

A Bibliometric Analysis on the Nexus of Financial Literacy and Cashless Payment Adoption

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Abstract: Over the past decade, scholarly interest in the nexus between financial literacy and cashless payments has grown significantly, paving the way for future research to explore new dimensions within this field. This study scientifically analyses and reviews the existing literature on financial literacy and cashless payments using a bibliometric analysis approach. Intellectual and logical structuring was carried out using VOSviewer by performing an analysis of 713 papers published from 2000 to 2024 in the Web of Science (WoS) database. The construction of network maps using co-authorship and co-occurrence analysis revealed interesting patterns and themes in the field of financial literacy and cashless payments. The discussion helps to identify the nature and scope of research conducted in both domains since their inception. This reflection provides recommendations and guidance grounded in prior studies, offering a clear direction for future research on financial literacy and cashless payment adoption, while also considering potential challenges and limitations.

Keywords: *Financial literacy, cashless payments, bibliometric analysis, Web of Science*

1. Introduction

The global shift towards cashless payment systems has been driven by advancements in financial technologies (FinTech), whose implementation aims to enhance transaction efficiency, convenience, and transparency. The rapid progress of FinTech in recent decades has increasingly transformed consumer preferences (Bhattacharjee et al., 2024) and helped them access financial services and markets much better than before (Kou et al., 2021). While these significant changes have increased the number of financial products, consumers still face various difficulties and complexities when using them (Long et al., 2023). For example, cashless payment systems, which are one of the components of FinTech, encompassing mobile payment, e-wallets, electronic bank transfers, QR codes, and contactless cards, offer benefits such as transaction efficiency, enhanced security, and financial inclusion (Vania et al., 2024). However, the adoption of these systems is contingent on users' level of financial literacy, which includes the knowledge and skills required to make informed financial decisions (Shehadeh et al., 2024b).

In both theory and practice, it is essential to acknowledge and comprehend the impact of financial literacy on the development of cashless payment systems (Świecka, 2018). Financial literacy emerges as a pivotal factor influencing individuals' ability to navigate and adopt digital systems effectively. While cashless payment adoption offers significant benefits, including economic inclusivity and reduced transaction costs, the lack of financial literacy often impedes its widespread acceptance (Yang et al., 2023; Shehadeh et al., 2024a). In general, financial literacy can be defined as the ability to understand and apply effective financial management skills, and it is widely believed that this concept should be instilled from an early age. It is commonly defined as the ability to effectively manage personal finances, including saving, investing, and handling debt. In 2022, the Organisation for Economic Co-operation and Development (OECD) proposed a comprehensive framework for measuring financial literacy, encompassing an individual's knowledge, attitudes, behaviours, skills, and awareness. As the global economy enters a stagnation phase and a recession increases in the post-COVID-19 era, the level of financial literacy among society has become increasingly important to ensure the right decisions are made for their financial well-being. This ability directly affects individuals' quality of life, hence making financial literacy a key to sustainable development highlighted in the United Nations' 2030 Agenda in 2015 (Świecka et al., 2020; Świecka et al., 2021).

In that regard, this study tends to examine and shed further light on the academic discourse around financial literacy and cashless payment adoption. Against this background, this study attempts to provide preliminary ideas in the field of financial literacy and its role in a cashless society. This study is critical because the rapid

changes in the digital financial system require tremendous support from society in terms of knowledge, skills, and the ability to adapt to technologies. Meanwhile, financial literacy may also influence the adoption and usage of cashless payment services (Long et al., 2023). This study aims to identify knowledge gaps through bibliographic coupling, thereby offering a roadmap for future research that may contribute to the advancement of a cashless society through enhanced financial literacy.

Following this brief introduction, the paper is structured as follows. The following section presents a literature review and insights into financial literacy and cashless payment adoption. The third section outlines the methodology employed in this study, including the data collection process and the scope of the research. The fourth section discusses the bibliometric findings and provides a critical analysis of the identified themes through bibliographic coupling and content analysis. Finally, the fifth and sixth sections conclude the study by outlining its limitations and offering suggestions for future research directions.

2. Literature Review

A review of research conducted between 2000 and 2010 highlighted that studying financial literacy is a significant challenge due to the absence of a well-defined and universally accepted definition in the literature (Remund, 2010). Ever since, researchers have believed that financial literacy has been portrayed as having a similar meaning to financial knowledge (Hilgert et al., 2003; Lusardi & Mitchell, 2011; Bucher-Koenen et al., 2016). Even though some studies commonly relate the concept of financial literacy to financial knowledge, it essentially has a more general definition comprising knowledge, behaviour, and attitudes of the people. According to the Organisation for Economic Co-operation and Development (OECD, 2020), financial literacy encompasses an integrated set of cognitive and behavioural capacities including awareness, knowledge, skills, and attitudes that collectively enable individuals to make informed financial decisions and pursue long-term financial well-being. Further, three main components of financial literacy are commonly identified as: (i) the individual's level of financial knowledge (cognitive aspect); (ii) attitudes towards saving; and (iii) financial behaviours (OECD, 2022).

When considered together, these elements play a crucial role in enabling the adoption of financial technology and digitalisation. Given the unique barriers to technology adoption experienced by the public, such as lack of knowledge, skills, and exposure, financial literacy becomes the best way to solve the issue. In a broader sense, cashless payments associated with technology usage and application are part of the development of FinTech. Not specific to cashless payments, FinTech adoption as a whole actually requires a high level of financial literacy (Yoshino et al., 2017). This is demonstrated by the positive association between financial literacy and FinTech adoption in Japan. To support the solution, policies are needed to improve financial literacy, including digital financial education programmes employed in schools and workplaces. These efforts are crucial because financial education indirectly influences FinTech adoption and usage by enhancing financial literacy. This is consistent with the findings of Henry et al. (2017), who analysed the 2017 Methods-of-Payment Survey in Canada and discovered that individuals with higher financial literacy, as measured by a standard assessment, tended to carry less cash and use cashless payment methods more frequently. Without financial literacy, individuals are generally less inclined to manage their finances through FinTech, i.e., cashless services (Bakar et al., 2020).

A study of Poland conducted by Świecka in 2018 portrayed that consumer knowledge of payment methods and their relationship with financial behaviour had long attracted the attention of researchers. However, no in-depth and empirically based scientific research had been completed in recent years. This might be due to the moderate digital literacy and necessary practices at that time. Nevertheless, Świecka (2018) demonstrated that individuals with higher levels of financial knowledge and skills tended to use cashless payment methods. This finding indicates that financial literacy is one of the key factors influencing the adoption of cashless payments. It is understood as both effective and easily understandable across diverse financial contexts, empowering individuals to actively engage in economic life. The COVID-19 pandemic has led to more emerging studies on the nexus between financial literacy and cashless payment adoption. While the pandemic has restricted outdoor activities, the implementation of contactless transactions has encouraged society to adopt cashless payments more widely.

