PRESENT STATE AND FUTURE DIRECTIONS OF DIGITAL PAYMENTS SYSTEM: A HISTORICAL AND BIBLIOGRAPHIC EXAMINATION

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ARTICLE INFO	ABSTRACT
	Purpose: The purpose of this research is to conduct a bibliographic analysis of digital payment systems. **Theoretical framework:** The digital payments system is a technologically advanced payment system that enables individuals, businesses, and nations to become self-sufficient, contactless, and tap-less when conducting transactions. Understanding the significance of the digital payment system is crucial. There remains much to investigate and discover. **Design/methodology/approach:** The using of an academic search method on the Scopus database, a bibliometric study of 714 publications on digital payment systems from the year 2000 to 2022 was conducted. For this experiment, we made use of Biblioshiny, an R-based web application available in the Bibliometrix package. We were able to identify significant publications, authors, nations, and article themes by using the software's automatic technique. We studied the citations, co-citations, and social networks. **Findings:** The results were able to identify significant publications, authors, nations, and article themes by using the software's automatic technique. We studied the citations, co-citations, and social networks. The statistics revealed that the number of publications increased gradually in the early years, followed by a sharp rise between the years 2005 and 2022. These years correspond to the political attempts to recover from the 2008 global financial crisis. India conducts the most significant scientific research in this field, followed by United States and China. **Research, Practical & Social implications:** This study not only identifies the research fields in digital payment systems, but also identifies the central key themes with possible research directions, in the area of electronic money, mobile money, authentication, security, Internet of things, blockchain, FinTech, mobile banking and Covid – 19. **Originality/value:** The findings of this study may be used by policymakers to inform the design of digital payment systems, policy initiatives, and other policy measures. Banking, financial planning, and investment management professionals would understand the rising concerns completely. Therefore, researchers, practitioners, and policymakers will use the current literature while doing fresh research on the Payments system's strengths and weaknesses. Doi: https://doi.org/10.26668/businessreview/2023.v8i6.2317

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ESTADO ATUAL E DIREÇÕES FUTURAS DO SISTEMA DE PAGAMENTOS DIGITAIS: UM EXAME HISTÓRICO E BIBLIOGRÁFICO

RESUMO

Objetivo: O objetivo desta pesquisa é realizar uma análise bibliográfica dos sistemas de pagamento digital.

Estrutura teórica: O sistema de pagamentos digitais é um sistema de pagamento tecnologicamente avançado que permite que indivíduos, empresas e nações se tornem autossuficientes, sem contato e sem toque ao realizar transações. Compreender o significado do sistema de pagamento digital é crucial. Ainda há muito para investigar e descobrir.

Desenho/metodologia/abordagem: A partir de um método de busca acadêmica na base de dados Scopus, foi realizado um estudo bibliométrico de 714 publicações sobre sistemas de pagamentos digitais no período de 2000 a 2022. Para este experimento, utilizamos o Biblioshiny, um aplicativo web baseado em R disponível no pacote Bibliometrix. Conseguimos identificar publicações, autores, nações e temas de artigos significativos usando a técnica automática do software. Estudamos as citações, cocitações e redes sociais.

Resultados: Os resultados foram capazes de identificar publicações significativas, autores, nações e temas de artigos usando a técnica automática do software. Estudamos as citações, cocitações e redes sociais. As estatísticas revelaram que o número de publicações aumentou gradativamente nos primeiros anos, seguido de um aumento acentuado entre 2005 e 2022. Esses anos correspondem às tentativas políticas de recuperação da crise financeira global de 2008. A Índia realiza a pesquisa científica mais significativa neste campo, seguida pelos Estados Unidos e China.

Implicações de pesquisa, práticas e sociais: Este estudo não apenas identifica os campos de pesquisa em sistemas de pagamento digital, mas também identifica os principais temas centrais com possíveis direções de pesquisa, na área de dinheiro eletrônico, dinheiro móvel, autenticação, segurança, Internet das coisas, blockchain, FinTech, mobile banking e Covid-19.

Originalidade/valor: as descobertas deste estudo podem ser usadas por formuladores de políticas para informar o design de sistemas de pagamento digital, iniciativas de políticas e outras medidas de políticas. Os profissionais de bancos, planejamento financeiro e gestão de investimentos entenderiam completamente as preocupações crescentes. Portanto, pesquisadores, profissionais e formuladores de políticas usarão a literatura atual enquanto fazem novas pesquisas sobre os pontos fortes e fracos do sistema de pagamentos.

Palavras-chave: Sistemas de Pagamento, Mudança Tecnológica, Sistema de Pagamentos Digitais, Análise Bibliométrica, Bibliometrix, Mapeamento Científico, Banco de Dados Scopus, Software R.

ESTADO ACTUAL Y DIRECCIONES FUTURAS DEL SISTEMA DE PAGOS DIGITALES: UN EXAMEN HISTÓRICO Y BIBLIOGRÁFICO

RESUMEN

Propósito: El propósito de esta investigación es realizar un análisis bibliográfico de los sistemas de pago digitales.

Marco teórico: El sistema de pagos digitales es un sistema de pago tecnológicamente avanzado que permite que las personas, las empresas y las naciones se vuelvan autosuficientes, sin contacto y sin tap al realizar transacciones. Comprender la importancia del sistema de pago digital es crucial. Queda mucho por investigar y descubrir.

Diseño/metodología/aproximación: Mediante un método de búsqueda académica en la base de datos Scopus, se realizó un estudio bibliométrico de 714 publicaciones sobre sistemas de pago digitales desde el año 2000 hasta el 2022. Para este experimento, utilizamos Biblioshiny, una aplicación web basada en R disponible en el paquete Bibliometrix. Pudimos identificar publicaciones significativas, autores, naciones y temas de artículos utilizando la técnica automática del software. Estudiamos las citas, cocitaciones y redes sociales.

Hallazgos: Los resultados permitieron identificar publicaciones significativas, autores, naciones y temas de artículos utilizando la técnica automática del software. Estudiamos las citas, cocitaciones y redes sociales. Las estadísticas revelaron que el número de publicaciones aumentó gradualmente en los primeros años, seguido de un fuerte aumento entre 2005 y 2022. Estos años corresponden a los intentos políticos de recuperarse de la crisis financiera mundial de 2008. India realiza la investigación científica más importante en este campo, seguida de Estados Unidos y China.

Implicaciones de investigación, prácticas y sociales: este estudio no solo identifica los campos de investigación en los sistemas de pago digital, sino que también identifica los temas clave centrales con posibles direcciones de investigación, en el área de dinero electrónico, dinero móvil, autenticación, seguridad, Internet de las cosas, blockchain, FinTech, banca móvil y Covid – 19.

Originalidad/valor: los formuladores de políticas pueden utilizar los hallazgos de este estudio para informar el diseño de sistemas de pago digital, iniciativas de políticas y otras medidas de políticas. Los profesionales de la banca, la planificación financiera y la gestión de inversiones entenderían por completo las crecientes

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preocupaciones. Por lo tanto, los investigadores, los profesionales y los encargados de formular políticas utilizarán la bibliografía actual mientras realizan nuevas investigaciones sobre las fortalezas y debilidades del sistema de pagos.

Palabras clave: Sistemas de Pago, Cambio Tecnológico, Sistema de Pagos Digitales, Análisis Bibliométrico, Bibliometría, Mapeo Científico, Base de Datos Scopus, Software R.

INTRODUCTION

The growth of digital payment systems (also referred to as "fintech") has coincided with the Fourth Industrial Revolution (IR 4. Zero). In India, Singapore, and Japan, the use of digital payment systems is most advanced. In addition, the spread of the internet and mobile devices has drastically impacted how customers interact with and make purchases from online retailers. Similar results were reported by (Sivathanu, 2019); (Shareef et al., 2017). In the aftermath of the demonetisation policy announcement, market observers have seen a large surge in the usage of electronic wallets (a digital means of storing credit card information on a mobile device) (Goriparthi, 2017); (Annakamu, 2021). In the decades leading up to the present, payment methods for products and services have undergone a sea shift, with more contemporary consumers choosing digital payment while cash use declines. (Balakrishnan & Shuib, 2021). The answer to this question is affirmative, despite the fact that we presume that the worldwide spread and use of the internet and digital technologies have resulted in the emergence of new forms of digital payments. According to (Singh, 2017); (Lee & Lee, 2019); (Leong *et al.*, 2020) the introduction of digital payments has made online transactions easier and safer via the usage of new payment methods. The words "electronic payment," "net payment," and "online payment" are included since they are among the most often used in the realm of finance. In contrast, the payments business saw decade-long expansion. In 2019, digital payments accounted for more than fifty percent of the global digital payment market, and by 2025, this proportion is projected to increase to more than fifty percent (Intelligence, M., 2019). Despite this, academics and practitioners have devoted substantial attention to the topic of digital payment acceptance due to the development of digital payment systems and the many variables that influence their adoption and usage. In New York City, investigations on the causes and obstacles of digital payments were undertaken. Currently, global payment systems are through a period of change, during which the most creative and cost-effective technologies have developed.

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Background of the Study

Digital payments have become a change agent, impacting our everyday lives, society, enterprises, and economies. The covid pandemic has produced a significant shift in consumer buying patterns and is accelerating the global use of digital payment systems ("COVID-19 and the financial services consumer," 2023). The prevalence of pandemic has expedited the shift towards digital payment methods. As a method of limiting the risk of the virus spreading via human encounters, customers and merchants are increasingly using digital payments. To safeguard business continuity in the face of mobility limits and the necessity to restructure the economy from the bottom up, global authorities are leaning toward digital payments. As more and more fintech companies join the market, the payment industry is transforming to become more customized, fast, easy, secure, and seamless. Fintech companies have attracted millions of digital consumers by offering cash-back incentives and discounts. According to the 2019 World Payments Report, India's digital payments industry has expanded significantly over the last few years due to infrastructural upgrades and customer adoption of digital payment methods. help from the government ("World payments report 2019," 2019). According to the report titled "India Internet 2019," there are 451 million active Internet users in India (Nielsen Holdings, 2019). Unified Payments Interface (UPI) has become the most common payment method in India, according to ("World payments report 2019," 2019) India Digital Payments Report 2019."

