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Adoption and Challenges of Digital Payment Systems: A Study of Consumer Perception in Urban and Rural India

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ABSTRACT
In the last decade or so, digital payment systems have seen rapid evolution, most acutely in countries that are still emerging like India. India's road to transformation through policy changes like India's demonetization and introduction of a super fast payments system called Unified Payments Interface (UPI), has catapulted India to the top of the radar in digital payment research globally. For this momentum to be sustained, understanding the dynamics of adoption, challenges and consumer behavior in this ecosystem is crucial. A bibliometric study of research on digital payment systems in India from 2010 to 2024 is carried out in this study. Publication trends, the countries contributing to this knowledge base, and key research themes are examined. Publications that are indexed in Google Scholar and Scopus are also analyzed to offer quantitative insights into the research landscape. The findings show that India contributes 79.4% of total publications in digital payment research. In addition, there is also considerable interest from the USA, UK, Australia, and Canada, which reveals that the world recognizes India's digital payment ecosystem. After demonetization and the onset of mobile payments, research accelerated. Themes include consumer adoption, trust, and technological barriers; as well as mobile wallets and consumer satisfaction. India's leadership in digital payment research underscores the need for further work in tackling barriers and building the sector in rural areas. Digital literacy, security, and consumer insight are what policymakers and businesses need to channel for further adoption, while blockchain and AI, emerging technologies, should be part of future research.

Keywords: Digital Payment Systems, Bibliometric Analysis, Unified Payments Interface, Mobile Payments, Policy Changes, Demonetization, Mobile Wallets

1. INTRODUCTION

Digital payment systems have become a cornerstone for financial innovation which has revolutionized the way consumers go about transactions. The Digital payment platform has redefined the payment system in India where Unified Payments Interface (UPI), mobile wallets, and contactless cards have revolutionized the way to make payments. These developments echo the current trend towards a cashless economy and simultaneously tackle specific urban and rural context challenges (Vidani & J, 2024). Although digital payment systems have quickly caught on, cybersecurity, digital illiteracy, and the lack of infrastructure in rural areas are still problems. The level of consumer trust and convenience has been cited time and again as critical adoption factors (Trivedi *et al*., 2023). These problems identify the necessity for a comprehensive analysis of consumer perceptions and the general dynamics of adoption in urban and rural contexts.

Convenience, speed, and financial incentives have primarily been driving factors in the quick digitization of payment systems in urban India. Urban consumers are also generally already digitally literate with the infrastructure (smartphone, internet access, etc.) to fully adopt such systems. The accessibility of diverse payment platforms such as mobile wallets, contactless credit/debit cards, as well as Unified Payments Interface (UPI) has been instrumental in shaping user behavior in cities, studies suggest (Putrevu *et al*., 2024). Further drives the adoption rates, are the incentives with cash backs, discounts, and loyalty programs provided by the service providers (Lin *et al*., 2022). Take for instance, Paytm, Google Pay, and PhonePe, which have been able to occupy the urban market on the back of these incentives. Moreover, digital payments performed in metropolitan areas have also been pushed up due to the convenience of avoiding cash transactions, especially throughout the COVID-19 pandemic (Zhao *et al*., 2021). The story of digital payment adoption in rural India is remarkably different, with numerous challenges. Digital literacy is one of the greatest barriers for most rural consumers to confidently use digital payment systems (Azeez *et al*., 2021). They also indicate that the availability of smartphones and the internet is

not sufficiently available and that the internet is not always reliable in rural areas. In addition, the fear of not being able to trust digital systems, together with security and fraud fears, has kept many rural residents from embracing these technologies (Manrai *et al*., 2021). In rural economies, traditional cash-based transactions still run deep, which slows and unevenly transforms digital modes of payment. Additionally, limited banking infrastructure and few awareness campaigns allowing rural people to understand the banking system make the issue (Marszałek *et al*., 2021). Solutions to these challenges are highly specific, requiring low-cost internet access, targeted education programs, and community-based initiatives to build trust. Previous studies of digital payment adoption have been undertaken, but slight attention has been paid to the comparative analysis of consumer perceptions in urban and rural India (Sahi *et al*., 2021). Furthermore, such a bibliometric analysis of the research landscape on this topic has not been carried out yet. The need for a review of existing literature and publication trends is evident in this gap.