Numerous studies have come out with significant findings on financial literacy and cashless payment adoption since then. Chih-Feng and Chun-Da (2020) suggest that individuals with higher financial literacy use mobile payment services more frequently as a preferred cashless method. Furthermore, individuals who prefer digital service providers tend to consider themselves more financially knowledgeable and generally more risk-tolerant (Königsheim et al., 2017; Mai, 2022). A higher level of financial knowledge can lead to more rational financial decisions, including responsible spending, effective money management, financial stability, and overall well-being (Swiecka et al., 2021). The introduction of new non-cash payment solutions, such as digital payments, can exclude older adults or individuals with limited financial knowledge, highlighting the importance of financial literacy related to payment systems. Additionally, a cashless society may face challenges in rural areas, where reliance on cash remains high and financial literacy levels tend to be lower compared to urban populations (Rahman et al., 2023). Studies among rural citizens or different income groups produce different results. In China, the 2015 and 2017 data from the China Household Finance Surveys showed that financial literacy plays a crucial role in enhancing the adoption of digital financial services, such as mobile payments, online borrowing, and online financial products. The influence is particularly stronger for online borrowing and financial products compared to mobile payments, indicating that the importance of financial literacy grows as the complexity of the digital financial service increases (Yang et al., 2023).

In addition, Seldal and Nyhus (2022) demonstrate that early adopters of new financial payment technologies tend to exhibit higher levels of financial literacy and typically come from younger age groups. The so-called Gen-Z is considered to have complex financial knowledge ranging from basic to advanced levels, with social influence having a positive effect on the intention to use cashless payments in Medan city, Indonesia (Pakpahan, 2024). This aligns with the evidence in the Asia-Pacific region, where 33% of Gen-Z spend over 6 hours daily on their mobile phones, with social media usage surpassing that of previous generations. The study also highlights that Gen-Z in Indonesia exhibits the highest mobile phone usage among all groups, averaging 8.5 hours per day. Growing up in the digital era has made Gen-Z highly attuned to technology, significantly influencing how they engage with the world and their approach to financial management (Vania et al., 2024).

Overall, this study examines how financial literacy in different dimensions affects cashless payment adoption. It is believed that there are some other factors that can be considered in influencing people's adoption of cashless payments. Over time, the field of financial technology, i.e., cashless payments and financial literacy, has developed into an interdisciplinary one. In light of this transformation, it is crucial to examine the available literature to identify how this research field is advancing. Therefore, this study uses bibliometric analysis tools to analyse important tendencies in the conceptual, intellectual, and social structure of the fragmented work. The following research questions (RQ) are the focus of this bibliometric study.

RQ1: What are the publication trends, and most prominent areas involved in the research on financial literacy and cashless payment adoption?

RQ2: Which countries are the major contributors to research on financial literacy and cashless payment adoption?

RQ3: What are the probable future areas of research on financial literacy and cashless payment adoption?

3. Methodology

Data Extraction, Inclusion and Exclusion Criteria

This study was conducted using bibliographic metadata. The methodology for this study began with identifying the appropriate database, followed by data collection guided by a defined search strategy. This study used all accessible metadata of the documents such as journal articles, early access, conference proceedings, books, or book chapters, and article reviews. In the first step, data were retrieved from the Web of Science (WoS) database on July 22, 2024. The majority of studies prefer the WoS database for bibliometric analysis because it includes highly reputable journals across multiple disciplines while excluding papers from magazines and non-scientific sources (Rodriguez-Ruiz et al., 2019; Khan et al., 2022), thereby ensuring the highest standards of thoroughness and quality (Ghosh, 2024). In fact, the WoS has long been recognised as the most comprehensive global citation database (Birkle et al., 2020; Öztürk et al., 2024) and its Journal Citation Reports (JCR) are widely regarded by the research community as a standard measure of journal impact (Liu et al., 2013; Carvalho et al., 2017; Rialti et al., 2019). In addition, WoS was selected as the sole database due to its standardised metadata, comprehensive citation records, and consistent indexing across disciplines, which are essential for reliable

bibliometric analysis (Linnenluecke et al., 2020; Ghosh, 2024). Despite this preference, the authors acknowledge that cross-database validation in future studies could broaden the scope of the findings.

The extracted documents from this database source were analysed using bibliometric techniques to develop the intellectual and conceptual structure that helps the study derive the connotations using co-word, co-citation, and co-author analysis (Linnenluecke et al., 2020). The different bibliometric indices can be used to derive the published document's research influence, for example, citation counts per paper, author and institution, and country (Haustein, S. & Larivière, 2015; Linnenluecke et al., 2020). However, this study focuses on understanding the knowledge structure using a co-word analysis of keywords. Therefore, the search was limited to the specific terms of keywords that appear in the title, abstract, and author's keywords. The search string is as follows: ((“financial literac*”) OR (“financial behavio*”) OR (“financial attitude”) OR (“financial knowledge”) OR (“financial education”) OR (“financial management”)) AND (“cashless” OR “e-payment” OR (“digital payment”) OR (“electronic payment”) OR (“cashless payment”) OR (“online payment”) OR “e-wallets”). A total of 963 articles emerged after applying the given criteria. Although the search string was designed to capture core concepts related to financial literacy and digital payment systems, it is acknowledged that alternative terminologies including ‘FinTech adoption,’ ‘contactless payment,’ and ‘digital finance’ were not explicitly incorporated. This represents a boundary condition of the current study and should be considered when interpreting the findings. The second step involved filtering and screening the data. The subject included all categories with limited types of documents, excluding letters, books, meeting abstracts, news items, and notes. The search aimed at documents published between 2000 and 2024 to cover the research trends. After rigorous screening, 713 articles were considered for inclusion in the bibliometric analysis.