Justification

The objective of this research is to ascertain the current patterns in the realm of digital payment systems. Furthermore, there has been a limited number of investigations carried out in this particular field. Therefore, it is imperative to comprehend the dynamic developments in this field.

Objective of the Work

- The primary objective of this study is to identify the authors and publications that have had the most significant influence on the evolution of digital payment systems.
- The objective is to identify the dominant nations and the nation's most frequently cited in digital payments system research.
- To conduct an analysis of the primary sources and their influence in the realm of digital payment systems.

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- To conduct an analysis of the current trends observed in digital payment systems.
- To evaluate the evolution of digital payment system concepts and to identify the main challenges that have been the subject of recent research.

BIBLIOMETRIC ANALYSIS

Bibliometric analysis studies use mathematical and statistical methods to investigate patterns in previously published material (Singh & Dhir, 2019). Bibliographic research in several disciplines of study, including a survey and analysis of the published literature in the topic. In order to make sense of the dispersed research, this study use econometric literature analysis techniques to uncover the most prominent conceptual, intellectual, and social constructs at play in the digital billing system.
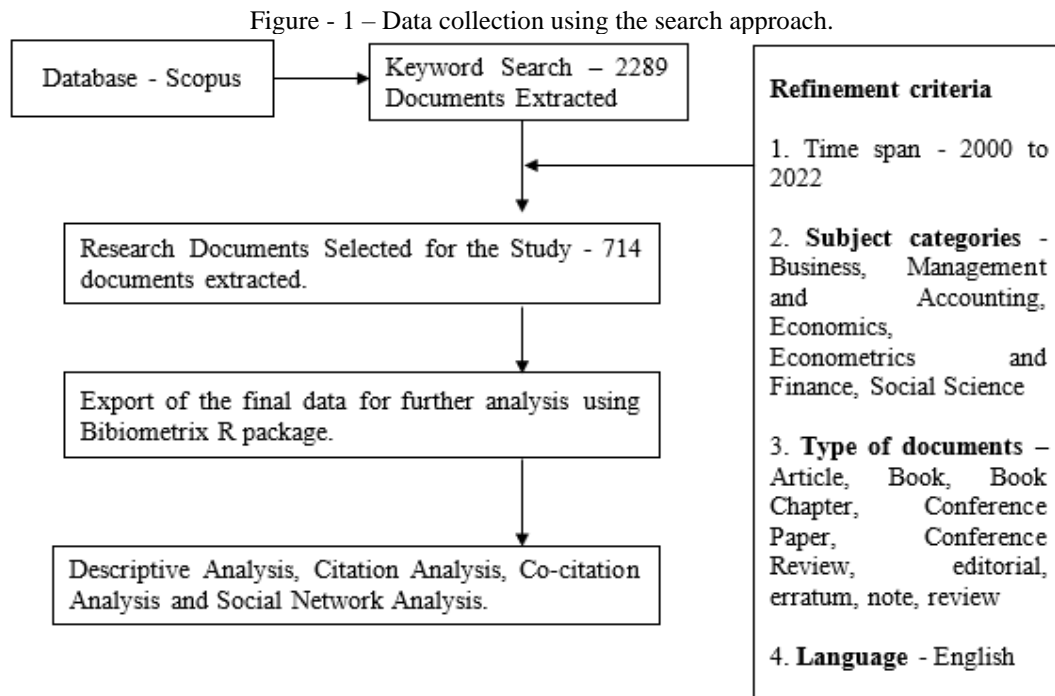
LITERATURE REVIEW

A thorough literature review was conducted to illustrate the current state of research in the field of digital payments. This method was deemed suitable for assessing the current state of knowledge on a specific subject and identifying areas that require additional research. Mukhopadhyay (2016) analysed the impact of demographic characteristics on the use of digital payment systems. The study revealed that transactions involving prepaid cards and mobile payments encountered the greatest growth rate. In her 2018 study, Dr. Shilpa Bhimrao Gaonkar analysed the various payment methods available to individuals and their respective benefits. Her findings indicate that transitioning to contactless payment methods can increase transparency, efficiency, and convenience, as well as make it simpler to monitor financial transactions. N. Rakesh et al. evaluated the current state of electronic payments and the service capabilities of UPI and BHIM technologies in their 2018 study. According to their findings, UPI has a larger user base than BHIM.

Dinesh, T.M., et al. (2018) assessed the influence of demonetization on digital payments in India. The study revealed that demonetization had a significant impact on digital payments, particularly RTGS and mobile transactions. The objective of KramDaştan and CemGürler's (2016) study was to identify the factors that influence consumers' adoption of mobile payment systems. The results indicated that perceived trust, perceived mobility, and attitude were positively correlated with mobile payment system adoption.

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MATERIALS AND METHODS

(Kumar et al., 2021) "The word "bibliometrics" is homologous to the term "librametrics" coined by S. R. Ranganathan, one of the greatest library scientists (Thanuskodi, 2010), which is the Russian concept of "scientometrics". The concept of "scientometrics" signifies the practice of applying quantitative techniques to the history of science and has substantial commonalities with bibliometrics. In essence, bibliometrics involves the study of bibliographic data statistically, leading to a bird eye's view of the major trends and scope of a set of documents (Broadus, 1987; Pritchard, 1969), including its research constituents, research themes, and the relationships that exist between them (Ramos-Rodrígue & Ruiz-Navarro, 2004; Cobo et al., 2015; Donthu et al., 2021a). This is done through the study of the structure and evolution of research through various indicators such as citations and networks (Donthu et al., 2021a; Valtakoski, 2019). Thus, the use of bibliometrics and its equivalent indicators can provide a comprehensive understanding of a research field (Garfield, 1955)." The data was gathered and pulled from the Scopus database based on the first keyword search. After data filtering and exclusion, 714 papers were chosen. The research spans the years 2000 to 2022, and its topic areas include business management, accounting, economics, econometrics, and finance, as well as social science. Which subclassification best describes this study? In addition, only records written in English were considered for the research, no other languages having been considered. Following this, the data was mapped and visualized using the bibliometric R package, and biblioshiny version 4 was used to do the study. For this research, descriptive analysis, citation analysis, co-citation analysis, and social network analysis were conducted using the biblioshiny software.

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Figure - 1 – Data collection using the search approach.

Source: Prepared by the authors (2023).

RESULTS AND DISCUSSION

Table – 1 - The description of the data

Time span - 2000: 2022	Sources - 512
Documents - 714	Annual growth rate - 19.46%
Authors - 1673	Authors of single authored documents - 197
International co – authorship 15.27%	Co – authors per document -2.53
Author's keywords(de) - 2074	References - 28467
Document average age - 4.18	Average citations per document - 7.73

Source: Prepared by the authors (2023).

During the first search, more than 2289 documents pertaining to the digital payments system were in the Scopus database; however, for greater accuracy, the data was filtered and the years 2000 to 2022 were selected from the Scopus database. Regarding document sources, there are around 512 sources. After data filtering, about 714 out of 2289 documents were retained for the research.

There is a surge in digital payments research with an annual growth rate of 19.45%. In terms of authorship, there are around 1673 writers who have investigated and written about various elements of digital payments. Moreover, international co-authorship is 15.27 percent, and the document per co-author ratio is 2.53. In addition, there are around 2074 author keywords with a total of 28467 references, an average document age of 4.18 years, and 7.773 average citations per document.

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Figure– 2 The year wise articles
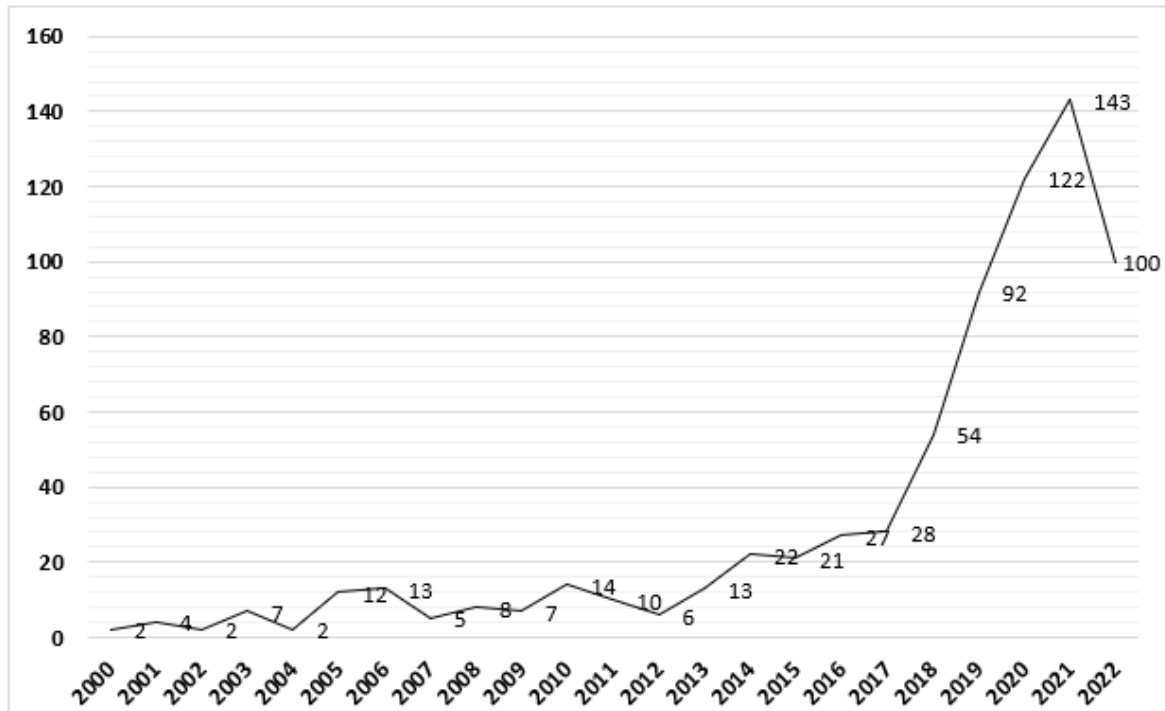
Source: Prepared by the authors (2023).

