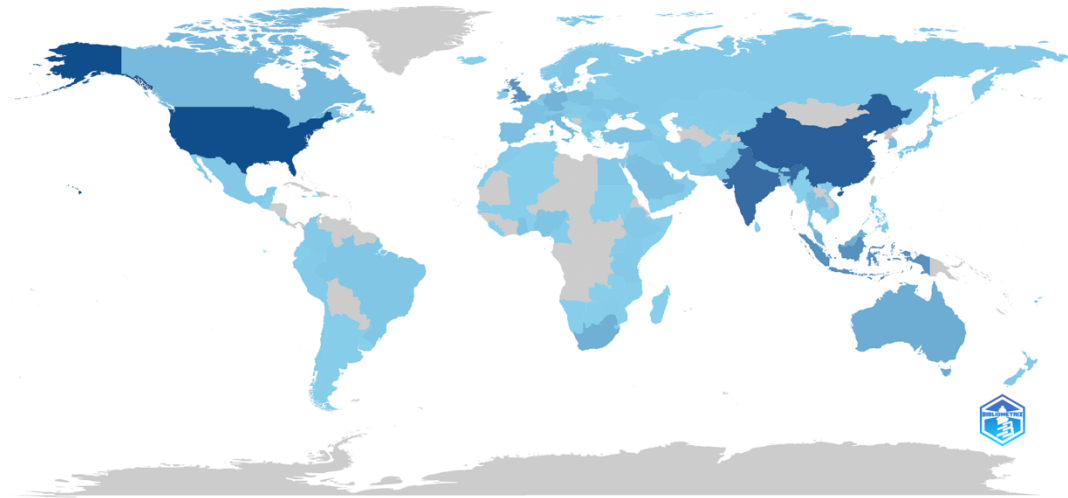


Fig 10. Countries Scientific Production
 Source: Author Generated using Biblioshiny