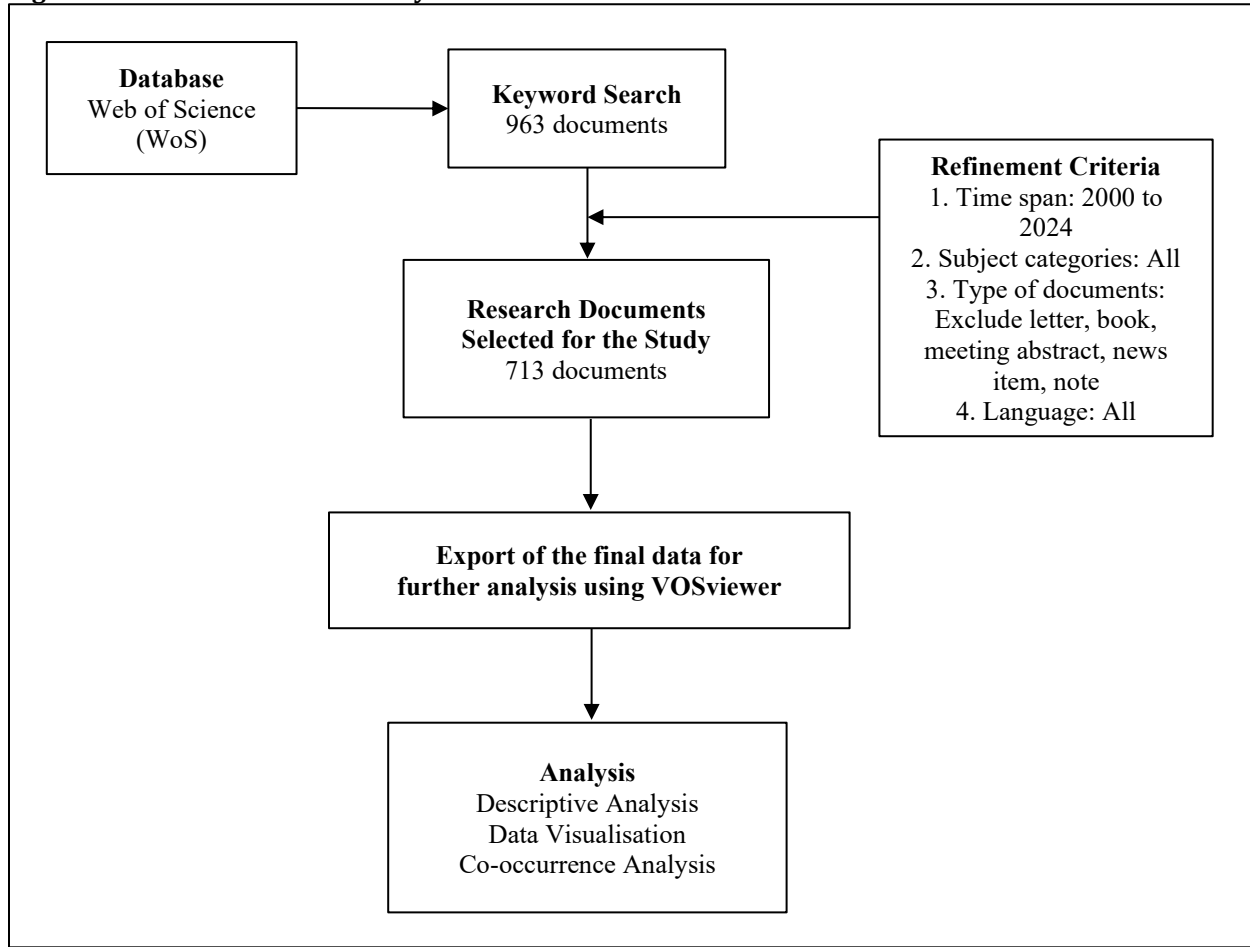
Data Analysis

The final step involved conducting a bibliometric analysis using VOSviewer software, which facilitates the essential task of bibliometric mapping. This software generates the interlinkages between the keywords, understanding the key research areas of the published articles based on the concept of the conjunction and concurrence of keywords (Zhu & Zhang, 2020; Ghosh, 2024). In the bibliometric section, this study analysed key information such as publication trends, document types, and country collaboration patterns. VOSviewer software was employed to perform network clustering through keyword analysis and bibliographic coupling (Eck & Waltman, 2010). Using bibliographic coupling, the study conducted a content analysis to identify major themes and suggest directions for future research on financial literacy and cashless payment adoption.

Following data extraction, a systematic screening process was undertaken. First, duplicate records were identified and removed automatically during the export process from WoS, as the database does not permit duplicate entries within a single search query. Records were then manually screened for relevance by reviewing titles, abstracts, and author keywords. Documents were excluded if they: (i) fell outside the defined document types (i.e., letters, books, meeting abstracts, news items, and notes); (ii) were unrelated to financial literacy or cashless/digital payment systems based on abstract screening; or (iii) lacked sufficient metadata for bibliometric analysis (e.g., missing author affiliations or keywords).

For the VOSviewer analysis, a minimum threshold of five occurrences was applied for keyword co-occurrence analysis to ensure only sufficiently represented terms were included in the network map. For co-authorship analysis, a minimum of two documents per author was set. These threshold values are consistent with conventions in bibliometric studies of comparable scope (Eck & Waltman, 2010; Linnenluecke et al., 2020). The resulting network maps were generated using both network visualisation and density visualisation modes to provide a comprehensive view of keyword relationships and thematic clusters. Figure 1 outlines the search criteria, including keywords, inclusion, and exclusion parameters, along with the subsequent analytical process.

Figure 1: Dataset search and analysis criteria



4. Results and Discussion

Document Types

In selecting the articles for review, this study included articles published in peer-reviewed journals and available in all languages. This study excluded articles published as letters, book chapters, meeting abstracts, news items, and notes. Further, articles that were not available as full-text articles and were outside the scope of the present study were omitted. Table 1 provides a synoptic overview of the selection criteria for the inclusion of document types undertaken by researchers for the selection of relevant studies. The criteria included produced 713 total of document types for further analysis.

Table 1: Inclusion of Document Types

No.	Document Types	Number of Articles
1.	Journal article	509
2.	Proceedings paper	117
3.	Early access	28
4.	Book chapter	21
5.	Editorial Material	11
6.	Book Review	15
7.	Review Article	12
Total		713