Documents from the Scopus database are shown by year. From two in 2000 to 144 in 2021 and 100 by the end of September 2022, the number of articles published on this website has progressively climbed. Throughout the last 22 years, there has been a rise in the number of publications pertaining to the study of digital payment systems, which has been well-established and thoroughly investigated. Yet, historical data indicates that the tendency is variable. Beginning in the year 2000, there were just two papers, which progressively expanded to four documents, seven documents in 2003, two less documents in 2006, and thirteen documents in 2007. In 2014, there were 13 papers; in 2015, there were 22 documents; in 2016, there were 27 documents; in 2017, there were 54 documents; in 2018, there were 92 documents; in 2019, there were 122 documents; in 2020, there were 143 documents; and in 2021 and 2022, there were 100 documents.

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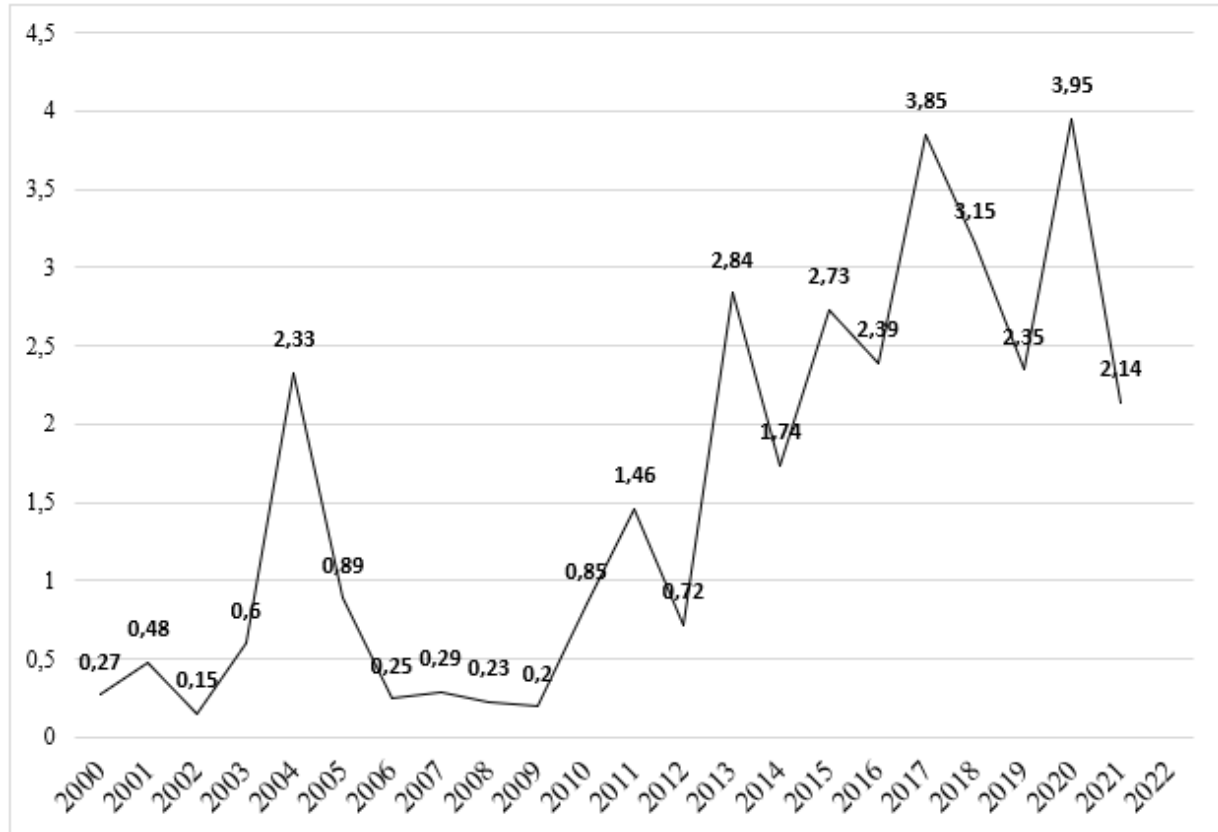
Source: Prepared by the authors (2023).

Figure – 3 – The year wise citation of articles

From 2000 through 2021, there is a rise in the overall number of citations every year. In the year 2000, the total number of citations is 0.27, followed by 0.48 in 2001, 2.33 in 2004, 0.89 in 2005, and 0.85 in 2010. From 2013 onwards, the number of total citations increases from 2.84 to 3.85 in 2017 to 3.95 in 2020 and so on.

Table – 2 -Top 10 Major Sources and Source Impact

Sources	Articles	Sources Impact	h_index
Journal of Payments Strategy and Systems	25	Electronic Commerce Research and Applications	9
Sustainability (Switzerland)	18	Sustainability (Switzerland)	6
Electronic Commerce Research and Applications	10	Electronic Commerce Research	4
Lecture Notes in Business Information Processing	10	Finance: Theory and Practice	3
International Journal of Scientific and Technology Research	8	ICBC 2019 - IEEE International Conference on Blockchain and Cryptocurrency	3
Electronic Commerce Research	7	International Journal of Information Management	3
Wirtschaftsdienst	6	International Journal of Recent Technology and Engineering	3
Finance: Theory and Practice	5	International Journal of Supply Chain Management	3

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Studies in Systems, Decision and Control	5	Investment Management and Financial Innovations	3
World Economy and International Relations	5	Journal of Payments Strategy and Systems	3

Source: Prepared by the authors (2023).

With this data, the top 10 sources of authoritative articles may be determined. Thus, we may draw the following conclusion: Journal of Payments Strategy and Systems contains 25 articles, Sustainability (Switzerland) contains 18, Electronic Commerce Research and Applications and Lecture Notes in Business Information Processing each contain 10, and the International Journal of Scientific and Technology Research contains eight. Study of Seven Elements of Electronic Commerce Finance: Theory and Practice has five articles, Studies in Systems, Decision, and Control has four, and Global Economy and International Relations has four. The information highlights the ten most important sources. Hence, the following conclusions are possible: Finance: Theory and Practice has a three-point h-index, Electronic Commerce Research and Applications has a nine-point h-index, Sustainability (Switzerland) seems to have a six-point h-index, and Electronic Commerce Research has a four-point h-index. Three is the h-index for each of the following conferences and journals: International Journal of Information Management, International Journal of Recent Technology and Engineering, International Journal of Supply Chain Management, Investment Management and Financial Innovations, and Journal of Payments Strategy and Systems.

Figure – 4 – Top 10 Major sources of articles
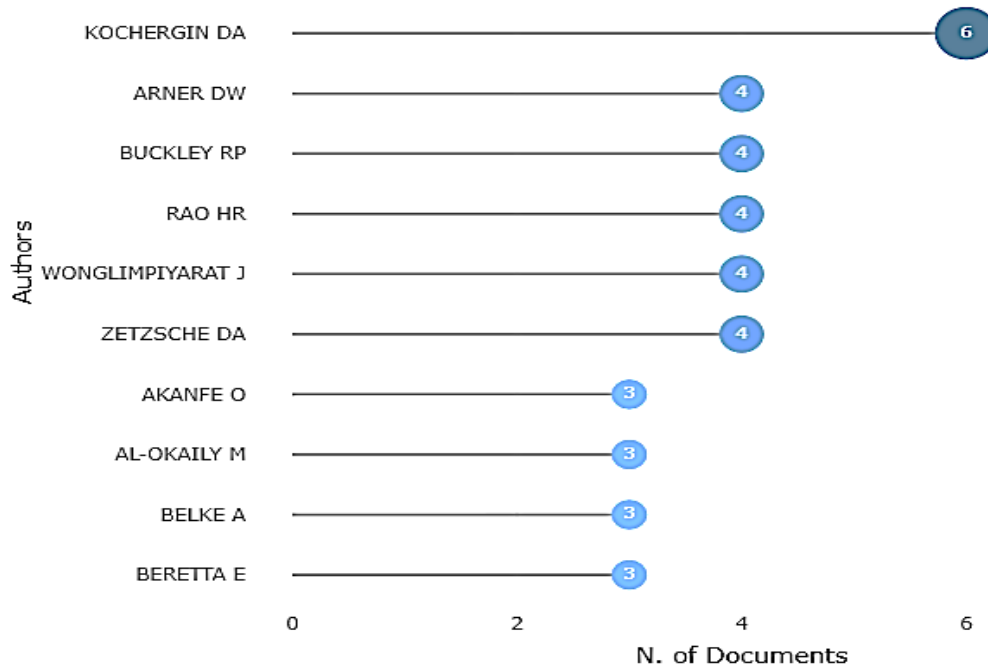

Source: Biblioshiny version 4.0

Table – 3- Top 10 Authors and author impact

Authors	Articles	Author Impact	h_index
Kochergin Da	6	Arner Dw	3
Arner Dw	4	Buckley Rp	3
Buckley Rp	4	Kochergin Da	3
Rao Hr	4	Li X	3
Wonglimpiyarat J	4	Rao Hr	3
Zetzsche Da	4	Shen H	3
Akanfe O	3	Zetzsche Da	3
Al-Okaily M	3	Abadal E	2
Belke A	3	Akanfe O	2
Beretta E	3	Al-Okaily M	2

Source: Prepared by the authors (2023).

Kochergin Da has published six works, while Arner DW, Buckley RP, Rao HR, Wonglimpiyarat J, and Zetzsche DA have each published four. Akanfe O, Al-Okaily M, Belke A, and Beretta E each contributed three points. In terms of author influence, seven out of ten writers have an h-index of three, while the other three authors have an h-index of two. In terms of author influence, Arner Dw, Buckley R, Kochergin Da, Li X, Rao Hr, Shen H, and Zetzsche Da each have three papers, whereas Abadal E, Akanfe O, and Al-Okaily M each have two.

Figure – 5 – Top 10 Authors.