The choice of these bibliometric indicators is vital to a complete analysis of the research landscape on the adoption as well as challenges of digital payment systems in India. Each indicator has a detailed purpose in that it contributes to the overall knowledge of trends, influential contributors, and collaboration networks. An analysis of year-wise published documents helps us trace out the temporal evolution of research in this domain and the growth pattern as well as key milestones (policy change or technological advancement) that may have affected the publication trends. By looking at the top 10 journals in terms of the number of publications and citations can identify the leading platforms disseminating impactful research and demonstrate where the most impactful work is being published. This understanding is further enhanced by source documents and cited journals that visually indicate relationships of key works, identify clusters of related research, and reveal dominant themes and emerging subfields. In addition, author-focused indicators, which include the analysis of the top 10 authors by citation count and visualization of co-authorship networks, reveal the most influential researchers and dynamics of collaboration in this area. The study of co-authorship patterns can help understand interdisciplinary collaborations and identify areas where researcher connectivity might be lacking. Assessment of the global impact and the geographical distribution of research, especially about the Indian contribution to the field, requires country-wise publication analysis. Country-wise publications represent international collaborations and cross-border knowledge exchange. The analysis of the top 50 cited articles finally provides a lens on the most impactful research in a focused form, showing with clarity what the foundational works that shape the current understanding are. This combination of indicators provides a thorough, multi-dimensional view of the research ecosystem enabling stakeholders to identify trends, research gaps, and avenues for further study. For evaluating the maturity of the field, identifying powerful researchers spanning the topic, and determining the direction where future research should go, are critical.

2. METHODOLOGY

This methodology includes conducting a bibliometric analysis of research on the adoption as well as challenges of digital payment systems in urban and rural India, particularly concerning consumer perception. It covers the period 2010–2024 and uses various bibliometric indicators to analyze trends, citation patterns, research output, and authorship dynamics.

2.1. Data Collection and Search Strategy

Google Scholar and Scopus databases were used in the research considering their huge reservoirs of journal articles, conference papers, and other peer-reviewed papers for comprehensive coverage of scholarly works. Keywords like ‘digital payment systems', 'consumer perception', 'adoption of digital payments', 'India', 'urban India', and 'rural India', was specifically used in the search. A search for articles addressing consumer perceptions, adoption, and challenges in urban and rural India was refined using Boolean operators (AND/OR) and wildcards.

The study covered the period of 2010 – 2024, during which time rapid technological changes such as mobile payments, Unified Payments Interface (UPI), and policy changes such as the 2016 demonetization. The inclusion criteria were peer-reviewed publications regarding adoption, challenges, and consumer perceptions of digital payment in India, fully accessible full texts, and English language publications. Studies unrelated to India, non-peer-reviewed materials, and inaccessible texts were excluded. Of which from an initial pool of 6,200 articles, excluded 1,000 articles that were irrelevant through title and abstract screening. A further 2,300 articles were excluded as they failed to meet the inclusion criteria and 900 duplicates were excluded. 2,000 articles were screened for full-text eligibility, and 800 articles were selected for final bibliometric analysis. The assessment of research trends, influential authors, journals, and publication networks across urban and rural contexts in India, was based on these articles.