Publication Trends

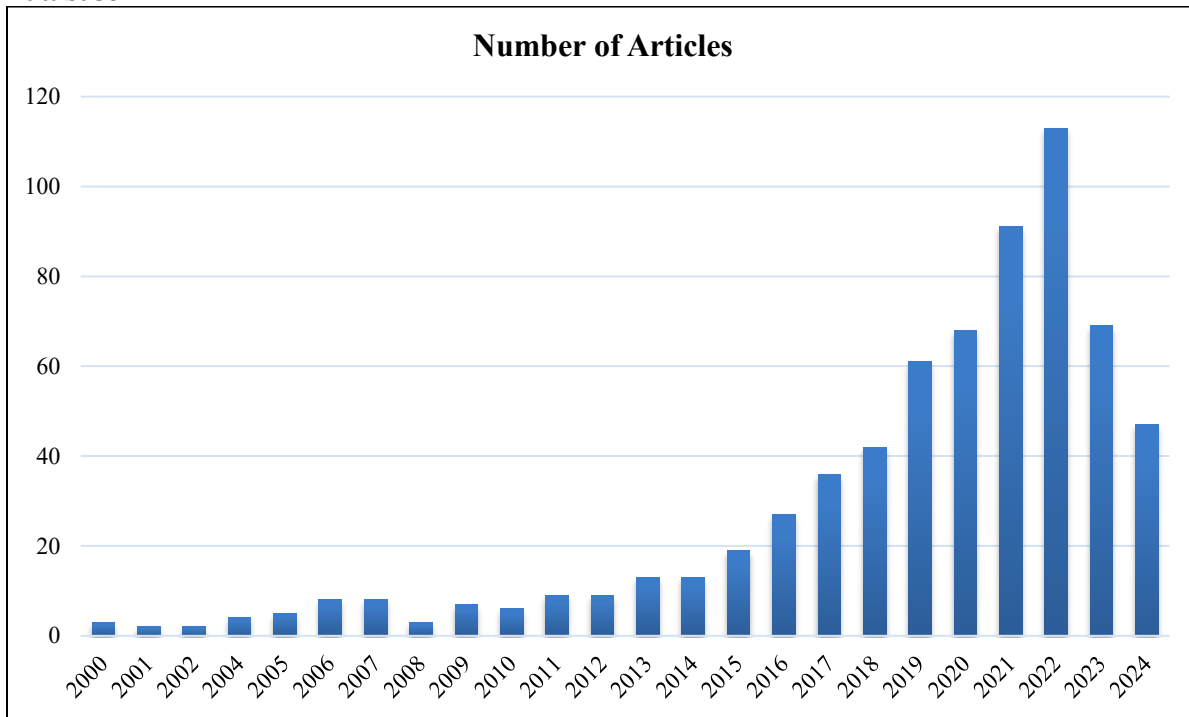
Figure 2 illustrates the publication trend within the dataset, highlighting a noticeable upward trajectory in recent years. From 2000 to 2005, the field gained minimal academic attention, with only a few articles published. Between 2006 and 2012, publications fluctuated without a clear growth pattern. A significant shift occurred in 2013, marked by the release of 13 articles, indicating a growing interest in the topic. Following this point, research output on financial literacy and cashless payment adoption expanded steadily, culminating in a peak in 2022 with 113 published articles. This sustained growth over the decade from 2013 to 2022 reflects increased scholarly focus, likely driven by global digitalisation trends, the rise of fintech, and greater awareness of financial inclusion issues.

First, the stream of publications indicates the increased awareness of financial literacy's importance. The growing recognition of the critical role of financial literacy in today's world underscores its importance for both individual financial well-being and overall economic stability. This awareness has led to a proliferation of research exploring various aspects of financial literacy, including its determinants, outcomes, as well as its relationship with other variables (Rehman & Mia, 2024). Second, the global shift towards cashless economies has led to the movement towards cashless transactions using various platforms such as mobile payments, digital wallets, and contactless transactions. These financial behaviours transformation prompting researchers to explore its factors and implications (Raya & Vargas, 2022). Third, the impact of COVID-19 has accelerated the adoption of cashless payments due to health concerns associated with physical cash. Additionally, the higher demand for cashless transactions during the pandemic contributes to rapid technological advancements. More new financial products and services have been introduced, necessitating a deeper understanding of financial literacy to navigate these innovations effectively. This has led to a surge in research focusing on the intersection of FinTech and financial literacy (Raj et al., 2024; Rehman & Mia, 2024). Lastly, the policy initiatives and financial inclusion efforts implemented by the governments and financial institutions, particularly in rural and underserved areas, have prompted studies examining the effectiveness of financial literacy programmes and the adoption of cashless payment systems among diverse populations (Khuc et al., 2022).

Studies in the two years after the peak year may have looked at the environmental impacts of cashless systems rather than the adoption process itself. Otherwise, the declining trend may be due to the researchers exploring other emerging variables associated with financial literacy and cashless payments. In sum, the upward trajectory of articles published in this collection over the years is a testament to the growing recognition of the significance of financial literacy and cashless payment adoption, underpinned by several factors such as awareness, policy initiatives, research advancements, and demand for evidence-based solutions.

In a theoretical context, the notable surge in publications post-2013, and particularly after 2020, aligns with the Technology Acceptance Model (TAM) and the Diffusion of Innovations Theory perspectives, which predict that the adoption of new technologies accelerates once a critical mass of users is reached (Rogers, 1983; Davis, 1989). The COVID-19 pandemic functioned as an exogenous shock that compressed adoption timelines, effectively advancing the cashless payment adoption curve by several years (Kotkowski & Polasik, 2021). This mirrors historical patterns observed during previous economic disruptions, where crisis conditions catalysed financial behaviour change.

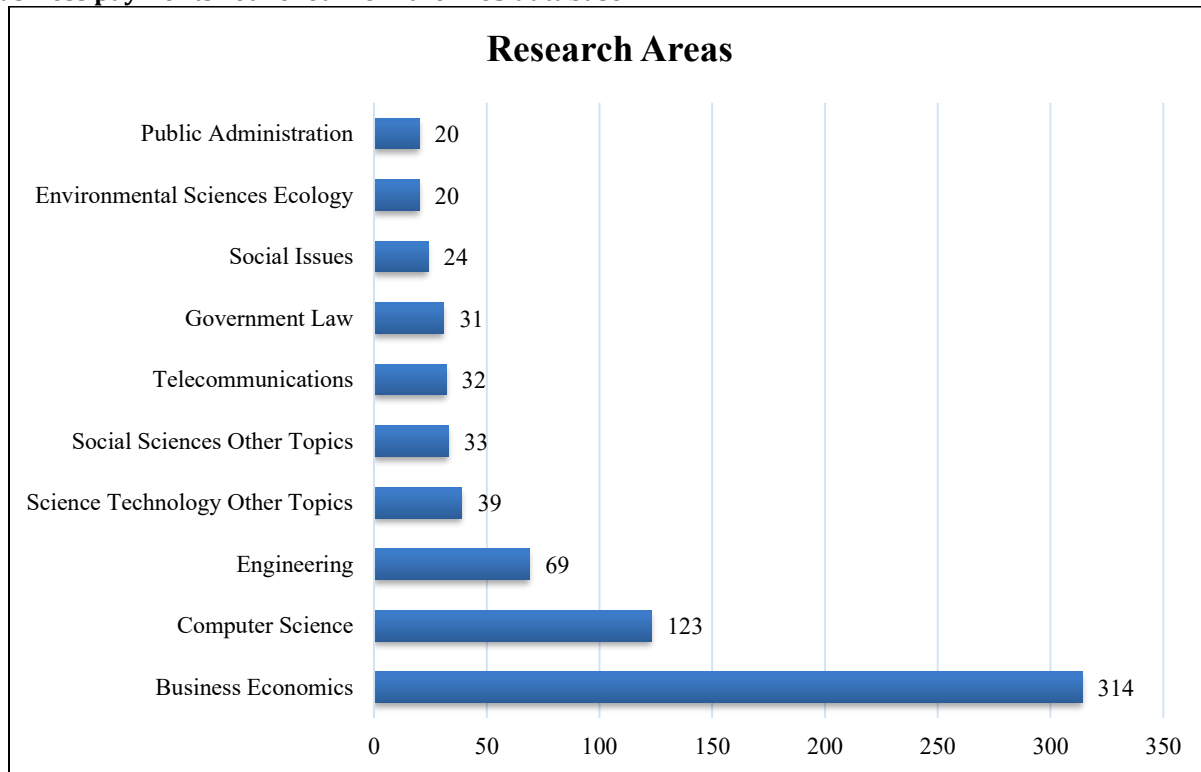
Figure 2: Annual publication trend of 713 papers for the period of 2000–2024 retrieved from WoS Database