Source: Biblioshiny version 4.0

Table – 4 - Top 10 Countries with total citations

Country	Frequency	Country	Total Citations
India	223	China	623
USA	195	USA	586
China	129	United Kingdom	455

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Indonesia	115	India	231
UK	94	Australia	208
Germany	73	Spain	189
Malaysia	45	Italy	133
Ukraine	45	Denmark	127
Spain	40	Brazil	119
Australia	39	Canada	108

Source: Prepared by the authors (2023).

This data reveals the following about the top 10 nations in terms of total number of published articles: Australia has 39 articles compared to Spain's 40, Malaysia's 45, the United Kingdom's 94, the United States' 195, China's 129, Indonesia's 115, the United Kingdom's 94, Germany's 73, Malaysia and the Ukraine's 45, and India's 223. This graph illustrates the top 10 nations by number of citations, allowing us to draw the following conclusion: China has 623 citations compared to 586 for the United States, 455 for the United Kingdom, 231 for India, 208 for Australia, 133 for Italy, 127 for Denmark, 119 for Brazil, and 108 for Canada. Overall, India is one of the nations where digital payments research has been widely studied and examined, with the biggest number of documents (223) and the highest number of total citations (623) belonging to China.

Table– 5- Trending topics

Item	Frequency
Electronic money	53
Electronic commerce	49
Digital storage	32
Global system for mobile communications	31
Payment systems	25
Blockchain	24
Mobile payment	22
Commerce	21
Financial system	20
Information systems	18
Finance	18
Economics	17
Authentication	15
Security of data	14
Internet	13
Peer to peer networks	13
Smart cards	12
Electronic document identification systems	12
Mobile telecommunication systems	11
Online systems	10

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Marketing	9
Bitcoin	9
Block-chain	9
On-line payment	8
Sustainability	8
Information and communication technology	8
Information technology	7
Competition	7
International trade	7
Distributed computer systems	7
Developing countries	7
Covid-19	7
Personal digital assistants	6
Mobile payment system	6
Payment transactions	6
Digital contents	6
Internet protocols	6
Communication	5
Mobile devices	5

Source: Prepared by the authors (2023).

Electronic money is studied 53 times, electronic commerce 49 times, digital storage 32 times, global system for mobile communications 31 times, payment systems 25 times, blockchain 24 times, mobile payment 22 times, commerce 21 times, financial system 20 times, information systems 18 times, finance 18 times, economics 17 times, authentication 15 times, data security 14 times, and so on. Internet and peer-to-peer networks each have 13 nodes. Electronic document identification systems and smart cards each 12 Mobile communications systems with 11 and Internet systems with 10, respectively. Marketing, Bitcoin, and Block-chain each comprise nine. Online payment, sustainability, and information and communication technology, each with eight, are ranked eighth. Technology, Competition, and international commerce Distributed computing environments, developing nations, covid-19 possesses seven, Personal digital assistants, mobile payment systems, payment transactions, digital content, and Internet protocols each received six, while communication and mobile devices received five.

Figure – 6 - Trending topics.
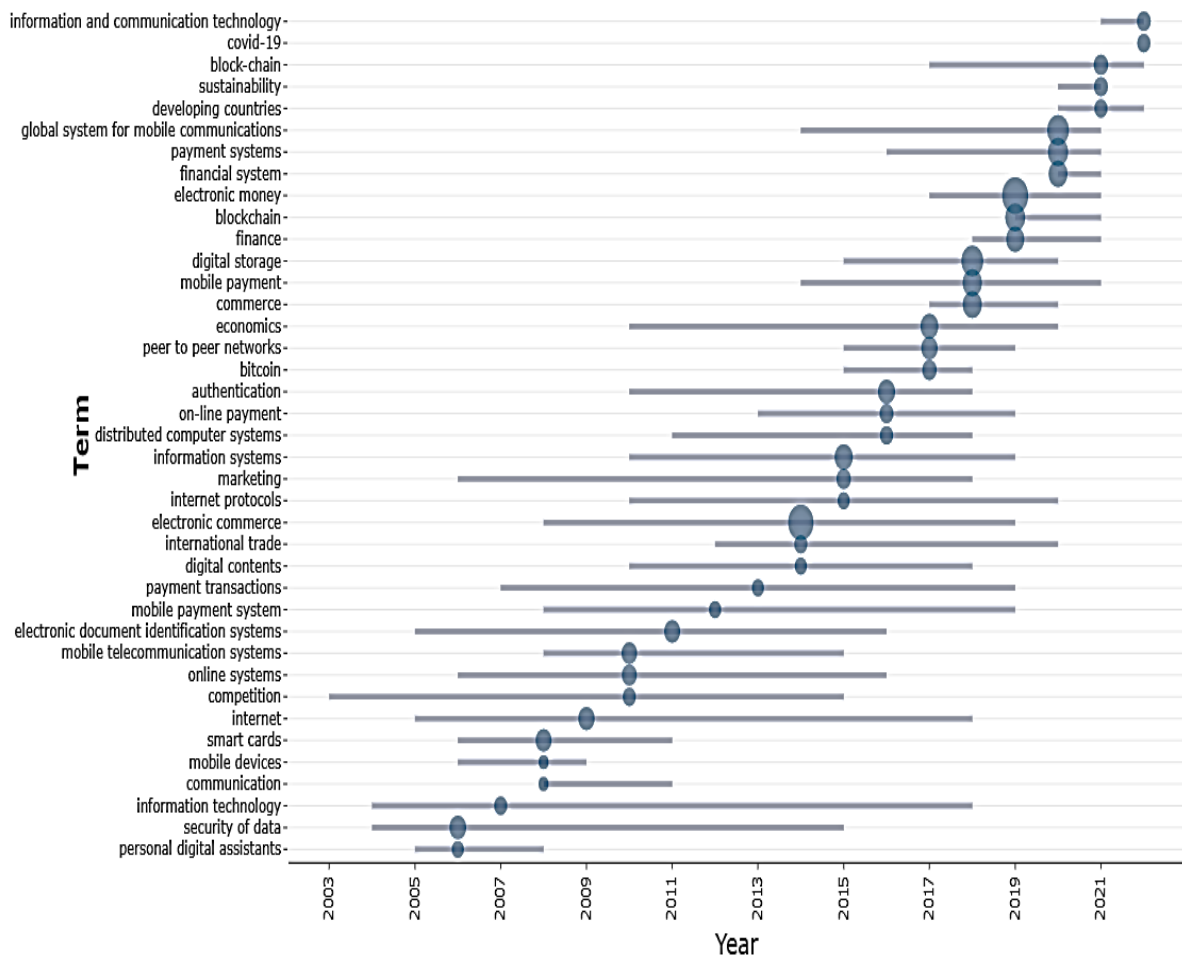
Source: Biblioshiny version 4.0

The theoretical evolution map focuses mostly on the ideas that have developed across time. The quadrant has four halves. First quadrant describes niche themes in which no themes or areas of research are present, followed by motor themes in which blockchain, block-chain, internet of things, electronic money, global themes for mobile communications, payment systems, financial system, covid-19, banking communications, sustainability, assessment method, stakeholder, economics, crowdsourcing, and operating system are some of the well-explored and researched topics. With relation to the developing decreasing quadrant, e-learning, machine learning, management, and marketing are among the topics that have received less attention. According on the statistics pertaining to fundamental topics, there seem to be no themes studied in this field.

Figure – 7 - Theoretical evolution
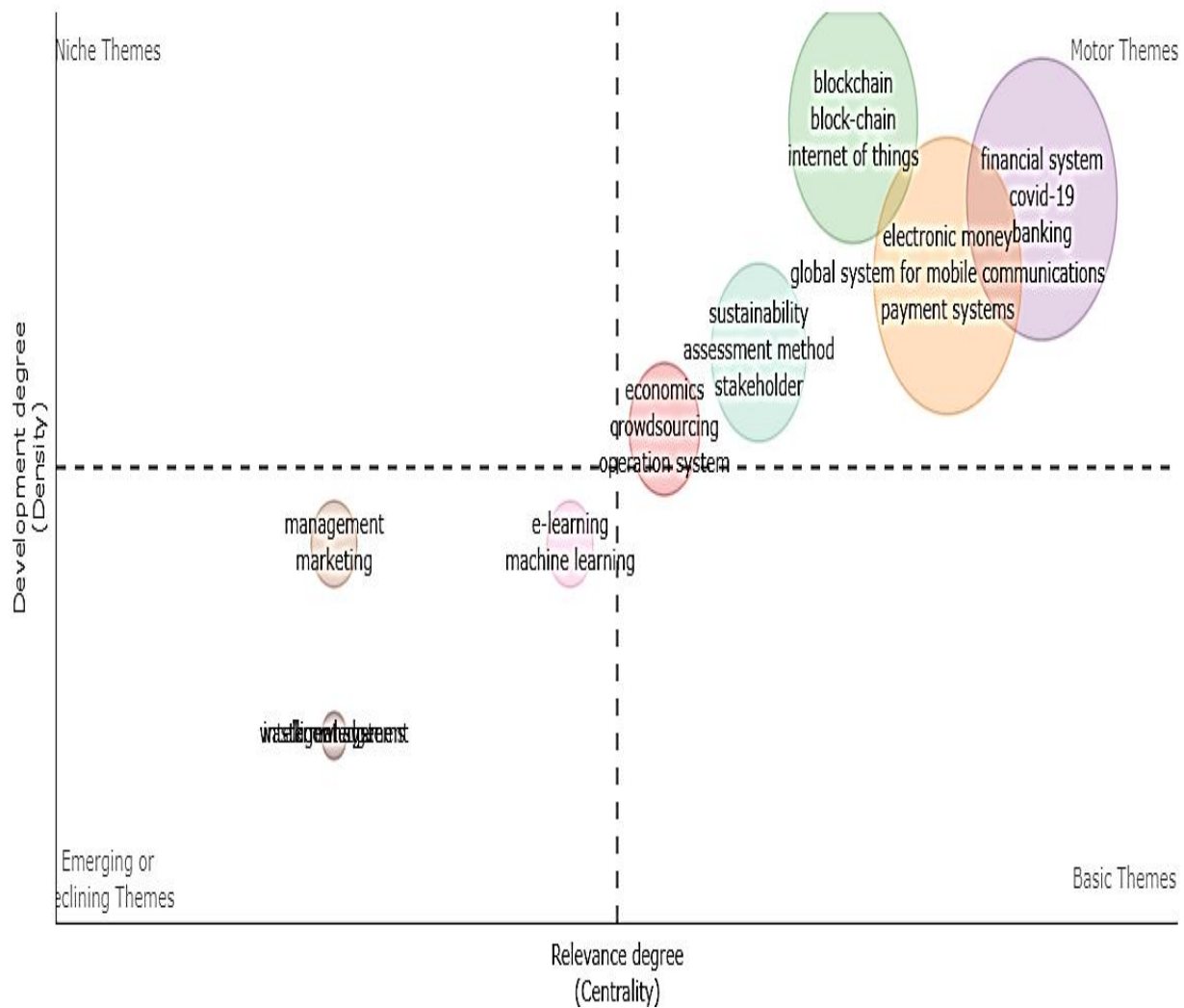
Source: Biblioshiny version 4.0