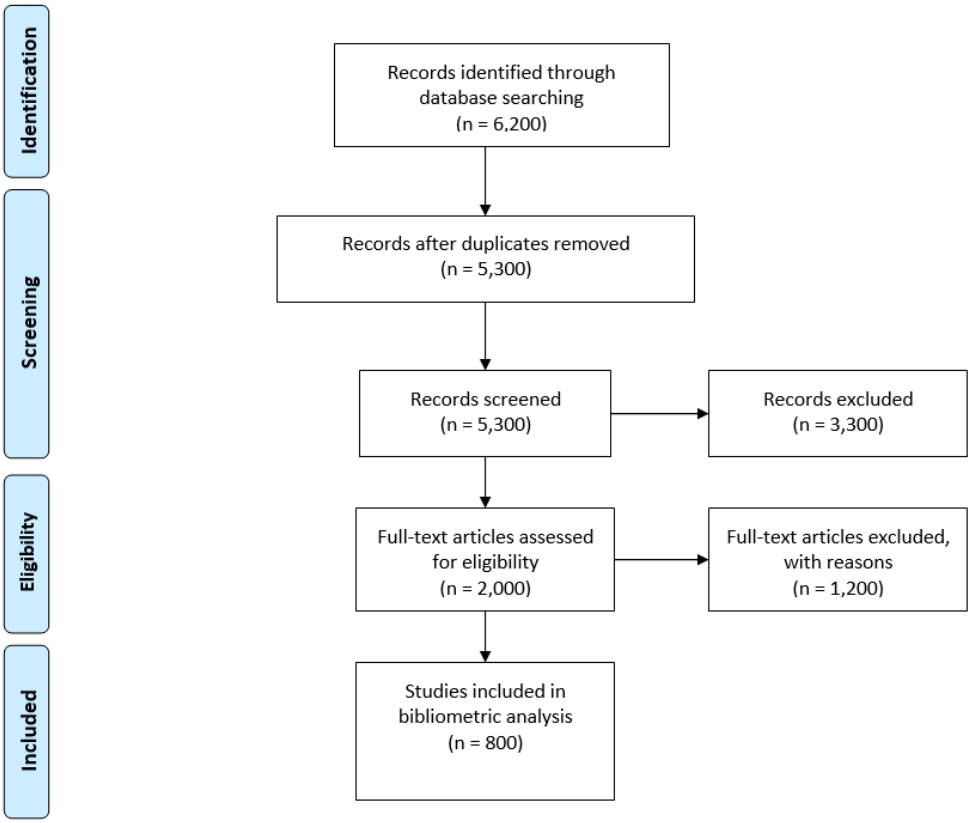


Fig 1. PRISMA Flowchart

2.2. Bibliometric Indicators and Analytical Procedures

Various indicators were used to assess publication trends and research influence in the bibliometric analysis of research on digital payment systems (2010–2024). To identify growth patterns for year-wise publication trends, publications were categorized by year and graphically represented for annual changes. By publication count, identified the top 10 journals and showed their share in total research output. To measure the impact of the journals, they were ranked among the top 10 journals with highest citations and a citation relationship and research cluster. The top 10 authors with highest citations were identified for author analysis. Geographic contributions from country stand analysis were assessed and India's role and collaborative efforts with other countries. To demonstrate key contributions and their influence on the field, the top 50 cited articles were listed. These analyses enabled a thorough picture of trends of publication, influential entities, and collaboration dynamics for digital payment systems research.

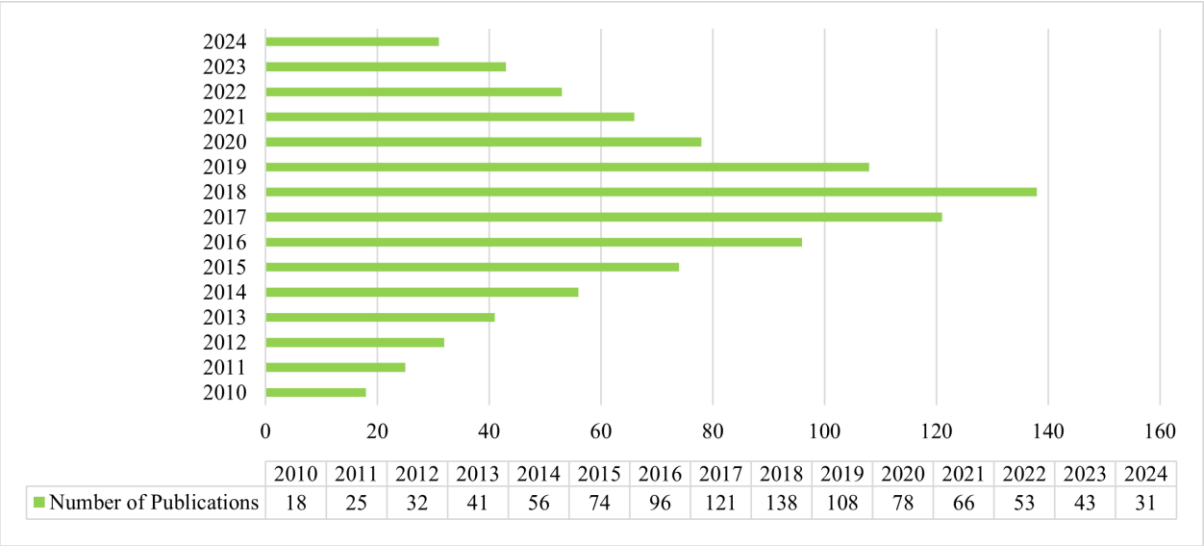
2.3. Data Sources and Tools

Multiple tools were used in the bibliometric analysis to capture and analyze the entire data. Citation data, publication counts, and influential articles relevant to digital payment systems in India were gathered from Google Scholar. Considering its importance as a tool to complement the data presented by Web of Science for bibliometric research, especially for citation analysis, Scopus was used as a complementary database to assure completeness and accuracy. Detailed network visualizations were built using VOSviewer to investigate co-authorship and country-based collaborations and understand research dynamics and relationships. The accumulated data was finally systematized and evaluated systematically using Microsoft Excel to generate graphs, tables, and summary statistics presenting findings. Such a multi-tool approach guaranteed robustness and also precision in the analysis.

3. RESULTS

3.1. Year-wise Published Documents (2010-2024)

Figure 2 shows the annual output of research on digital payment systems, in terms of adoption and challenges in urban and rural India, from 2010 to 2024. This data shows a constant rise in publications from 2010 to 2016, and then a steep growth in research output in 2017–2019, probably due to high policy initiatives such as the 2016 demonetization and the development of digital payment technologies like UPI. 138 publications in 2019 shows a peak in interest in this area during this period. But for the years 2020 and onward, the number of publications declines gradually, reaching 31 in 2024 (likely again because research interest turns to a different topic or the discourse has become saturated regarding this topic). The trend shows that India is moving towards digital payments in response to technological, societal, and policy-driven changes.



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Number of Publications	18	25	32	41	56	74	96	121	138	108	78	66	53	43	31

Fig 2. Year-wise Publication Trends (2010–2024)

3.2. Top 10 Journals by Number of Published Documents

Table 1 depicts the top 10 journals in which the highest figure of publications have been made in digital payment systems concerning their adoption and challenges in India. Collected together, these journals account for 79% of the total research output in this area. The *Journal of International Consumer Marketing* has publications in the lead with 95 publications, followed by the *International Journal of Retail & Distribution Management* and the *South Asian Journal of Business Studies* with a focus on the issues of consumer actions and business management in the framework of digital payments. Journals like *Digital Business and Journal of Financial Services Marketing* show how technology, finance, and marketing meet in the digital payment landscape. The breadth of disciplines within digital payment research is apparent in these publications, from business to media, to psychology.