Most Relevant Sources based on Research Areas

Figure 3 illustrates the publication trends of the most prominent sources contributing to the literature on financial literacy and cashless payments. The leading disciplines represented include business economics, computer science, and engineering. Among these, business economics stands out with the highest volume of publications (314 articles), followed by computer science with 123 publications during the review period. These subject areas are well-represented in scholarly publishing, reflecting a growing academic focus on the business and technological dimensions of financial literacy and digital payment systems. This surge can be linked to the rising relevance of these topics in the broader context of financial technology (FinTech). Moreover, the convergence of finance and technology is attracting increasing attention from academics, researchers, policymakers, and industry practitioners. The engineering field also contributes significantly, particularly through research on technological innovations, systems architecture, and implementation methodologies. Engineering is a key field in supporting financial literacy and digital payment adoption through the development of secure transaction platforms, encryption technologies, and robust infrastructure designed to mitigate cybersecurity threats. A deeper examination reveals that other contributing research areas include science and technology studies, social sciences, telecommunications, law and public policy, environmental science, and public administration. The growing volume of publications in these domains demonstrates a shift towards an interdisciplinary exploration of how digital transformation intersects with financial behaviour and literacy. Recent scholarship increasingly focuses on the integration of technology with financial knowledge, attitudes, and behaviours, particularly in the context of adopting cashless payment systems. These studies are published in highly regarded journals by leading academic publishers such as Springer, Elsevier, Wiley-Blackwell, Routledge and Cambridge University Press. These publishers are known for their high standards of peer review and scholarly rigor, thus further reinforcing the academic credibility, relevance, and impact of the work addressing the intersection of financial literacy and cashless payment adoption.

Figure 3: Top 10 research areas with a minimum of 20 published articles on financial literacy and cashless payments retrieved from the WoS database



Most Relevant Sources based on Countries (provided Country Collaboration Map)

Figure 4 presents the top 10 countries according to the most relevant publication sources in the research area. India became the most impactful country that published in the research area of financial literacy and cashless payments with 143 articles, followed by the USA (97), Australia (54), England (48), Malaysia (45), and Indonesia (34). The highest total number of publications originating from developing countries reflects the need for financial literacy and technological progress made in the nation and the interest in digital tools to boost the resilience of the cashless society. The figure also shows that African countries do not appear in the ranking. The bottom four countries among the top tier, with fewer than 30 publications in this research area are Japan (28), Republic of China (25), Poland (24) and Russia (23). These lower numbers of publications in the area may be contributed to by several factors. Russia and Poland, for instance, with varying economic conditions and geopolitical challenges, may allocate fewer resources to research areas that are not seen as immediate national priorities. Meanwhile, countries like Japan and China might already have well-established cashless payment systems and high levels of financial literacy, leading to less need for extensive research in these areas.

Theoretically, India's dominance in publication output is consistent with the diffusion of innovation framework, where developing economies with large unbanked populations represent high-stakes adoption environments that attract research attention (Ozili, 2020). India's demonetisation policy in 2016 and subsequent digital payment infrastructure initiatives (e.g., UPI) created a natural experiment environment, driving academic inquiry into adoption barriers, financial literacy gaps, and inclusion outcomes. The relatively lower output from Japan and China, by contrast, may reflect a research saturation effect where mature cashless ecosystems reduce the novelty value of adoption studies, shifting research focus towards optimisation and user behavior.

Figure 4: Top 10 most impactful countries with a minimum of 20 published articles on financial literacy and cashless payments retrieved from the WoS database