Table –6 -Major Themes Evolved

Central Themes	Digital Payments System	
	Cluster– 1	**Cluster – 2**
	Electronic money, Mobile Money	Blockchain
Key Theoretical Contributions	• (Saqib & Moon, 2023) "Agent service characteristics have a significant impact on customer empowerment. Although both service quality and agent credibility significantly impact empowerment (Rezabakhsh et al., 2006) the service agent's credibility has a more substantial impact on customer empowerment. • An empowered consumer is in a better position to use or discontinue a service. However, a sense of helplessness can lead to consumer demotivation (Füller et al., 2009) (Gu et al., 2009) • The customer engagement process is more feasible when the agent possesses	• (Rico-Peña et al., 2023) "SLR of extant research on models used to characterise blockchain performances and vulnerabilities, which have developed in a diverse theoretical and contextual setting. • The different models have been applied for the diverse blockchain-based applications and typologies, while providing information on the target parameters evaluated. • Emerging patterns in the application of models across different but interrelated research fields, in line with the suggestions by (Shams et al., 2020) The proposed classification

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	characteristics that can provide favorable customer journeys and experiences. • Agent credibility and its elements - truthfulness and reliability as essential to prioritize for managerial as well as regulatory actions. However, privacy and security seem to be the top concern of consumers (Semerikova, 2020). The low level of professionalism implies the need for some interventions (e.g., training) so as to improve the performance of the service agents."	provides valuable information on the most suitable mathematical tools for the analysis of the common performance and vulnerability issues, while structuring the information on how these issues have been previously approached depending on the typology of the host blockchain applications. • Markov chain mathematical models) are applied transversally whatever the underlying blockchain typology analysed, while some other are mostly used to evaluate specific topics (for instance Machine Learning to assess the price evolution of cryptocurrencies."
Methodology	Quantitative method	Qualitative method
Theory Used	Stimulus organism response theory.	Vulnerabilities and performance of Blockchain models.
Top five cited articles	• (Rezabakhsh et al., 2006) • (Füller et al., 2009) • (Gu et al., 2009) • (Semeraro, 2020). • (Pavlou et al., 2007)	• (Nakamoto, 2008) • (Eyal & Sirer, 2014) • (Androulaki et al., 2013) • (Ron & Shamir, 2013) • (Decker & Wattenhofer, 2013)
Central Themes	**Digital Payments System**	
	Cluster– 3	**Cluster– 4**
	Authentication, Security, Internet of Things	Covid – 19, FinTech, Mobile Banking
Key Theoretical Contributions	• (Saqib & Moon, 2023) "About the different IoT security issues. • Discusses about the various security threats and counter measures. • Attacks and countermeasures at the Perception Layer. • Attacks and countermeasures at the Application Layer. • Attacks and countermeasures at the Network Layer. • Comprehensive view of IoT Authentication Scheme. • Comparison Analysis of Different Authentication Schemes. • Network Security Assessment."	• (Tut, 2023) "Covid-19 pandemic accelerated digital onboarding and increased the adoption of FinTech (i.e., mobile banking) for payments."
Methodology	Qualitative method	Quantitative method
Theory Used	SLR method (Kitchencham, 2007)	Herfindahl–Hirschman Index (HHI).
Top five cited articles	• (V, Vidya and Pattar, 2022) • (Amoretti et al., 2021) • (Yu et al., 2021) • (Kaur & Kumar, 2021) • Rana et al., (2021)	• (Fung et al., 2020) • (Fu & Mishra, 2020) • (Ireland, C. B., 2020) • (Hopkins, A. & Sherman, M., 2020). • (Bae et al., 2003) • (Allen & Gale, 2000)

Source: Prepared by the authors (2023).

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Based on the data analysis, this table depicts how the primary topics of recent years have changed. The fundamental concepts have been divided into four distinct groups. In cluster one, the major topics are electronic money and mobile money, with the top five referenced publications being (Rezabakhsh et al., 2006), (Füller et al., 2009), (Gu et al., 2009), and (Semerikova, 2020) and (Semerikova, 2020). (Pavlou et al., 2007). In addition, significant theoretical contributions include electronic currency and mobile currency.

(Saqib & Moon, 2023) Customer empowerment is significantly influenced by agent service attributes. While both service quality and agent credibility have a considerable influence on consumer empowerment (Rezabakhsh et al., 2006), agent credibility has a greater impact. A customer with more empowerment is in a stronger position to use or terminate a service. Yet, a feeling of powerlessness might demotivate consumers (Füller et al., 2009). (Gu et al., 2009).

The process of customer interaction is more viable when the agent has qualities that enable them to create positive client journeys and experiences. Agent credibility and its components - honesty and dependability - must be prioritized for both management and regulatory activities. Yet, privacy and security seem to be customers' primary worry (Semerikova, 2020). The lack of professionalism necessitates various measures (such as training) to enhance the performance of the service agents." (Saqib & Moon, 2023) The quantitative study technique and Stimulus organism response theory were employed to conduct this research. In cluster – two, where Blockchain is the central theme and the top five cited articles are (Nakamoto, 2008); (Eyal & Sirer, 2014); (Androulaki et al., 2013); (Ron & Shamir, 2013); (Decker & Wattenhofer, 2013), the most significant theoretical contributions pertaining to blockchain are (Rico-Pea et al., 2023). "Overview of existing research on models used to characterize blockchain performances and vulnerabilities, which have emerged in a variety of theoretical and contextual contexts. The various models have been applied to the various blockchain-based applications and architectures while giving information on the assessed target parameters. Developing trends in the use of models across diverse yet interconnected study domains, consistent with the recommendations of (Shams et al., 2020) The proposed classification provides valuable information on the most appropriate mathematical tools for the analysis of common performance and vulnerability issues, while also organizing information on how these issues have been previously addressed based on the application type of the host blockchain. Markov chain mathematical models) are used regardless of the blockchain type being analyzed, while others (such as Machine Learning to assess the price development of cryptocurrencies) are primarily employed to examine certain themes. (Rico-Peña et al., 2023)

The study's approach is qualitative research, and the theory is Vulnerabilities and performance of Blockchain models.

With reference to cluster – three, where the central themes are Authentication, Security, and Internet of Things, and where the top five cited articles are (V, Vidya, and Pattar, 2022); (Amoretti et al., 2021); (Yu et al., 2021); (Kaur & Kumar, 2021); (Rana et al., 2021), the most important theoretical contributions with regard to blockchain are (V, Vidya, (Saqib & Moon, 2023) About the many IoT security risks. Covers the many dangers to security and countermeasures. Perception-layer attacks and countermeasures. Application layer attacks and countermeasures. Network-layer assaults and countermeasures. A thorough examination of IoT Authentication Scheme.

Comparative Examination of Several Authentication Methods. Network Security Evaluation Saqib & Moon, 2023) The study's technique and theory are qualitative research and the SLR method, respectively (Kitchencham, 2007). With respect to cluster – four, where the central themes are Covid – 19, FinTech, and Mobile Banking, and where the top five cited articles are (Fung et al., 2020); (Fu & Mishra, 2020); (Ireland, C. B., 2020); (Hopkins, A. & Sherman, M., 2020); (Bae et al., 2003); (Allen & Gale, 2000), the most significant theoretical contributions (Tut, 2023) "The Covid-19 epidemic boosted digital onboarding and improved FinTech (mobile banking) usage for payments." (Tut, 2023) Quantitative research methods and Herfindahl–Hirschman Index theories were used for this investigation (HHI).

Table – 7 Cluster wise classification

Cluster	Gap	Possible Research Questions
Cluster – 1 Electronic Money, Mobile Money	• (Shaikh et al., 2023) "The extent of user's involvement in the co-creation of the service could affect perceived empowerment. Higher involvement leads to focused attention in computer-mediated interactions such that highly involved consumers consider themselves experts (Bloch, 1986) (Füller et al., 2009) • The fear of agent opportunism could enhance the uncertainty and risk of the use of mobile money services and consequently affect the extent of customer empowerment. Agent opportunism significantly increases transaction uncertainty (Pavlou et al., 2007). • The popularity as well as the usage of mobile money services	• RQ1 – (Shaikh et al., 2023) "The perception of agent towards customers with reference to rural side. • RQ2 – The impact level of agent opportunism on consumer empowerment. • RQ 3 – To study whether agent opportunism could enhance the uncertainty and risk of the use of mobile money services and consequently affect the extent of customer empowerment. • RQ4 – To study the challenges faced by these agents in creating a consumer base and awareness of mobile money services in remote areas. • RQ5- To assess the impact of digitalization plans for the less privileged in remote/rural areas