Table 1. Top 10 Journals by Number of Publications on Digital Payment Systems (2010–2024)

Journal Name	Number of Publications	Percentage of Total Publications (%)
Journal of International Consumer Marketing	95	11.9%
International Journal of Retail & Distribution Management	84	10.5%
South Asian Journal of Business Studies	80	10.0%
Digital Business	72	9.0%
Journal of Financial Services Marketing	65	8.1%
International Journal of Information Management	57	7.1%
Journal of the Academy of Marketing Science	50	6.3%
Journal of Banking and Financial Technology	46	5.8%

Indian Growth and Development Review	43	5.4%
Psychology and Education Journal	40	5.0%
Total (Top 10)	632	79.0%

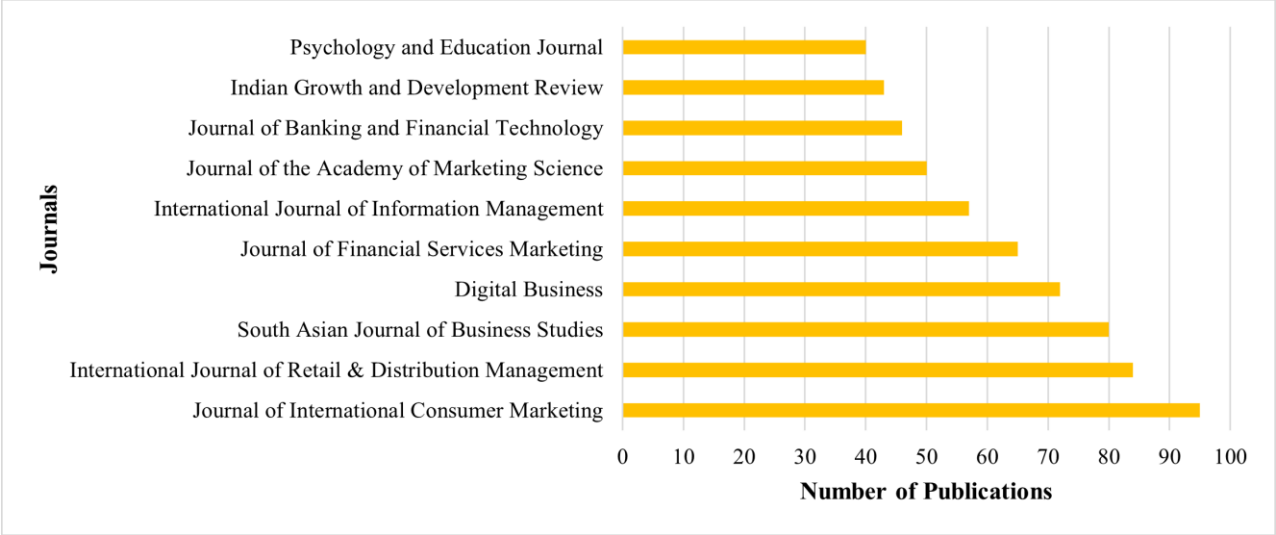


Fig 3. Number of Publications by Journal

The number of publications within various journals on digital payment systems research is represented in Figure 3. Journals that have been major contributors to this field during the study period are highlighted in the data. *Indian Growth and Development Review* and *Journal of Banking and Financial Technology* are among the few others top with the highest number of publications in *Psychology and Education Journal*. The form of distribution spent a lot of attention on this group of journals, telling it how considerable influence they have in the field of research. The graph also helps in identifying the most productive journals in publishing research related to adoption, challenges, and consumer perceptions of digital payment systems in India.

3.3. Top 10 Journals with Maximum Citations

Table 2 characterizes the top 10 journals that gained the highest number of citations in the arena of digital payment systems, more specifically on research on consumer perception, adoption, and challenges in India. However, the second, third, and fourth positions are held by the *Journal of the Academy of Marketing Science* (9,800 citations), *International Journal of Information Management* (8,900 citations), and *South Asian Journal of Business Studies* (8,200 citations), respectively. Other journals of interest include *The Journal of Asian Finance*, *Economics and Business* and *International Journal of Bank Marketing*, cited 7,500 and 7,200 times, respectively. High citation counts indicate that these journals have taken a major role in pushing research in the field of digital payments. Cited substantially, these journals indicate the popularity of research published there amongst the scholars and the extent to which the published research influences digital payment adoption, challenges, and consumer behavior discourse. Scholars and researchers wishing to follow up on these have become the most referenced and authoritative journals to find the most important and current answers on key drivers, trends, and scholarly contributions to topics in this area.

