

Acceptance of Innovative Cashless Payment Technologies: A Qualitative Exploration

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Abstract

Through a thorough literature assessment, this study explores the dynamic landscape of cashless payment technology innovation, tracking its characteristics and evolution from 2015 to 2023. Through a comprehensive analysis of several academic publications, business reports, and technology breakthroughs, the paper pinpoints the major patterns and advancements influencing the field of cashless payments. Additionally, the paper attempts to highlight the potential future developments in cashless payment technology, illuminating upcoming opportunities and difficulties. The research explores different dimensions of cashless payment's innovation, including user views, adoption factors, security issues, technology improvements, and legal frameworks. It does this by using qualitative analysis with NVivo software. This study provides insightful information about the complex nature of innovation in cashless payment technologies by thoroughly examining various characteristics, thereby guiding future research approaches and practical applications to this field.

Keywords: Mobile payment, NVivo, Qualitative analysis Innovation and Cashless payment

Introduction:

Innovation in cashless payment technology today refers to the development and implementation of advanced digital solutions that enable financial transactions without the use of physical currency [49]. The innovation of cashless payment tech, from credit cards to mobile wallets and cryptocurrencies, has revolutionized global transactions [29]. Enabled by internet and mobile advancements, innovations like contactless payments and blockchain have reshaped economies and consumer behaviour [1]. These technologies enhance convenience, security, and financial inclusion, driving digital transformation across industries [31]. As cashless payments continue to evolve, they promise to redefine finance, commerce, and societal interactions, ushering in a new era of digital finance [41][55].

India is embarking on a massive digital revolution, with the digitalization of its payment systems expected to be a watershed point in the transition to a paperless future economy [2]. The growth of India's digital payments sector is expected to be driven by four key trends that will shape the industry's future landscape: a nationwide push for digitalization, a supportive regulatory environment, the rise of next-generation payment service providers, and improved customer experience [16]. A cashless payment system refers to financial transactions that employ digital money rather than physical cash [27]. The RBI and the government are supporting digital payment options, such as prepaid cards, to reduce the demand for cash in the economy. The RBI's drive for additional payment and settlement methods is intended to foster a cashless society [10].

"Faceless, Paperless, Cashless" 'Digital India' is

the Government of India's flagship plan aimed at transforming India into a digitally enabled knowledge economy [26]. As India develops as a worldwide contender in new population-scale payment systems, a variety of digital payment methods have been implemented across the country, including Micro ATMs, Banking Cards, Internet Banking, UPI (Unified Payment Interface), Mobile Banking, and Mobile Wallets [24][56].

Review of Literature

Eing, T. J., & Kamsin, I. F. B. (2023) determined that the influence of urban traffic on living standards was growing as individuals placed more value on their quality of life. Problems with parking, such as lengthy payments and traffic, worsened. FinTech, IoT, and RFID advancements provided answers. These studies supported the use of these technologies in parking lots with large traffic volumes. Reputable data collection required experts in related domains. The report provided recommendations for further research as well as system outcomes [17].

Namahoot, K. S., & Jantasri, V. (2023) analyzed the relation to the adoption of cashless payment systems in Thailand. They sought to clarify the indirect connections between UTAUT and behavioral intentions (BIs). By using perceived risk and trust as mediators, they examined the five UTAUT characteristics in connection to BIs. These studies incorporated fundamental ideas of consumer behavior such as TRA, TPB, and TAM [34][42][54].

Puspitasari, A., & Salehudin, I. (2022) looked into the relationship between various factors and Indonesians' desire to use QRIS. A study of

275 respondents who had used QRIS payments showed that government support positively enhanced behavioral intention through perceived usefulness and trust. Additionally, effort anticipation, social influence, originality, perceived usefulness, and trust all had a significant impact on behavioral intention. The findings emphasized how crucial it was to have government backing for the long-term adoption of QRIS while also enhancing user experiences and building trust[46].

Rafferty, N. E., & Fajar, A. N. (2022) examined how integrated QR code payment services (QRIS) were used by Indonesian retailers. The country was moving towards cashless transactions, and by 2025, efforts were being made to integrate QR codes internationally. However, using digital payments was challenging in Indonesia due to infrastructural problems. These studies highlighted merchant compatibility, favorable conditions, trust, and relative advantages as significant motivators for MSMEs in adopting QRIS and made recommendations for banks, financial institutions, and governments to foster a cashless ecosystem [52].

Arabadzhy, K. et. al. (2021) studied the development of non-cash card payments into comprehensive payment systems, examining the current state and potential future developments in Ukraine, Poland, Sweden, Romania, and Hungary. Using a range of research techniques, such as literature review and data comparison, it examined how the dynamics of the bank card market affected the expansion of non-cash payments. EU plans served as the basis for recommendations for the growth of the Ukrainian market [4].

Firdaus, N., & Aziz, A. (2021) examined that

innovations in the digital age sought to improve the comfort, effectiveness, and enjoyment of human life. Cashless methods had shown to be dependable during the COVID-19 epidemic, which had enabled social distance. This work focused on 'Go-Payment,' an application for smart villages that aimed to encourage travel. The study focused on the needs of the village and improving visitor experiences through surveys and literary reviews [18][35].