Cluster	Gap	Possible Research Questions
	by financially included and excluded populations. There are gender differences when adopting and using mobile money services in Africa and elsewhere. • A female agent could emerge as a powerful tool for reaching and facilitating the female mobile money customer base and is therefore, worthy of investigation. • The motivations of the mobile money agent when providing services to the unbanked population; the challenges faced by these agents in creating a consumer base; and awareness of mobile money services in remote areas. • To assess the impact of digitalization plans for the less privileged in remote/rural areas on their usage of formal payment services such as mobile money services and on their financial inclusion."	on their usage of formal payment services such as mobile money services and on their financial inclusion. • RQ6 - How innovative services like mobile money services have helped consumers and various communities conduct financial transactions without compromising the social distancing parameters and can look into the possibility of the contactless or remote access of financial and payment services becoming the new normal. • RQ – 7 – Further longitudinal studies can be carried out in this area. • RQ – 8- Further studies can be done using samples with varied respondent demographics."
Cluster – 2 Blockchain	• (Rico-Peña et al., 2023) "The specific study of those models more suitable for blockchain typologies specifically applicable to innovative technologies (namely tree-chain), such as IoT. • Future studies focusing on several uncovered specific parameters and relevant blockchain sub domains, for instance the economic significance of transaction fees and related market structures or focusing on specific use of blockchain to current topical issues (ie. blockchain has been recently proposed in support of Covid-19 pandemic (Nandi et al., 2021 (Xu et al., 2021)"	• RQ1 – (Rico-Peña et al., 2023) "To study the suitability of blockchain typologies with reference to innovative technologies like IoT. • RQ2 – to study the economic significance of transaction fees and related market structures."
Cluster – 3 Authentication, Security, Internet of Things	• (Saqib & Moon, 2023) "Machine learning techniques, blockchain-enabled security and 6 G communications are among the opportunities. • Machine Learning Methods. • Blockchain-Enabled Security. • 6G Communications and Reconfigurable Intelligent Surfaces (RISs) for IoT."	• RQ – 1 (Saqib & Moon, 2023) "The prediction of IoT using regression-based algorithms. • RQ – 2 the application of Reinforcement learning techniques to improve resource allocation and load balancing. • RQ- 3 The usage of classification techniques like k-nearest neighbour and decision trees to solve problems such as anomaly detection for increased security.

Cluster	Gap	Possible Research Questions
		• RQ – 4 To assess the performance and security of a blockchain-enabled smart contract. • RQ – 5- The application of 6G communication and Reconfigurable Intelligent Surfaces (RISs) for IoT"
Cluster – 4- Covid – 19, FinTech, Mobile Banking	• (Tut, 2023) "The present study has been done in the context of Kenya. • Moreover, the study has focussed on the effects of the coronavirus disease 2019 (COVID-19) pandemic on financial institutions and on consumers' adoption of Financial Technology (FinTech) for payments. • The study has focussed only mobile banking platform."	• RQ – 1 (Tut, 2023) "The future studies can be done in the emerging countries with reference to payment system. • RQ – 2 The effect of payment systems can be studied using other macro – economic variables like GDP, savings, etc. • RQ – 3- Comparative studies can be done with reference to payment systems in the context of pre-covid -19 and post – covid – 19 scenarios. • RQ – 4 - To study which gender is having highest adoption rate in using payment systems. • RQ – 5 – To focus the impact of payment system on cash-based transactions. • RQ – 6 - To study the Whether digital payment systems have led to decrease in the corruption."

Source: Prepared by the authors (2023).

Table 8 primarily outlines the cluster-based categorization, research gaps, and potential research issues. Cluster 1 focuses on mobile and electronic money The lack of research in this field is (Shaikh et al., 2023) "The level of user participation in the co-creation of the service may influence the perception of empowerment. Greater participation induces focused attention in computer-mediated interactions, to the extent that highly engaged customers see themselves as experts. (Bloch, 1986) (Füller et al., 2009) Fear of agent opportunism may increase the uncertainty and risk associated with the usage of mobile money services, hence influencing the degree of client empowerment. Significantly increasing transaction uncertainty is agent opportunism (Pavlou et al., 2007). The prevalence and use of mobile money services among economically included and excluded people. In Africa and worldwide, there exist gender inequalities in the adoption and use of mobile money services. A female agent may emerge as

a potent instrument for reaching and enabling the female mobile money consumer base; consequently, she merits more examination. The objectives of the mobile money agent in delivering services to the unbanked population, the problems these agents have in building a customer base, and the awareness of mobile money services in distant locations. Assess the effect of digitization initiatives for the disadvantaged in remote/rural regions on their use of formal payment systems, such as mobile money services, and their financial inclusion." RQ1 - (Shaikh et al., 2023) "The perception of agents toward rural clients. RQ2 - The amount of agent opportunism's influence on consumer empowerment. RQ 3 – To investigate whether agent opportunism might increase the uncertainty and risk associated with the usage of mobile money services and, as a result, influence the degree to which customers are empowered. RQ4 – Examine the obstacles these agents encounter in establishing a client base and raising awareness of mobile money services in rural places. RQ5- Evaluate the effect of digitization initiatives for the disadvantaged in remote/rural regions on their use of formal payment systems, such as mobile money services, and their financial inclusion. RQ6 - How innovative services, such as mobile money services, have aided consumers and diverse communities in conducting financial transactions without compromising social distance parameters, and the possibility of contactless or remote access to financial and payment services becoming the new norm. In this area, further longitudinal research may be conducted. RQ – 8 - Further research may be conducted utilizing samples with diverse respondent demographics."

Cluster – two is concerned with Blockchain research gaps in this field: (Rico-Peña et al., 2023) "The study of those models that are more suited for blockchain typologies that are relevant to novel technologies (particularly tree-chain), such as IoT. Future research should concentrate on a number of identified specific parameters and relevant blockchain subdomains, such as the economic significance of transaction fees and related market structures, or on the specific application of blockchain to current topical issues (e.g., blockchain has recently been proposed in support of the Covid-19 pandemic (Nandi et al., 2021)). (Xu et al., 2021). RQ1 – (Rico-Peña et al., 2023) "To examine the applicability of blockchain typologies in light of emerging technologies such as IoT. RQ2 - Examine the economic importance of transaction fees and associated market structures." Cluster - three objectives on Authentication, Security, and the Internet of Things the research deficit in this domain: (Saqib & Moon, 2023) "Among the prospects are machine learning methods, blockchain-enabled security, and 6 G communications. Techniques for learning machines Security Powered by Blockchain, 6G Connectivity, and Reconfigurable Intelligent Surfaces (RISs) for IoT." RQ – 1 (Saqib & Moon,

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2023) "the prediction of the Internet of Things utilizing regression-based algorithms. RQ – 2: The use of Reinforcement Learning methods to enhance resource allocation and load balancing. RQ- 3 The use of classification methods such as k-nearest neighbor and decision trees to tackle security-related issues such as anomaly detection. RQ – 4 Evaluate the performance and security of a smart contract enabled by blockchain technology. RQ – 5: "The use of 6G connectivity and Reconfigurable Intelligent Surfaces (RISs) for IoT" Cluster – 4 focuses on the gap between Covid – 19, FinTech, and Mobile Banking. (Tut, 2023) "This research was conducted within the setting of Kenya. In addition, the research examined the implications of the coronavirus disease 2019 (COVID-19) pandemic on financial institutions and customers' use of Financial Technology (FinTech) for payments. The research was limited to mobile banking platforms." So, the study's future path will be RQ – 1 (Tut, 2023) (Tut, 2023) "Future research on payment systems may be conducted in the developing nations. RQ – 2 It is possible to examine the impact of payment systems using other macroeconomic variables such as GDP, savings, etc. RQ – 3 – Comparative studies of payment systems may be conducted in the context of pre- covid -19 and post- covid -19 situations. RQ – 4 - To determine which gender has the greatest percentage of payment system acceptance. RQ – 5 – Concentrate on the effect of the payment system on cash-based transactions. RQ – 6 – To investigate whether digital payment methods have reduced corruption. To investigate the connection between digital payment systems and financial literacy. RQ – 8- To investigate whether successful digital payments have contributed to financial inclusion.

CONCLUSION AND FUTURE DIRECTIONS

This research examines the state of digital payment systems in September 2000 and September 2022. It also provides a thorough explanation of the research's philosophical, social, and empirical foundations. This study's most significant contribution is the manner in which it summarises and emphasises previous papers on the topic. Version 4.0 of the Bibliometrix R-Package was chosen due to its adaptability and user-friendliness. Scopus provided a well-structured database with credible sources for this study's data, and it was well-integrated with the analytical tools that were employed. Regarding the primary objective, Kochergin Da, Arner DW, and Buckley RP, along with other notable authors, stand out. Research on digital payment systems is published most frequently in the Journal of Payments Strategy and Systems, Sustainability (Switzerland), and Electronic Commerce Research and Applications. Regarding the second objective, India, the United States, and China are the foremost countries in digital

payment system research. The countries with the most citations in this field are China (623), the United States (586), and the United Kingdom (455). Regarding the third objective, the primary information sources are the Journal of Payments Strategy and Systems, which contains 25 articles, the Journal of Payments Strategy and Systems, which contains 18 articles, and Electronic Commerce Research and Applications, which contains 10 articles. Electronic Commerce Research and Applications has the highest impact of the leading sources, with an h-index of nine, followed by Sustainability (Switzerland) with an h-index of six and Electronic Commerce Research with an h-index of four. The fourth objective relates to prominent topics such as electronic currency, electronic commerce, digital storage, the Global System for Mobile Communications (GSM), payment systems, blockchain, mobile payment, commerce, and the financial system. For the purpose of attaining ultimate objectives, theoretical concepts have been organised into four main clusters based on underlying themes. Cluster 1 relates to mobile and digital currencies, whereas Cluster 2 concentrates on blockchain. Cluster 3 focuses on authentication, security, and the Internet of Things, whereas Cluster 4 focuses on Covid-19, FinTech, and mobile banking. Future researchers can explore other databases such as Google Scholar, Web of Science, Dimensions, etc., as this study is restricted to the Scopus database alone. The current study is conducted using R studio biblioshiny version 4, but other software such as Vos viewer, Gephi, bib excel, etc. may be used. This study not only outlines the theoretical concepts, gaps, and potential research gaps, but also recommends that future researchers and practitioners conduct research in the areas of electronic money, mobile money, blockchain, authentication, security, and the internet of things, FinTech, and mobile banking.