Table 2. Top 10 Journals with Maximum Citations

Journal Name	Maximum Citations
Journal of the Academy of Marketing Science	9,800
International Journal of Information Management	8,900
South Asian Journal of Business Studies	8,200
The Journal of Asian Finance, Economics and Business	7,500
International Journal of Bank Marketing	7,200

Global Business Review	6,700
Digital Business	6,200
Telecommunications Policy	5,800
Journal of Strategic Marketing	5,400
Indian Growth and Development Review	4,900

Fig 4. Total Citations of Top 10 Journals on Digital Payment Systems Research

Figure 4 indicates the maximum citations for the top 10 journals in digital payment systems research. The highest citation count belongs to the *Journal of the Academy of Marketing Science* with 9,800. The editors and authors of other highly cited journals such as the *International Journal of Information Management* (8,900 citations) and the *South Asian Journal of Business Studies* (8,200 citations) are also using their articles to help shape the academic debate on digital payments. Additionally, another example of the field's focus on finance, economics, and marketing is shown through journals like *The Journal of Asian Finance, Economics and Business*, and the *International Journal of Bank Marketing*. However, these journals have a significant role in framing research and policy discussions on digital payment systems in India, in general.

3.4 Top 10 Authors having maximum citations

The top 10 authors, as ranked by citation counts, in the research of digital payment systems are listed in Table 3. The academic impact these authors have had in the field is reflected in the citation figures. Sumeet Gupta has the highest citation count (8,817) among all the researchers in the study and is therefore an important player in developing the research on digital payment systems. Another key figure is Amit Shankar who has 2,959 citations in his list. The remaining authors such as Emma Louise Slade, Shalini Srivastava, and Neena Sinha also have impressive citation counts; exhibiting their substantial contributions in this field. The authors named here have played a central role in furthering the academic discourse on the implementation and challenges of digital payment systems in India.

Table 3. Top 10 Authors with Maximum Citations

Author	Year
Sumeet Gupta	8817
Amit Shankar	2959
Emma Louise Slade	2680
Shalini Srivastava	2524
Neena Sinha	2493
Nidhi Singh	2011
Pushp Patil	1932
Biplab Datta	1389
Sindhu Singh	840
Viral Bhatt	756

3.5 Country-wise Publication Distribution (2010-2024)

Table 4 shows the distribution of publications for research on digital payment systems in India by country of origin. It shows how many publications and the percentage of the total publications in the study scope. The field is dominated by India (635 publications, 79.4% of total research output). This means that India is the main source of research about digital payment systems, especially in urban and rural areas. After the USA, with 95 publications (11.9%), follow the UK with 40 (5.0%), Australia with 20 (2.5%) and Canada with 10 (1.2%) articles. India's pivotal position in research on digital payments and the adoption of these technologies can be discerned by this distribution, given the country's rapid digitalization and policy-based initiatives such as demonetization and a push for mobile payments. It also mirrors the world's interest in India's digital payments ecosystem, its unique challenges and successes.

Table 4. Country-wise Distribution of Publications

Country	Number of Publications	Percentage of Total Publications (%)
India	635	79.4%
USA	95	11.9%
UK	40	5.0%
Australia	20	2.5%
Canada	10	1.2%

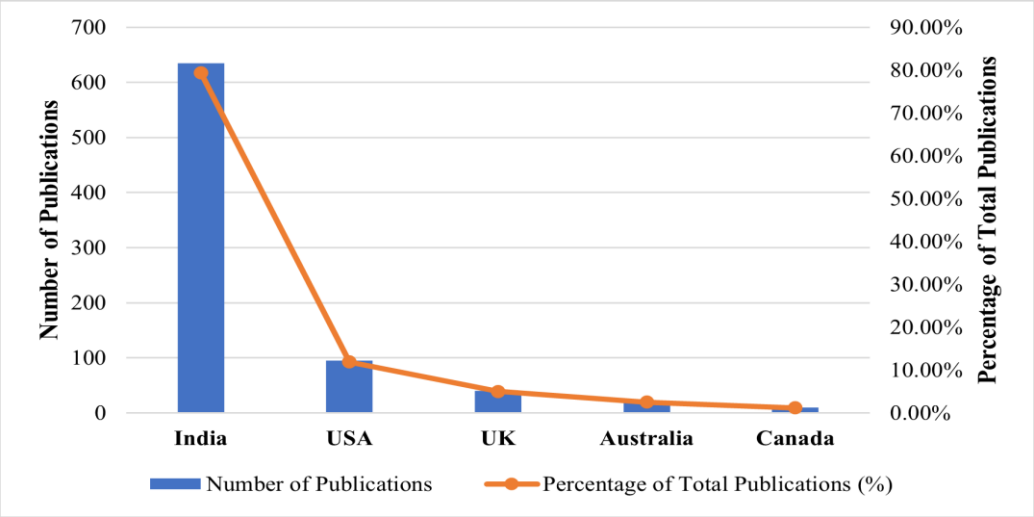


Fig 5. Country-wise Distribution of Publications

Country-wise publication distribution concerning research on digital payment systems over the years 2010 to 2024 is given in Figure 5. Leading the field is India which produces 79.4% of the total publications, contributes 635 articles (79.4%), and is a key player in terms of digital payment adoption and challenges. 95 publications from 15 countries account for 11.9% in the USA, which is a strong international interest. The relatively smaller contributions come from the UK (5.0%; 40 publications), Australia (2.5%; 20 publications), and Canada (1.2%; 10 publications). The distribution reflects that India leads in global digital payment research and shows that global interest in digital payment research is growing particularly from developed economies.