5.2 Indian Research Trends

5.2.1 Most Frequent Words

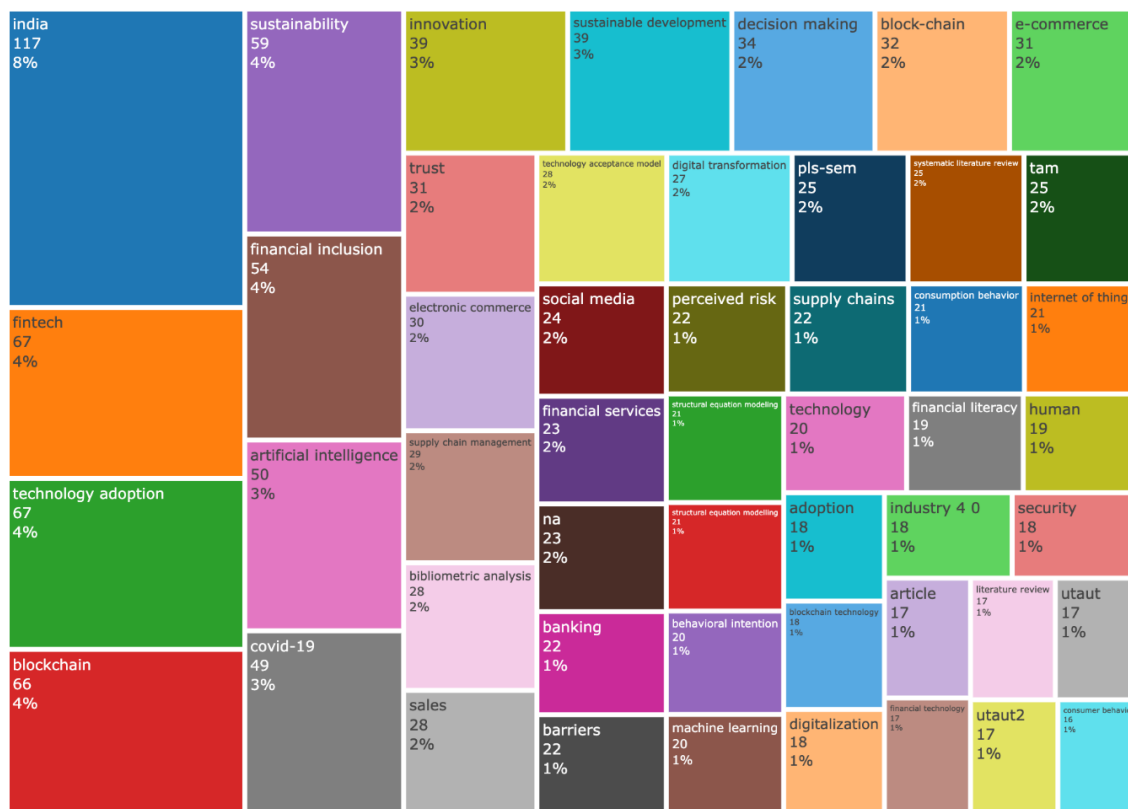


Fig 11. Word Tree of Indian Studies

Source: Author Generated using Biblioshiny

Broad, technology-focused topics define Indian digital payment research, as shown by the word-tree and word cloud. India, Technology Adoption, FinTech, Blockchain, Financial Inclusion, and COVID-19 are frequent terms, indicating an emphasis on national digital

transformation and post-pandemic financial behavior. TAM, UTAUT2, and PLS-SEM indicate that most studies use quantitative modeling and technology adoption frameworks. Very few publications cover informal sellers, street-based companies, or livelihood sustainability. Micro-level digital adoption is disregarded, emphasizing the necessity of this study.



Fig 12. Word Cloud of Indian Studies

Source: Author Generated using Biblioshiny

5.2.2 Thematic Cluster

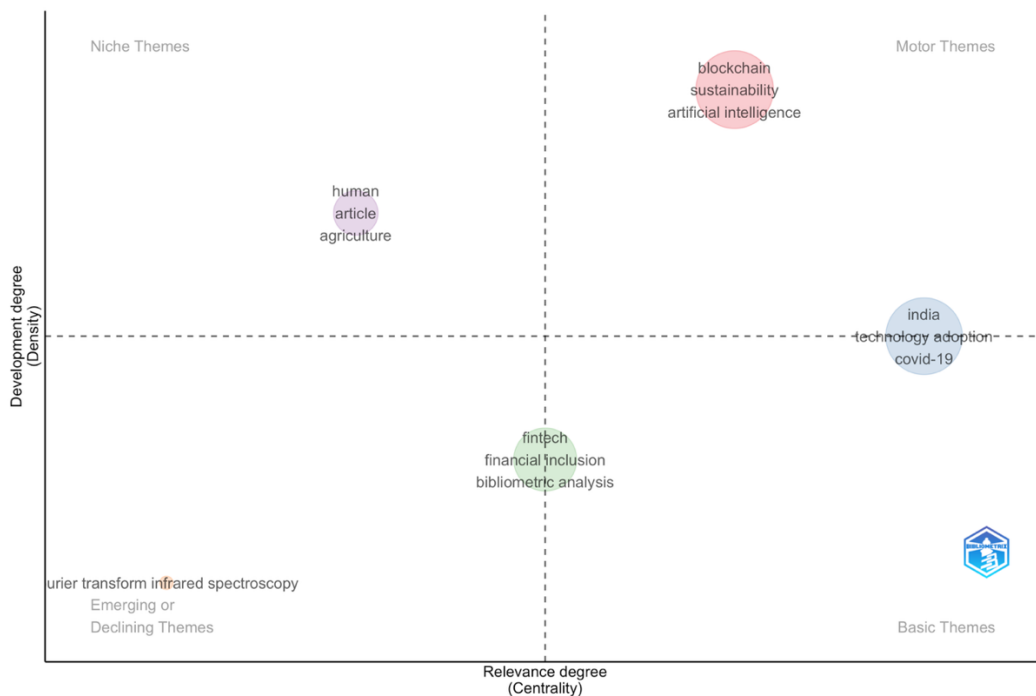


Fig 13. Thematic Map of Indian Studies

Source: Author Generated using Biblioshiny

Different themes are used in Indian digital payment research. Digital innovation and finance technology discussions center on cars. Simple themes support many subjects but are less specialized. Niche themes indicate specialized study. Digital payment arguments hardly mention emerging or fading difficulties. Digital finance and financial inclusion are fundamental to current scholarship. Excellent national research on FinTech and inclusion lacks information on informal micro-enterprises and street sellers' digital experiences. This study addresses this gap.

5.2.3 Evolution of Topics

Over the past decade, Indian digital payment research has changed themes. After the 2016 policy shock, demonetization, mobile wallets, and smart city initiatives dominated the debate from 2016 to 2019. A cashless economy was the national goal. The pandemic boosted digital transactions and changed consumer behavior, focusing attention on FinTech, technology adoption, and COVID-19 in 2020–2022. From 2023 to 2025, blockchain, decentralized finance, sustainability, and the SDGs have gained popularity, linking digital finance to social and economic concerns. “FinTech” and “India” dominate all three phases, but street-level and informal firms are absent from these clusters, highlighting a mismatch. The present study is innovative and important due to this gap.