REFERENCES

Abdullah and Naved Khan, M. (2021) "Determining mobile payment adoption: A systematic literature search and bibliometric analysis", *Cogent Business & Management*, Vol. *8* No.1. doi:10.1080/23311975.2021.1893245

Abdullah, N., Redzuan, F., & Aziah Daud, N. (2020). "E-wallet: Factors influencing user acceptance towards cashless society in Malaysia among public universities." *Indonesian Journal of Electrical Engineering and Computer Science*, Vol. *20 No.* 1, pp. 67-74. doi: 10.11591/ijeecs.v20.i1.

Afroze, D., & Rista, F. I. (2022). "Mobile financial services (MFS) and digital inclusion – a study on customers' retention and perceptions." *Qualitative Research in Financial Markets*, Vol. *14 No.* 5, pp. 768-785. doi: 10.1108/qrfm-06-2021-0095

Acheampong, P. *et al.* (2017) "Hybridizing an Extended Technology Readiness Index with Technology Acceptance Model (TAM) to Predict E-Payment Adoption in Ghana," *American Journal of Multidisciplinary Research*, Vol. 5 No. 2.

Allen, F., & Gale, D. (2000). "Financial contagion." *Journal of Political Economy*, Vol. *108 No.* 1, pp. 1-33. doi: 10.1086/262109

Ali, A., & Bashir, H. A. (2021). "Bibliometric study on asset pricing." *Qualitative Research in Financial Markets*, Vol. *14 No.* 3, pp. 433-460. doi: 10.1108/qrfm-07-2020-0114

Amoretti, M. *et al.* (2021) "A Scalable and Secure Publish/Subscribe-Based Framework for Industrial IoT," *IEEE Transactions on Industrial Informatics*, Vol. 17 No. 6, pp. 3815–3825. doi: 10.1109/tii.2020.3017227.

Androulaki, E. *et al.* (2013) "Evaluating User Privacy in Bitcoin," *Lecture Notes in Computer Science*, pp. 34–51. doi: 10.1007/978-3-642-39884-1_4.

Annakamu, S. P. & Mahesvari, D., (2021). "Impact Of Digital Payments On Retailers Across Tamil Nadu." *Psychology and Education Journal,* Vol. 58 No. 4, pp. 3657-3666.

Aydin, G. and Burnaz, S. (2016) "Adoption of mobile payment systems: a study on mobile wallets," *Journal of Business, Economics and Finance*, Vol. 5 No. 1, pp.73. doi: 10.17261/pressacademia.2016116555.

Bae, K., Karolyi, G. A., & Stulz, R. M. (2003). "A new approach to measuring financial contagion." *Review of Financial Studies*, Vol. *16 No.* 3, pp. 717-763. doi: 10.1093/rfs/hhg012

Baker, H. K., Kumar, S., & Pandey, N. (2020). "A bibliometric analysis of managerial finance: A retrospective." *Managerial Finance*, Vol. *46 No.* 11, pp. 1495-1517. doi: 10.1108/mf-06-2019-0277

Balakrishnan, V., & Shuib, N. L. (2021). "Drivers and inhibitors for digital payment adoption using the cashless society readinesss-adoption model in Malaysia." *Technology in Society*, Vol: *65*, pp. 101554. doi: 10.1016/j.techsoc.2021.101554

Bezhovski, Z. (2016) "The Future of the Mobile Payment as Electronic Payment System," *European Journal of Business and Management*, Vol. 8 No. 8, pp. 127–132. website; www.iiste.org/Journals/index.php/EJBM/article/download/29473/30263.

Bloch, P. H. (1986). "The product enthusiast: Implications for marketing strategy." *Journal of Consumer Marketing*, Vol. *3 No.* 3, pp. 51-62. doi: 10.1108/eb008170

Boateng, R., & Sarpong, M. Y. (2019). "A literature review of mobile payments in sub-Saharan Africa." *IFIP Advances in Information and Communication Technology*, pp.128-146. doi: 10.1007/978-3-030-20671-0_9

Bojjagani, S., Sastry, V. N., Chen, C., Kumari, S., & Khan, M. K. (2021). "Systematic survey of mobile payments, protocols, and security infrastructure." *Journal of Ambient Intelligence and Humanized Computing*, Vol. *14 No.* 1, pp. 609-654. doi: 10.1007/s12652-021-03316-4

Galande, A. and Borkar, D.S. (2021) "Digital Payment: The canvas of Indian banking financial system," *European Journal of Molecular & Clinical Medicine*, Vol. 7 No. 8, pp. 5868–5871. Website: https://ejmcm.com/article_11443_8d2decd9d558c0da134cf233fc175e9c.pdf.

COVID-19 and the financial services consumer. (2023, March 3). Capgemini. https://www.capgemini.com/insights/research-library/covid-19-and-the-financial-services-consumer-2/

Dahlberg, T., Mallat, N., Ondrus, J., & Zmijewska, A. (2008). "Past, present, and future of mobile payments research: A literature review." *Electronic Commerce Research and Applications*, Vol. *7 No.* 2, pp. 165-181. doi: 10.1016/j.elerap.2007.02.001

Decker, C. and Wattenhofer, R. (2013) "Information propagation in the Bitcoin network," *International Conference on Peer-to-Peer Computing* [Preprint]. doi: 10.1109/p2p.2013.6688704.

Dennehy, D. and Sammon, D. (2015) "Trends in mobile payments research: A literature review," *Journal of Innovation Management*, Vol. 3 No. 1, pp. 49–61. doi: 10.24840/2183-0606_003.001_0006.

Donthu, N., Kumar, S., Pandey, N., & Lim, W. M. (2021). "Research constituents, intellectual structure, and collaboration patterns in *Journal of international Marketing*: An analytical retrospective." *Journal of International Marketing*, Vol. *29 No.* 2, pp. 1-25. doi: 10.1177/1069031x211004234

Donthu, N., Kumar, S., Mukherjee, D., Pandey, N., & Lim, W. M. (2021). "How to conduct a bibliometric analysis: An overview and guidelines." *Journal of Business Research*, Vol. *133*, pp. 285-296. doi: 10.1016/j.jbusres.2021.04.070

Donthu, N., Kumar, S., Pandey, N., Pandey, N., & Mishra, A. (2021). "Mapping the electronic word-of-mouth (eWOM) research: A systematic review and bibliometric analysis." *Journal of Business Research*, Vol. *135*, pp. 758-773. doi: 10.1016/j.jbusres.2021.07.015

Eyal, I. (2017). "Blockchain technology: Transforming libertarian cryptocurrency dreams to finance and banking realities." *Computer*, Vol. *50 No.* 9, 38-49. 10.1109/mc.2017.3571042

Eyal, I., & Sirer, E. G. (2014). "Majority is not enough: Bitcoin mining is vulnerable." *Financial Cryptography and Data Security*, pp. 436-454. doi: 10.1007/978-3-662-45472-5_28

Fu, J., & Mishra, M. (2020). "The global impact of COVID-19 on Fintech adoption." *SSRN Electronic Journal*. doi: 10.2139/ssrn.3588453

Füller, J., Mühlbacher, H., Matzler, K., & Jawecki, G. (2009). "Consumer empowerment through internet-based Co-creation." *Journal of Management Information Systems*, Vol. *26 No.* 3, pp. 71-102. doi: 10.2753/mis0742-1222260303

Fung, D.W.H. *et al.* (2020) "Friend or foe: The divergent effects of FinTech on financial stability," *Emerging Markets Review*, Vol. 45, pp. 100727. doi: 10.1016/j.ememar.2020.100727.

Goriparthi, R. & Tiwari, P., (2017). "Demonetization in India an era for digital payments.". *Splint International Journal of Professionals,* Vol. 4 No. 1, p. 40.

Grover, P., Kar, A.K. and Ilavarasan, P.V. (2017) "Understanding Nature of Social Media Usage by Mobile Wallets Service Providers –An Exploration through SPIN Framework," *Procedia Computer Science*, Vol. 122, pp. 292–299. 10.1016/j.procs.2017.11.372.

Gu, J., Lee, S., & Suh, Y. (2009). "Determinants of behavioral intention to mobile banking." *Expert Systems with Applications*, Vol. *36 No.* 9, pp. 11605-11616. doi: 10.1016/j.eswa.2009.03.024

Hopkins, A. & Sherman, M., (2020). "How has the COVID-19 pandemic affected daily spending patterns?". *Central Bank of Ireland.*

Intelligence, M., (2019). *"Mobile Payments Market: Growth, Trends, and Forecast (2020 - 2025)".* s.l.:s.n.

Ireland, C. B., (2020). "The potential economic impact of COVID-19 pandemic based on baseline and severe scenarios." *In: Quarterly Bulletin,* July.Vol. 3.

Home. (n.d.). Wide Range of Digital Payment Solutions | Worldline India. https://in.worldline.com/index.php/reports-and-insights#2019

Kandoth, S., & Shekhar, S. K. (2022). Recruitment marketing - a bibliometric analysis. *International Journal of Professional Business Review*, Vol. 7 No.2, e0431. doi: 10.26668/businessreview/2022.v7i2.431

Kaul, S. D., & Awasthi, A. K. (2016). "Security enhancement of an improved remote user authentication scheme with key agreement." *Wireless Personal Communications*, Vol. *89 No.* 2, pp. 621-637. doi: 10.1007/s11277-016-3297-6

Kaur, D., & Kumar, D. (2021). "Cryptanalysis and improvement of a two-factor user authentication scheme for smart home." *Journal of Information Security and Applications*, Vol: *58*, pp. 102787. doi: 10.1016/j.jisa.2021.102787

Kitchenham, B. & Charters, S., (2007). "Guidelines for performig systematic literature reivews in software engineering".

Kent Baker, H., Pandey, N., Kumar, S., & Haldar, A. (2020). A bibliometric analysis of board diversity: Current status, development, and future research directions. *Journal of Business Research*, *108*, 232-246. doi: 10.1016/j.jbusres.2019.11.025

Kumar, N. K., & Yadav, A. S. (2022). "A systematic literature review and bibliometric analysis on mobile payments." *Vision: The Journal of Business Perspective*, 097226292211041. doi: 10.1177/09722629221104190

Kumar, S., Kamble, S., & Roy, M. H. (2019). "Twenty-five years of *Benchmarking: An International Journal (BIJ). Benchmarking: An International Journal*, Vol. *27 No.* 2, pp. 760-780. doi: 10.1108/bij-07-2019-0314

Kumar, S., Lim, W. M., Sivarajah, U., & Kaur, J. (2022). "Artificial intelligence and blockchain integration in business: Trends from a bibliometric-content analysis." *Information Systems Frontiers*. doi: 10.1007/s10796-022-10279-0

Intern. Journal of Profess. Bus. Review. | Miami, v. 8 | n. 6 | p. 01-29 | e02317 | 2023.