3.6 Top 50 Cited Articles

Table 5. Top 50 most cited articles (2010-2024)

S.No.	Title	Journal Name	Author	Citation Count
1.	"Understanding consumer adoption of mobile payment in India: Extending Meta-UTAUT	International Journal of Information Management	Patil *et al.* 2020	794

	model with personal innovativeness, anxiety, trust, and grievance redressal"			
2.	"Determining factors in the adoption and recommendation of mobile wallet services in India: Analysis of the effect of innovativeness, stress to use and social influence"	International Journal of Information Management	Singh *et al*., 2020	679
3.	"Exploring consumer adoption of proximity mobile payments"	Journal of Strategic Marketing	Slade *et al*., 2015	536
4.	"Factors affecting mobile payment adoption intention: An Indian perspective"	Global Business Review	Shankar *et al*., 2018	368
5.	"Consumer preference and satisfaction of M-wallets: a study on North Indian consumers"	International Journal of Bank Marketing	Singh *et al*., 2017	312
6.	What affects usage satisfaction in mobile payments? Modelling user generated content to develop the "digital service usage satisfaction model"	Information Systems Frontiers	Kar & A.K., 2021	305
7.	"Customer usage intention of mobile commerce in India: an empirical study"	Journal of Indian Business Research	Thakur *et al*., 2013	257
8.	"Study of consumer perception of digital payment mode"	Journal of internet banking and commerce	Singh *et al*., 2017	216
9.	"Assessment of mobile technology use in the emerging market: Analyzing intention to use m-payment services in India"	Telecommunications Policy	Liébana-Cabanillas *et al*., 2020	190
10.	"An exploratory study on mobile banking adoption in Indian metropolitan and urban areas: A scenario-based experiment"	Information Technology for Development	Gupta *et al*., 2017	91
11.	"Digital financial literacy and its determinants: an empirical evidences from rural India"	South Asian Journal of Social Studies and Economics	Azeez *et al*., 2021	85
12.	"Citizens' adoption behavior of mobile government (mGov): a cross-cultural study"	Information Systems Management	Shareef *et al*., 2016	81
13.	"Measuring E-service quality and customer satisfaction with internet banking in India"	Theoretical Economics Letters	Singh & S, 2019	75
14.	"Factors impacting mobile banking in India: Empirical approach extending UTAUT2 with perceived value and trust"	IIM Kozhikode Society & Management Review	Sankaran *et al*., 2021	72
15.	"Repercussions of COVID-19 on small restaurant entrepreneurs: The Indian context"	Strategic Change	Vig *et al*., 2021	58
16.	"A literature study of consumer perception towards digital payment mode in India"	Psychology and Education	Ranjith *et al*., 2021	53
17.	"Moving from cash to cashless economy: Toward digital India"	The Journal of Asian Finance, Economics and Business	Aggarwal *et al*., 2021	51
18.	"Why customers make mobile payments? Applying a means-end chain approach"	Marketing Intelligence & Planning	Sankaran *et al*., 2021	44
19.	"An empirical investigation of the continued usage intention of digital wallets: The	Future Business Journal	Shetu *et al*., 2022	40