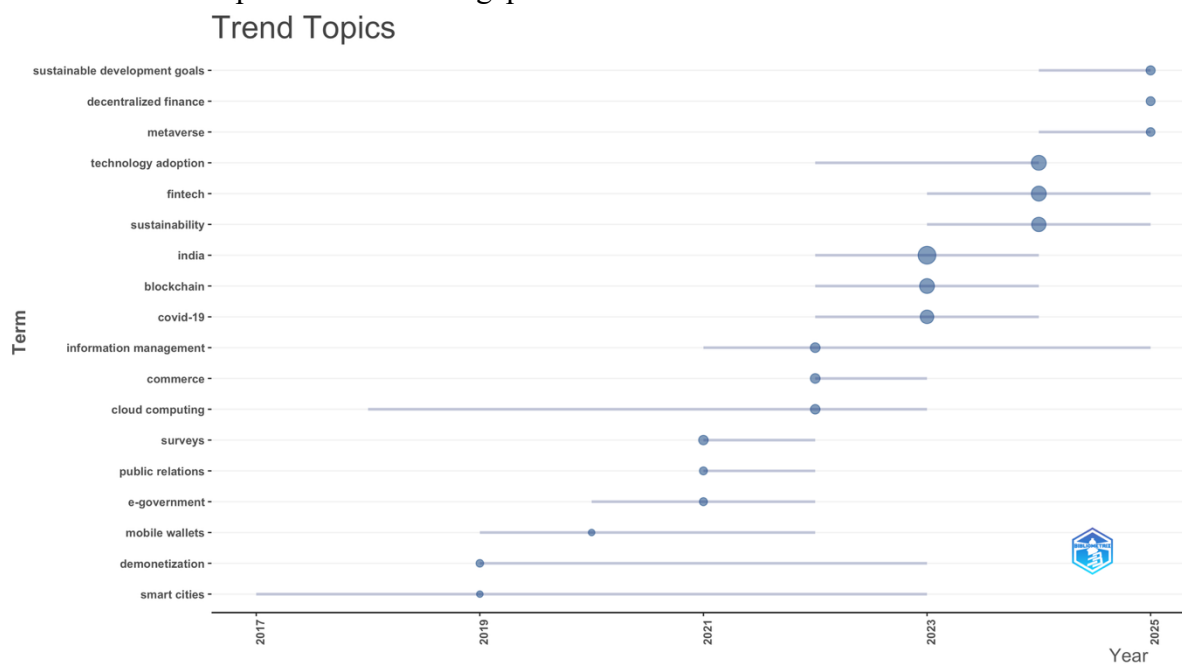


Fig 14. Trending Topics from 2015 to 2025 of Indian Studies

Source: Author Generated using Biblioshiny

6. Drivers & Barriers in Digital Payment Adoption to Informal Vendors

6.1 Drivers of Digital Payment Adoption

- Convenience and customer demand for UPI
- Elimination of small-change problems
- Peer influence (neighbours, nearby shopkeepers)

6.2 Barriers Particularly Relevant to Informal Vendors

- Lack of smartphone literacy and internet reliability
- Fear of fraud and transaction failure
- Small ticket size — most payments under ₹500
- Preference for cash during off-peak hours