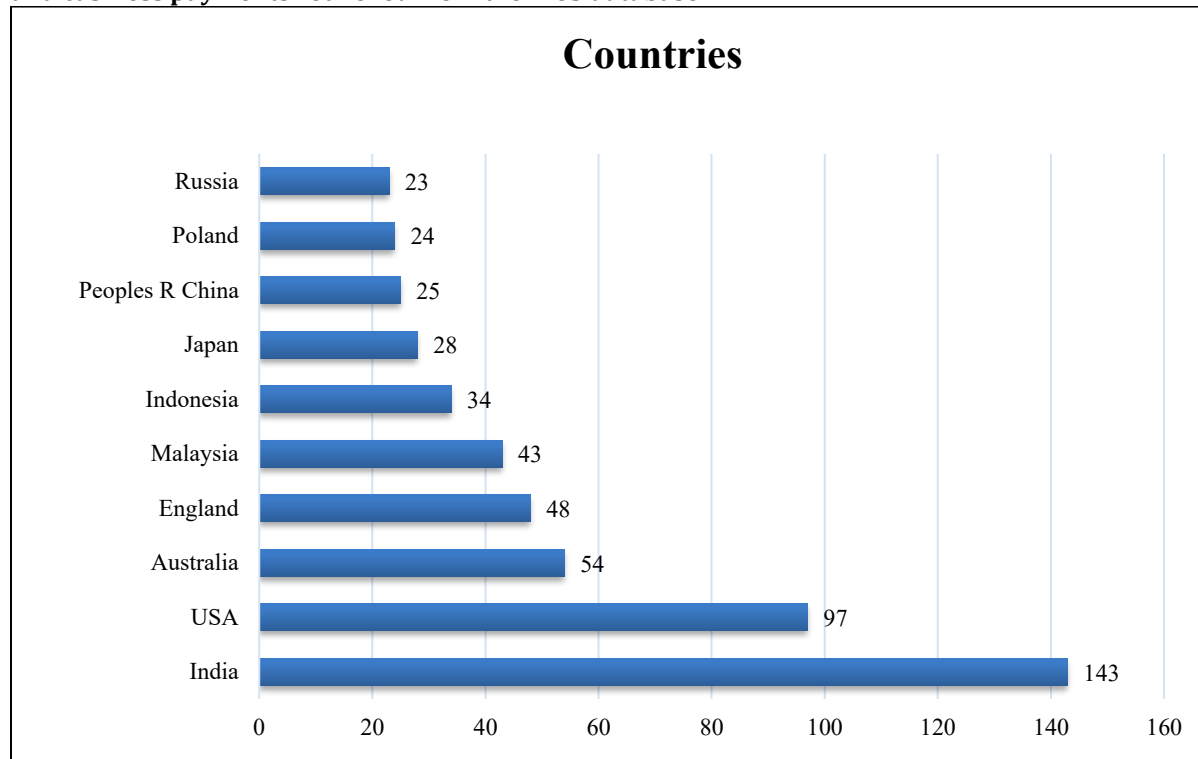
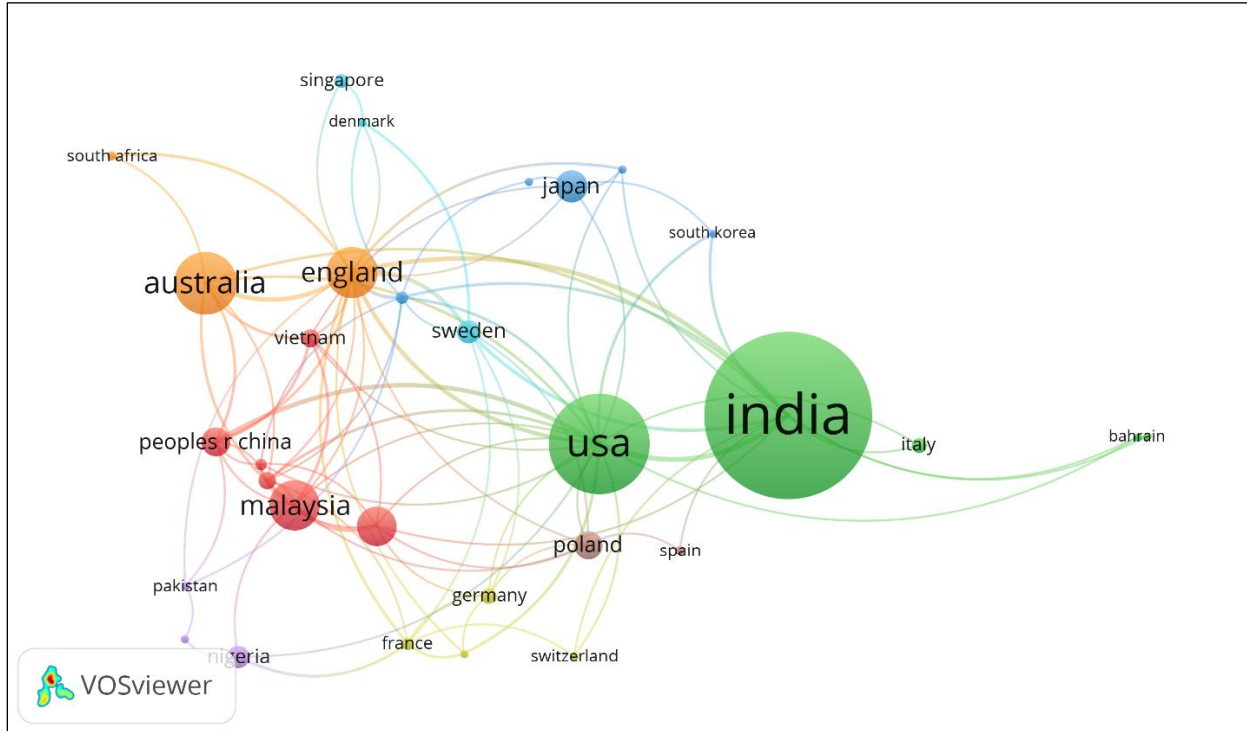


Figure 5 shows global collaboration in financial literacy, financial payments, cashless payments, COVID-19 and mobile banking. India is marked as one of the countries with the highest number of research collaborations, frequently partnering with nations such as the United States, England, Australia, and Malaysia. Other prominent partnerships include those between the United States of America (USA) and Malaysia, the Republic of China, Poland, and Sweden, as well as between England and Malaysia, the Republic of China, Australia, Vietnam and Japan. Collaborations among countries across different continents underscore the global dimension of scientific research and academic publishing efforts. These collaborations represent meaningful partnerships in advancing research on financial literacy and cashless payment systems. India has engaged in collaborations with other countries such as Italy, Bahrain, South Korea, Spain, and Switzerland, but the number of these partnerships remains relatively limited (with one collaboration individually). Other countries also collaborate, such as Pakistan, which had collaborations with three countries, namely England, the Republic of China, and Nigeria, followed by Denmark with Sweden and Singapore, and France with Germany, Switzerland, and Nigeria. These findings highlight the growing need for enhanced collaboration across countries and continents, as international research partnerships facilitate the exchange of knowledge and expertise. By integrating diverse perspectives, methodologies and datasets, collaborative research contributes to the production of more comprehensive, nuanced and in-depth studies. Such cooperation also allows researchers to better understand how social, cultural, and economic contexts influence the adoption of cashless payment systems and financial literacy practices. Furthermore, these collaborations can help identify global best practices, inform financial education policies and support the creation of international standards and guidelines aimed at fostering a cashless society.

Figure 5: Network Visualisation Map of the Countries (Countries Collaboration Map from VOSviewer software)



Keyword Analysis from 2000 to 2024

The science mapping procedure is a combination of two basic processes (Boyack & Klavans, 2014; Öztürk et al., 2024), namely “analysis” and “visualisation”. According to Comerio & Strozzi (2019), this procedure allows the author to represent keywords as the themes of research articles. Using VOSviewer, a keyword analysis was performed to explore the most prevalent themes in financial literacy and cashless payments. A total of 77 keywords with 790 total occurrences were identified across the 713 papers. Table 2 shows the leading 10 keywords used in financial literacy and cashless payments research between 2000 and 2024. The keyword “cashless” appears most frequently, with 38 occurrences, indicating its widespread use as a standalone conceptual term in the literature. Other commonly used keywords include “COVID-19” (29 occurrences), “cashless economy” (28 occurrences), and “cashless payment(s)” (53 occurrences), reflecting key themes and focus areas within the research landscape. A significant finding from the analysis of cashless keywords is that there is no unanimity on the conceptualisation of cashless payments and that a lack of standardised meaning compels authors to use the terms interchangeably. This resulted in the other keywords used representing cashless payments, i.e., mobile payment (20 occurrences) and mobile banking (18 occurrences). Additionally, most of the research uses the keyword financial literacy (21 occurrences), which also reflects financial inclusion (23 occurrences). This analysis produced significant findings that financial literacy has other domains used by researchers, i.e., financial behaviour, financial knowledge, and financial attitudes. This is because there is no consensus to finalise a standard and single concept for financial literacy.