	moderating role of perceived technological innovativeness"			
20.	"E-payment: Buzzword or Reality"	International Journal of Recent Technology and Engineering	Acharya *et al*., 2019	39
21.	"How to enhance consumer experience over mobile wallet: A data-driven approach"	Journal of Strategic Marketing	Shankar *et al*., 2023	39
22.	"A study on growth of mobile banking in India during covid-19"	PalArch's Journal of Archaeology of Egypt/Egyptology	Agarwal *et al*., 2020	37
23.	"Factors affecting the consumer's adoption of E-wallets in India: An empirical study"	Alochana Chakra Journal	Ajmera *et al*., 2020	35
24.	"Investigating digital transactions in the interest of a sustainable economy"	International Journal of Modern Agriculture	Nandal *et al*., 2021	34
25.	"Analysing slow growth of mobile money market in India using a market separation perspective"	Information Technology for Development	Potnis *et al*., 2020	33
26.	"Netizens' Perspective Towards Electronic Money and Its Essence in the Virtual Economy: An Empirical Analysis with Special Reference to Delhi-NCR, India"	Complexity	Khan & M.A., 2021	33
27.	"Exploring the determinants of adoption of Unified Payment Interface (UPI) in India: A study based on diffusion of innovation theory"	Digital Business	Shahid & M, 2022	33
28.	"A Study on Mobile Banking and its Impact on Customer's Banking Transactions: A Comparative Analysis of Public and Private Sector Banks in India"	FIIB business review	Singh *et al*., 2016	32
29.	"A study on adoption of digital payment through mobile payment application with reference to Gujarat state"	International Journal of Trend in Scientific Research and Development	Tripathi & S, 2020	31
30.	"Impact of perceived value on the online purchase intention of base of the pyramid consumers"	International Journal of Consumer Studies	Srivastava *et al*., 2023	30
31.	"Critical success factors of the digital payment infrastructure for developing economies"	Springer International Publishing	Singh *et al*., 2019	29
32.	"Mobile Wallet Adoption in India: An Analysis"	IUP Journal of Bank Management	Sharma *et al*., 2019	28
33.	"Factors influencing customer preference of cardless technology over the card for cash withdrawals: an extended technology acceptance model"	Journal of Financial Services Marketing	Nambiar *et al*., 2023	28
34.	"Factor affecting consumer satisfaction in cashless payment systems in India with respect to Paytm and BHIM"	International Journal of Recent Technology and Engineering	Tiwari *et al*., 2019	27
35.	"A review of factors affecting digital payments and adoption behaviour for mobile e-wallets"	International Journal of Research in Management & Business Studies	Singh & G, 2019	27

36.	"Consumer adoption of pro-poor service innovations in subsistence marketplaces"	Journal of Business Research	Hasan *et al*., 2020	26
37.	"How do mobile wallets improve sustainability in payment services? A comprehensive literature review"	Sustainability	Hopalı *et al*., 2022	26
38.	"Factors Affecting Adoption of Mobile Banking at the Bottom of the Pyramid in India"	International Journal of Marketing & Business Communication	Kansal & P, 2016	25
39.	"Factors impacting behavioural intentions to adopt the electronic marketplace: findings from small businesses in India"	Electronic Markets	Misra *et al*., 2022	25
40.	"Digitalization & customer perception towards the banking services"	Aweshkar Research Journal	Joshi *et al*., 2017	24
41.	"The Role of Innovation Resistance and Technology Readiness in the Adoption of QR Code Payments Among Digital Natives: A Serial Moderated Mediation Model"	International Journal of Business Science & Applied Management	Ashrafi *et al*., 2023	23
42.	"Validating the role of digital payment mode as a new driver of online shopping: A modified UTAUT2 model"	Journal of Public Affairs	Gupta *et al*., 2022	22
43.	"UPI (Unified Payment Interface)–A new technique of Digital Payment: An Explorative study"	International Journal of Current Research in Multidisciplinary	Neema *et al*., 2016	20
44.	"Effect of perception and satisfaction on preference for mobile wallet"	FIIB Business Review	Chand *et al*., 2022	20
45.	"Understanding technology readiness and user's perceived satisfaction with mobile wallet services in India"	NMIMS Management Review	Sinha *et al*., 2019	19
46.	"Intention to adopt mobile-based online payment platforms in three Asian countries: an application of the extended Technology Acceptance Model"	Journal of Contemporary Marketing Science	Jawad *et al*., 2022	19
47.	"Review on the influence of trust on mobile wallet adoption and its effect on users' satisfaction"	International Journal of Management, Technology and Engineering	Sarika *et al*., 2018	17
48.	"Factors influencing the adoption of payment banks in India using an extended TAM"	Asia-Pacific Journal of Management Research and Innovation	Kaur *et al*., 2020	15
49.	"An empirical approach to customer perception of mobile banking in Indian scenario"	International Journal of Business Innovation and Research	Ali *et al*., 2015	15
50.	"Measuring consumer-based brand equity of prestigious mass brands using masstige mean score scale"	International Journal of Consumer Studies	Singh & B, 2024	14

4. DISCUSSION

Through a bibliometric investigation of research on digital payment systems in India, from 2010 to 2024, the adoption, consumer perception, and challenges have been determined, and many of the key trends, patterns, and insights of this field are revealed. The numbers reveal a sharp increase in publications from 2010 to 2016 and a sharp spike between 2017 and

2019. This increase is likely driven by several major policy changes such as the 2016 demonetization and rapid adoption of technologies like Unified Payments Interface (UPI) leading to a boom in research on digital payment systems. The drop off in publications after 2019 could be due to some combination of saturation of the discourse or a movement away from current academic interest to a different set of challenges or new digital technologies. India has been a key player in enabling digital payment transformation, especially in its urban and rural areas, with 79.4% of total publications by India in this area. The high output resonates well with the nation's aspiration to scale up digital financial inclusion. However, global interest in India's experiences is fairly high, especially from the USA, UK, Australia, and Canada, which form a large share of all the publications.