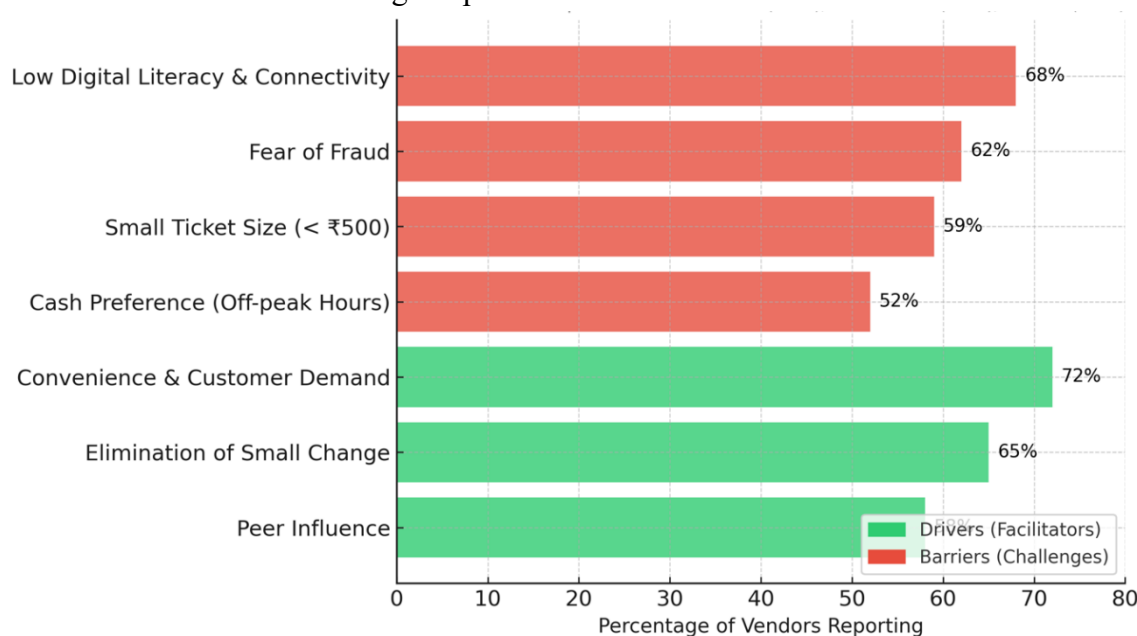


Fig 15. Drivers & Barriers of Digital Payment Adoption among Informal Vendors

Source: Author Generated

Data Source: RBI Payments Report (2024) and Compiled from Studies – Bakshi et al. (2024) & Mathur et al. (2025)

7. Discussion

Digital payment research has risen, yet the informal sector is understudied. FinTech, blockchain, mobile payments, and technology adoption frameworks dominate worldwide and Indian research, yet micro-entrepreneurs are ignored. Although informal merchants use UPI and QR-based payments in everyday markets, this mismatch continues.

Data invisibility is the main scholarly explanation for their absence. Many suppliers use personal UPI IDs, making transactions peer-to-peer and excluded from merchant databases. This hides their digital conduct and limits researchers' and policymakers' evidence. Many studies indicate obstacles such as insufficient digital literacy, unstable connectivity, and fraud fear, but few link digital payment adoption to long-term economic benefits. Few vendor-focused studies suggest benefits such as increased customer reach, income stability, and financial services access, albeit these findings are scattered. Study locations vary, mostly in India, China, and Africa.

Despite increased digital payment acceptance, informal merchants are underrepresented in scholarship, the study found. Digital payments and economic sustainability need more systematic, multi-regional research.

8. Implications

8.1 Theoretical Implications

Informal suppliers with limited resources and digital readiness may find mainstream adoption models (TAM, UTAUT) excessively constraining. Future study should include informality, livelihood resilience, and financial behavior to explain digital adoption.

8.2 Practical and Policy Implications

Policymakers should aid vendor onboarding with streamlined KYC, merchant-specific UPI, and digital literacy programs. Financial institutions can create micro-credit products using incomplete digital transaction trails. Better dispute resolution and offline payment would reduce vendor fraud and connectivity issues.

8.3 Methodological Implications

Global-Indian literature separation improved clarity and reduced overgeneralization. Formal databases are insufficient for studying informal traders, however bibliometrics and an SLR enhanced the field. Field surveys, interviews, and transaction diaries must record vendor-level digital activity in future research.

9. Conclusion

This study synthesizes global and Indian informal sector digital payment studies. Despite digital transaction development, academic literature prefers formal organizations, technology adoption frameworks, and FinTech ecosystems, according to bibliometric analysis and systematic review. Despite their widespread use of UPI and QR-based systems, informal merchants are structurally and data-invisible from empirical datasets and scholarly research. How digital payments effect micro-entrepreneurs' business stability, financial resilience, and livelihood outcomes should be studied. This study establishes a research goal and framework for advancing theoretical and empirical work on informal digital financial inclusion.

10. Limitations

This study is flawed. Only English-language studies are included, which may exclude regional language research. Second, the review uses Scopus and Web of Science; other databases may include more information. Third, formal digital payment statistics classify many vendor transactions as peer-to-peer, restricting structured evidence. Due to these restrictions, the current analysis may underrepresent informal-sector trends.

11. Future Scope

Digital adoption frameworks need economic sustainability, revenue stability, and resilience. Comparative studies across emerging nations may explain informal-sector digitalization. We can create and test vendor-specific digital solutions like simplified merchant UPI, offline payment, and fraud protection.

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