Table 2: Top 10 keywords of financial literacy and cashless payments based on the occurrence

Keywords	Occurrences	Percentage
cashless	38	15%
COVID-19	29	12%
cashless economy	28	11%
cashless payments	28	11%
cashless payment	25	10%
financial inclusion	23	9%
financial literacy	21	9%

mobile payment	20	8%
cash	19	8%
mobile banking	18	7%

Sources: Summarised from VOSviewer

From the keyword searches, Figure 6 shows that ‘cashless’ is more widely connected with different terms such as payment, economy, e-payment, and society. This integration can clearly be seen through the density visualisation map of the author keywords in Figure 7. Meanwhile, financial literacy is also linked to cashless payments (Shehadeh et al., 2024b) as shown in Figure 8. As individuals are taking charge of their digital financial transactions after the pandemic, financial literacy has become equally and increasingly important. Financial literacy emerged as a core element during COVID-19, making it viable, as digital payments, mobile payments, and digital transactions were widely used during that time to avoid physical contact. However, the probability of more frequent cashless payments as a result of the pandemic differs considerably between countries, indicating the role of country-specific factors (Kotkowski & Polasik, 2021). Promoting financial literacy and cashless payments, for example, may reduce cash demand for transactions but not for hoarding in the case of Japan (Fujiki, 2020). Financial inclusion, financial technology, and digitalisation remain other emerging themes in the domain.

Figure 6: Network Visualisation Map of the Author Keywords

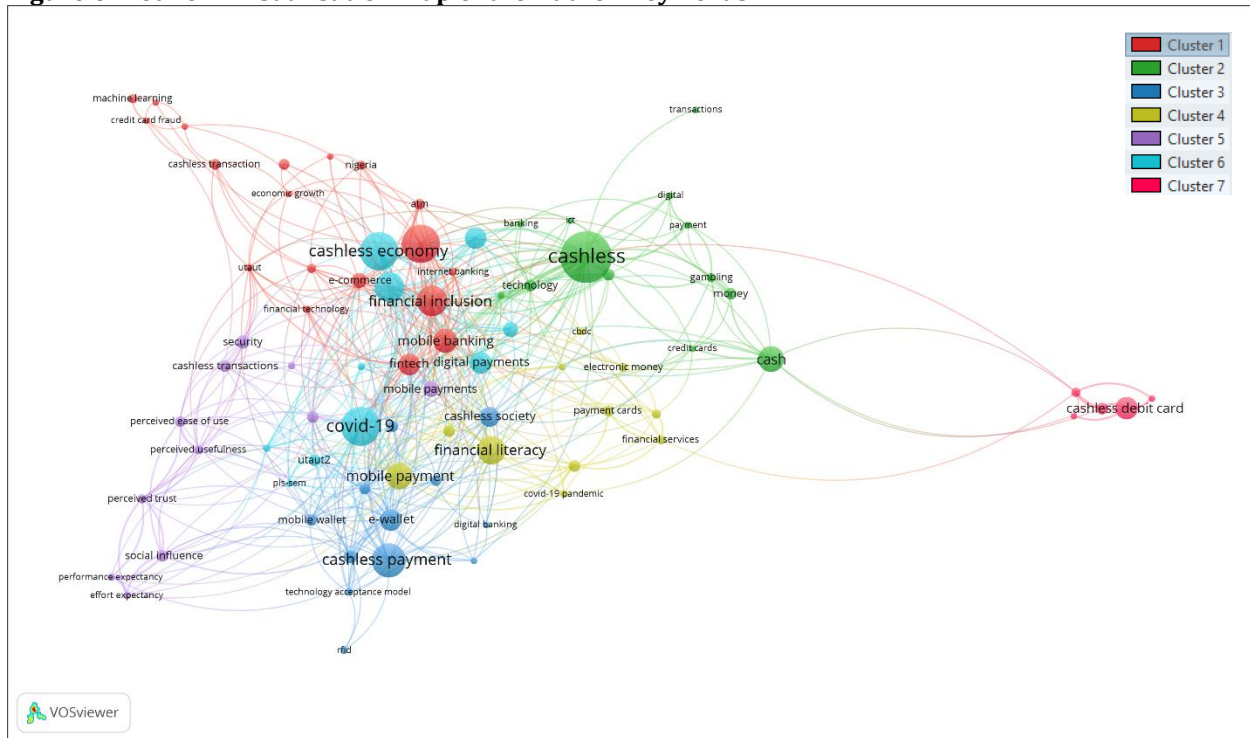
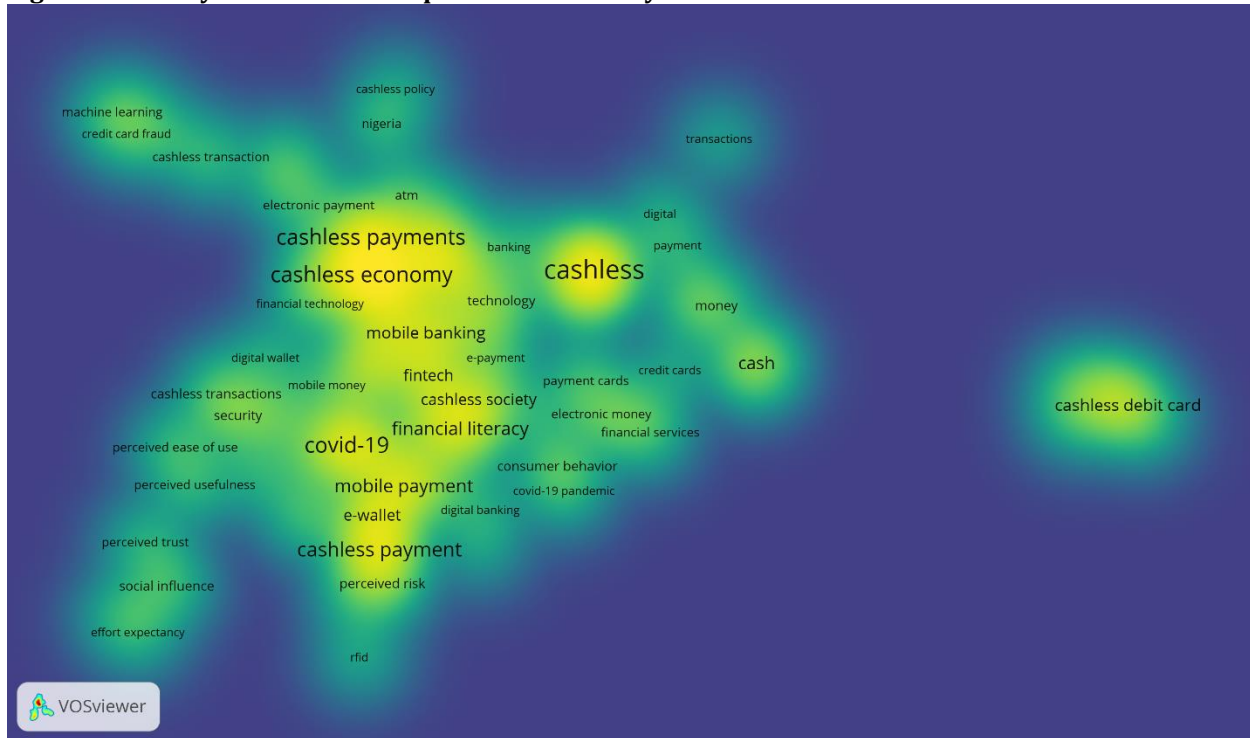


Figure 7: Density Visualisation Map of the Author Keywords



Cluster Analysis

From 2000 to 2024, 713 relevant articles published in journals extracted from the WoS database discussed diverse areas of financial literacy and cashless payment adoption. The bibliometric analysis will provide improved insight into the logical structure, further enhancing understanding of the domain and the work in its associated areas. This section thoroughly discusses the pertinent themes that emerged from the bibliometric analysis.