This study finds results consistent with previous research that India is a distinct case for the acceptance of digital payments, where policy shifts such as demonetization and the launch of mobile payment platforms play a significant role. Studies (Gupta *et al*., 2017; Singh *et al*., 2017) show that user anxiety, trust, and perception are critical barriers to adoption. For example, many works (Shankar *et al*., 2018) have cited the Unified Payments Interface (UPI) as being the breakthrough in simpler mobile payments that have been responsible for a lot of recent research on this topic. However, previous studies have focused on barriers such as trust and awareness (Singh *et al*., 2017) whereas this study shows that most of the research is currently concentrated on the acceptance of mobile wallets and the shift in consumer behavior towards mobile-first payment systems. This implies that the academic discourse has not only grown in technology but the dynamic nature of consumers' preferences to policy changes and technological adoption (Sinha *et al*., 2019).

These findings have important policy, business, and research implications. The continued growth of digital payments in urban as well as in rural areas highlights the importance for governments and policymakers to set up additional digital literacy initiatives, particularly in rural areas, to help ease the knowledge gap around trust and security concerns in rural areas. These policy strategies need to be refined based on ongoing research. The rising trend of mobile wallet adoption and consumer satisfaction should be used by businesses and monetary institutions to inform the design and marketing of mobile payment systems (Yadav *et al*., 2024). Further promotion of adoption would be possible if solutions were offered that are targeted to specific concerns consumers have around privacy, security, and ease of use, for instance. From a research standpoint, this study represents a move to study consumer perceptions across different types of digital payment technologies. The need for continued research on consumer behavioral economics and consumer psychology in the digital finance ecosystem is made apparent by a growing body of work around consumer adoption models, particularly when it comes to mobile-based payment solutions (Putrevu *et al*., 2024).

Several avenues for future research are suggested by the findings. Second, although further research on the topic would be possible only if the discourse on digital payments evolves, the impact the trends like the blockchain or AI can have on the transaction methods can be investigated. The scope also exists for studying the socio-economic factors that drive the acceptance of digital payments in rural markets where access to technology remains a challenge. Future research could also look at how consumer behavior changes during crises, where the demonetization of 2016 and the COVID-19 pandemic offer natural experiments for payment system adoption. Further, though the majority of the research focuses on mobile payments and mobile wallets, there is also scope for research on other payment systems, such as biometric authentication or contactless payments, that are becoming increasingly popular in the Indian market (Ahmed *et al*., 2021). However, the limitations of this study remain a constraint to the trends and progression of digital payment systems in India. Due to reliance on Google Scholar and Scopus, some grey literature and publications not titled in these databases may have been excepted because of database limitations. Moreover, the analysis was limited to English publications, excluding essential research published in regional languages or non-peer-reviewed ones. Secondly, its limited period of focus (2010–2024) can ignore historical contexts related to early digital payment adoption in India before 2010. Future studies could extend the analysis period to include pre-2010 development including early internet banking initiatives. Furthermore, the bibliometric analysis does not analyze the content of articles, which avoids the possible sensitivity in the findings of individual studies, for instance, their methodological rigor or quality.

5. CONCLUSION

A bibliometric investigation of research on digital payment systems in India from 2010 to 2024 shows the evolution, adoption, and challenges of digital payment technologies in India. With a 79.4% share in total publications, India leads globally in research on digital payments. India's rapid digitalization, policy-driven initiatives like demonetization, and the widespread adoption of mobile payment systems like UPI have contributed to this dominance. The increasing volume of

publications between 2017 and 2019, can be traced back to key events, such as the implementation of UPI and mobile wallets, which shows how India pushes toward financial inclusion and digital transformation. Nevertheless, there is enormous interest around the world in what India has done, with major input from the USA, UK, Australia, and Canada. This international involvement points out the respect India's digital payment ecosystem commands globally, its unique issues, and its success. However, even with India leading the race, there is a great deal of interest from developed economies, as digital payments have become increasingly significant in global financial systems.

The mainstream of the top cited articles tend to focus on consumer adoption, barriers to adoption such as trust and anxiety, and the effect of mobile payment systems in general, and mobile wallets in particular. The research has shifted to consumer behavior, consumer preferences, and consumer satisfaction and continues to evolve with a growing focus on consumer dynamic needs and technology. These outcomes are constant with the pattern of adoption of digital payments overall and speak to India's leadership in the global discussion of financial inclusion and mobile-first payments. In the coming days, digitization of payment systems necessarily requires policy intervention to promote digital literacy and address security and trust concerns, especially for rural populations. Learnings from consumer satisfaction can help businesses and financial institutions refine the design as well as the marketing of payment systems. Avenues for future investigation are suggested in research on emerging technologies such as blockchain and AI in payment systems and socio-economic factors that affect adoption in rural markets. While the current study covers publications from 2010 to 2024, a more complete view of the evolution of India's digital payments could be obtained by extending the analysis to prior years and non-English publications. All in all, the lesson from India's digital payment leadership is useful for policymakers as well as businesses. Digital payments in driving financial inclusion and technological advancement have attracted increasing global interest. More research remains to be done on the changing relationship between consumer behavior and digital payment technologies, especially in the developing economy.

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