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Kumar, S., Madhavan, V., & Sureka, R. (2020). "The Journal of emerging market finance: A bibliometric overview (2002–2019)." *Journal of Emerging Market Finance*, Vol. *19 No.* 3, pp. 326-352. doi. 10.1177/0972652720944329

Kumar, S., Maggino, F., Mahto, R. V., Sureka, R., Alaimo, L. S., & Lim, W. M. (2021). "Social indicators research: A retrospective using bibliometric analysis." *Social Indicators Research*, Vol. *162 No.* 1, pp. 413-448. doi: 10.1007/s11205-021-02847-9

Kumar, S., Pandey, N., & Haldar, A. (2020). "Twenty years of *Public management review (PMR)*: A bibliometric overview." *Public Management Review*, Vol. *22 No.*12, pp. 1876-1896. doi: 10.1080/14719037.2020.1721122

Kumar, S., Pandey, N., & Tomar, S. (2020). "Twenty years of *Latin American business Review*: A bibliometric overview." *Latin American Business Review*, Vol. *21 No.* 2, pp. 197-222. doi: 10.1080/10978526.2020.1722683

Kumar, S., Spais, G. S., Kumar, D., & Sureka, R. (2019). "A bibliometric history of the *Journal of promotion Management* (1992–2019)." *Journal of Promotion Management*, Vol. *26 No.* 1, pp. 97-120. doi: 10.1080/10496491.2019.1685622

Lee, S. M., & Lee, D. (2019). "Untact: A new customer service strategy in the digital age." *Service Business*, Vol. *14 No.* 1, pp.1-22. doi: 10.1007/s11628-019-00408-2

Leong, L.-Y. *et al.* (2020) "Predicting mobile wallet resistance: A two-staged structural equation modeling-artificial neural network approach," *International Journal of Information Management*, Vol. 51, p. 102047 doi: 10.1016/j.ijinfomgt.2019.102047.

Lu, L. (2019). "Mobile payments—Why they are so successful?" *Open Journal of Business and Management*, Vol. *07 No.* 03, pp. 1131-1143. doi: 10.4236/ojbm.2019.73078

Mallat, N. (2007). "Exploring consumer adoption of mobile payments – A qualitative study." *The Journal of Strategic Information Systems*, Vol. *16 No.* 4, pp. 413-432. doi: 10.1016/j.jsis.2007.08.001

Mendes, J. A., Bueno, L. O., Oliveira, A. Y., & Gerolamo, M. C. (2022). Agriculture startups (AgTechs): A bibliometric study. *International Journal of Professional Business Review*, Vol. 7 No. 2, e0312. doi: 10.26668/businessreview/2022.v7i2.312

Nakamoto, S., (2008). *"Bitcoin: A Peer-To-Peer Electronic Cash System",* s.l.: s.n.

Nandi, S. S., Sarkis, J., Hervani, A. A., & Helms, M. M. (2021). Redesigning Supply Chains using Blockchain-Enabled Circular Economy and COVID-19 Experiences. *Sustainable Production and Consumption*, Vol. 27, pp. 10–22. https://doi.org/10.1016/j.spc.2020.10.019

NPCI, (2021). *"Digital payments adoption in India, 2020",* s.l.: s.n

Pattnaik, D., Kumar, S., & Vashishtha, A. (2020). "Research on trade credit – a systematic review and bibliometric analysis." *Qualitative Research in Financial Markets*, Vol. *12 No.*4, pp. 367-390. doi: 10.1108/qrfm-09-2019-0103

Intern. Journal of Profess. Bus. Review. | Miami, v. 8 | n. 6 | p. 01-29 | e02317 | 2023.

27

Pavlou, Liang, & Xue. (2007). "Understanding and mitigating uncertainty in online exchange relationships: A principal-agent perspective." *MIS Quarterly*, Vol. *31 No.* 1, pp. 105. doi: 10.2307/25148783

Porambage, P., Braeken, A., Schmitt, C., Gurtov, A., Ylianttila, M., & Stiller, B. (2015). "Group key establishment for enabling secure Multicast communication in wireless sensor networks deployed for IoT applications." *IEEE Access*, Vol. *3*, pp. 1503-1511. doi: 10.1109/access.2015.2474705

Ravi, S., & Rajasekaran, S. R. (2023). A perspective of digital marketing in rural areas: A literature review. *International Journal of Professional Business Review*, Vol. 8 No. 4, e01388. doi:10.26668/businessreview/2023.v8i4.1388

Rezabakhsh, B., Bornemann, D., Hansen, U., & Schrader, U. (2006). "Consumer power: A comparison of the old economy and the internet economy." *Journal of Consumer Policy*, Vol. *29 No.* 1, pp. 3-36. doi: 10.1007/s10603-005-3307-7

Riad Shams, S., Vrontis, D., Chaudhuri, R., Chavan, G., & Czinkota, M. R. (2020). "Stakeholder engagement for innovation management and entrepreneurial development: A meta-analysis." *Journal of Business Research*, Vol. *119,* pp. 67-86. doi: 10.1016/j.jbusres.2020.08.036

Rico-Peña, J. J., Arguedas-Sanz, R., & López-Martin, C. (2023). "Models used to characterise blockchain features. A systematic literature review and bibliometric analysis." *Technovation*, Vol. *123,* pp. 102711. doi: 10.1016/j.technovation.2023.102711

Ron, D., & Shamir, A. (2013). "Quantitative analysis of the full bitcoin transaction graph." *Financial Cryptography and Data Security*, pp. 6-24. doi: 10.1007/978-3-642-39884-1_2

Sahi, A. M., Khalid, H. & Abbas, A., (2021). "Digital payment adoption: a review (2015-2020)". *Journal of Management Information and Decision Sciences,* Vol. 24 No. 7, pp. 1 - 9.

Saqib, M., & Moon, A. H. (2023). "A systematic security assessment and review of Internet of things in the context of authentication." *Computers & Security*, Vol. *125,* pp. 103053. doi: 10.1016/j.cose.2022.103053

Sardana, V. and Singhania, S. (2018) "Digital technology in the realm of banking: A review of literature," *International Journal of Research in Finance and Management*, Vol. 1 No. 2, pp. 28–32. web: www.allfinancejournal.com/archives/2018.v1.i2.12.

Semerikova, E. (2020). "What hinders the usage of smartphone payments in Russia? Perception of technological and security barriers." *Technological Forecasting and Social Change*, Vol. *161*, pp. 120312. doi: 10.1016/j.techfore.2020.120312

Shaikh, A., Glavee-Geo, R., Karjaluoto, H. & Hinson, R., (2023). "Technological Forecasting & Social Change Mobile money as a driver of digital financial inclusion". *Technological Forecasting & Social Change,* Vol. 186, pp. 122 - 158.

Shareef, M. A., Dwivedi, Y. K., Kumar, V., & Kumar, U. (2017). "Content design of advertisement for consumer exposure: Mobile marketing through short messaging service."

International Journal of Information Management, Vol. *37 No.* 4, pp. 257-268. doi: 10.1016/j.ijinfomgt.2017.02.003

Singh, S., & Dhir, S. (2019). "Structured review using TCCM and bibliometric analysis of international cause-related marketing, social marketing, and innovation of the firm." *International Review on Public and Nonprofit Marketing*, Vol. *16* No. (2-4)*,* pp. 335-347. doi: 10.1007/s12208-019-00233-3

Singh, S. & Rana, R., (2017). "Study of consumer perception of digital payment mode". *Journal of Internet Banking and Commerce,*Vol. 22 No. 3, pp. 1 - 14.

Shailza, & Sarkar, M. P. (2019). Literature Review on Adoption of Digital Payment System. *Global Journal of Enterprise Information System*, Vol. 11 No. 3, pp. 62–67. https://www.gjeis.com/index.php/GJEIS/article/download/14/14

Shams, S.M.R. *et al.* (2020) "Stakeholder engagement for innovation management and entrepreneurial development: A meta-analysis," *Journal of Business Research*, Vol. 119, pp. 67–86. doi: 10.1016/j.jbusres.2020.08.036.

Sivathanu, B. (2019). "Adoption of digital payment systems in the era of demonetization in India." *Journal of Science and Technology Policy Management*, Vol. *10 No.* 1, pp. 143-171. doi: 10.1108/jstpm-07-2017-0033

Tut, D. (2023). "FinTech and the COVID-19 pandemic: Evidence from electronic payment systems." *Emerging Markets Review*, Vol. *54,* pp. 100999. doi: 10.1016/j.ememar.2023.100999

V, S., A, V., & Pattar, S. (2022). "MQTT based secure transport layer communication for mutual authentication in IoT network." *Global Transitions Proceedings*, Vol. *3 No.* 1, pp. 60-66. doi: 10.1016/j.gltp.2022.04.015

World payments report 2019. (2019, September 18). "Sogeti, provider of technology and engineering services." Web: www.sogeti.com/explore/reports/world-payments-report-2019/

Xu, H., Zhang, L., Onireti, O., Fang, Y., Buchanan, W. J., & Imran, M. A. (2021). "BeepTrace: Blockchain-enabled privacy-preserving contact tracing for COVID-19 pandemic and beyond." *IEEE Internet of Things Journal*, Vol .*8 No.* 5, pp. 3915-3929. doi: 10.1109/jiot.2020.3025953

Yu, S., Jho, N., & Park, Y. (2021). "Lightweight three-factor-Based privacy- Preserving authentication scheme for IoT-enabled smart homes." *IEEE Access*, Vol .*9*, pp. 126186-126197. doi: 10.1109/access.2021.3111443