Cluster 1: Cashless Economy and Financial Inclusion

Studies within this cluster mostly focused on the way FinTech plays its role in economic growth, security, and financial inclusion. The cashless economy has gained significant attention in recent years, driven by advancements in FinTech and its role in fostering financial inclusion. Digital payment systems, including mobile banking and e-wallets, have transformed financial transactions, offering convenience and accessibility, particularly to unbanked and underbanked populations (Ozili, 2020). The shift towards a cashless society is closely linked to economic growth, as seamless transactions enhance efficiency and reduce costs associated with cash handling (Raya & Vargas, 2022). However, concerns regarding trust and security remain critical barriers to adoption, as users' perceptions of privacy, fraud risks, and regulatory protections greatly influence their willingness to embrace digital financial ecosystems (Apau & Lallie, 2022). Studies using bibliometric analysis indicate a growing body of literature on digital payment systems, with a focus on consumer trust, cybersecurity measures, and the role of government policies in promoting financial inclusion (Dissanayake et al., 2023). By analysing research trends, this study seeks to explore how digital payments drive financial inclusion while addressing security concerns that may hinder widespread adoption. Thus, the possible research angle within this cluster includes trust and security concerns in digital financial ecosystems, focusing on how digital payments drive financial inclusion.

Cluster 2: Adoption of Cashless Payments

In the cluster of adoption of cashless payments, studies often discussed mobile payments and e-wallets, where most of them applied the Unified Theory of Acceptance and Use of Technology (UTAUT) model to address digital and technology adoption among consumers. Researchers conducted studies focusing on the factors affecting digital payment adoption, specifically technology acceptance (Abdullah & Naved Khan, 2021; Raj et

al., 2024; Shehadeh et al., 2024b). This cluster area used various related keywords such as cashless payment, mobile payment, e-wallet, perceived trust, perceived usefulness, UTAUT, technology acceptance model to explain the adoption of digital payments, influenced by trust, security, and usability models like UTAUT and the Technology Acceptance Model (TAM). The main possible research gap to be explored is how perceived risk and trust affect e-payment adoption. Risk-averse people may be less likely to adopt and use e-payment services, while people with herd behaviour may tend to adopt and use e-payment services more (Königsheim et al., 2017; Bakar et al., 2020). In addition, the effects of financial literacy on the use and adoption of e-payment vary depending on individual behavioural traits (Long et al., 2023). This area of research can be applied in campus society as well as public society.

The predominance of UTAUT and TAM frameworks in this cluster reflects the field's grounding in information systems theory. However, a critical gap exists in integrating financial literacy as a moderating variable within these models. Existing adoption models largely treat users as technologically homogeneous, overlooking the role of financial knowledge as a precondition for meaningful technology engagement (Long et al., 2023). Future research should embed financial literacy constructs directly into UTAUT-based models to better explain variance in cashless payment adoption, particularly across different income and educational segments.

Cluster 3: Impact of COVID-19 on Financial Behavior

This cluster highlights the impact of the COVID-19 pandemic on financial behaviour, with a particular focus on the rapid acceleration of digital financial services and its implications for financial literacy. The pandemic catalyzed the widespread adoption of digital banking and e-payment systems, as consumers and institutions adapted to mobility restrictions and health concerns (Kotkowski, R., & Polasik, M., 2021; Raj et al., 2024). On university campuses, these changes were particularly pronounced, as students increasingly relied on contactless payment methods, online banking, and fintech platforms, reshaping their financial habits and interactions (Susanti & Reza, 2023). This shift underscored the importance of digital financial literacy, as individuals were required to navigate new technologies and financial tools in a rapidly changing economic environment (Koskelainen et al., 2023; Saxena, 2024). A potential research angle emerging from this cluster is the post-pandemic transformation in campus e-payment behaviour, especially how exposure to fintech during the crisis influenced students' long-term financial preferences and trust in digital financial systems. Overall, the cluster encapsulates a broader move towards a cashless society and highlights the role of crises in accelerating digital financial inclusion.

5. Conclusion and Implications

Directions and Suggestions for Future Research

This research on financial literacy and cashless payment adoption presents an analysis of bibliometric data sourced from the WoS database, aiming to unravel the implications, significance, and future directions stemming from this study.

Limitations

In terms of the limitations, the researchers only considered publications found in the WoS database. Other articles with the same keywords might be found in other databases such as Scopus, PubMed, and the Social Science Research Network. Additionally, articles published without a DOI and those accessible through open sources such as Google Scholar were excluded from the study. In addition, the search term "Financial Literacy and Cashless Payment Adoption" was used to find data for this study. Future searches in this area could yield a different or supplementary perspective by conducting studies on sociodemographic, economic, and risk preferences on cashless payment adoption.

Practical and Social Implications

This study offers a comprehensive overview of the current research landscape, providing direct guidelines for policymakers and financial service providers to design targeted interventions to improve financial literacy and encourage the adoption of secure, inclusive cashless payment systems. Insights from the bibliometric mapping can help fintech companies and mobile payment developers understand key research trends, user concerns, and financial literacy gaps, enabling them to develop user-centric products and effective awareness campaigns. In addition, educators and curriculum developers can use these findings to align financial literacy training with

emerging digital financial tools and behaviours, fostering better preparedness among students and low-literacy populations within the dynamic cashless economy.

Conclusion

This paper showed that bibliometric research is a significant scientific approach for both experienced and emerging scholars looking to delve deeper into a retrospective of broad and rich fields. This study provides a comprehensive bibliometric analysis of the nexus between financial literacy and cashless payment adoption, thus offering valuable insights into the intellectual structure and thematic evolution of the field. The findings reveal a growing scholarly interest in understanding how financial knowledge influences the adoption of digital payment technologies, highlighting critical themes such as trust, perceived risk, digital inclusion, and behavioural intention. As a subject that has drawn significant attention, particularly over the past few years, financial literacy and cashless payment adoption requires its preferable further research. The important themes identified in this study certainly provide significant, fundamental, and beneficial topics for future research.

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