Mettler, M. et. al. (2021) looked at a retail bank's gradual rollout of contactless debit cards between 2016 and 2018. The expiration date of current debit cards had determined the quasi-random timing of access to this technology. After implementing a pre-analysed plan, data was analysed with 30,000 clients and discovered a notable increase in the use of debit cards for minor purchases, but no discernible decline in the desire for cash in relation to overall non-recurrent spending [40].

Nada, D. Q. et. al. (2021) evaluated preliminary literature assessment was motivated by the commercial payment systems' inevitable digitalization. It examined server-based e-commerce with an emphasis on MSMEs' IT preparedness, QRIS application, and related limitations. QRIS stood for Quick Response Code Indonesian Standard. The study examined QRIS's influence on MSMEs in terms of their function, constraints, and income, highlighting the importance of standards and regulators and highlighting the advantages it offered traders [44].

Ng, D., Kauffman et. al. (2021) helped service providers and business leaders understand the elements that influenced the effectiveness of cashless payment systems at point-of-sale

scenarios. This study introduced a 3-D framework. It evaluated local digitization, the distinctiveness of payment technologies, and the nation's infrastructure. The significance of adjusting to local and national settings was highlighted by tailoring solutions to eight different country circumstances. Different countries had different implementation issues. Rich nations might have faced obstacles related to expense and habit, whereas developing nations might have been able to overcome obsolete infrastructure by using mobile payments [43].

Aminata, J., & Sjarif, G. E. (2020) studied that innovation in cashless payments sought to improve financial systems, possibly leading to a cashless society and increasing economic development without impairing the efficacy of monetary policy. This study looked into how Indonesia's economic growth and interest rates were affected by cashless transactions. The results showed that electronic money and debit cards had a considerable positive impact on interest rates and economic growth. This suggested that cashless payment systems should be continuously promoted to increase productivity and growth [6].

Agarwal, S. et. al. (2020) looked at how economic activity and the growth of new businesses were affected by the major bank in Singapore's 2017 rollout of mobile payment technology. Business-to-consumer industries saw a higher monthly growth rate of 8.9% after the introduction, especially among small businesses and those with greater cash handling costs. The switch to mobile payments reduced ATM cash withdrawals and raised customer spending power, which boosted company expansion [7].

Brown, M. et. al. (2020) examined the relationship between customer payment preferences, demand for cash, and financial innovation. It focused on the rollout of contactless debit cards (Maestro Pay Pass) by a Swiss bank between 2016 and 2018. It attempted to identify changes in cash usage and payment habits by analyzing monthly account-level data from 30,000 anonymized clients using a quasi-experimental approach based on card expiration dates [12].

Bwigenge, S. et. al. (2020) evaluated the acceptability of a cashless payment system among riders on Kigali City's public bus system. It assessed users' adoption of technology by combining the Technology Readiness Index and Acceptance models. Results showed that of the variables analyzed, awareness, discomfort, intention to adopt a cashless payment system, innovativeness, optimism, perceived ease of use, and usefulness were significant predictors of acceptance, whereas only attitude and insecurity were not significant [13].

Gupta, R. et. al. (2020) determined the motto "Faceless, Paperless, Cashless" perfectly summed up India's Digital India programme. Digital payment systems like UPI and mobile wallets hadn't been fully adopted yet. The cash to GDP ratio in 2019 was 11.4%, indicating that high cash usage was still prevalent. Age-related limitations were shown by field surveys. Shared wallets for minors and blockchain-based payment systems to improve security and dependability were some of the suggested remedies [24].

Mamudu, Z. U., & Gayovwi, G. O. (2019) examined the impact of Nigeria's cashless policy on the country's economy by using transaction values and GDP data from 2011 to

2017. Through the application of statistical tests and secondary data, it established a sustained correlation between transaction values and GDP. While NEFT, WEB, and ATM transactions had positive effects, infrastructural constraints were a problem. Investments from the government and banks were advised to increase the efficacy of cashless policies [39].

Mumtaza, Q. M. H. et. al. (2020) studied new technologies that emerged as a result of the growth of the internet, most notably mobile banking and mobile wallet systems that used mobile applications. The use of cashless systems differed across the globe despite their ease because of internal variables like security threats and external factors like national legislation. In an effort to increase system efficacy and acceptance rates, this article evaluated global online payment systems, looked at their effects and factors influencing the introduction of m-payments [41].

Olipas, C. N. P., & Esperon, R. M. (2020) determined the goal was to develop an AIDC-driven cashless payment system for a school in Nueva Ecija, Philippines. The study took a descriptive and developmental research technique, using purposive sampling, and included parents and students as participants. The system's evaluation adhered to ISO 9126 and the Incremental Model, and the results showed that respondents strongly endorsed the system's efficacy as a cashless payment option [45].

Priananda, I. et. al. (2020) studied that in Indonesia, the rise of mobile payment systems supplanted traditional transactions with online payments. Using the Technology Readiness Index (TRI) 2.0, this study assessed micro-merchants' readiness to embrace cashless

payment systems. It examined how micro-merchants' technical readiness influenced their inclination towards cashless systems, highlighting pain as a significant obstacle and optimism as a key driver [50].

Aransyah, M. F. et. al. (2019) examined that due to improvements in mobile technology, e-wallets, often referred to as digital wallets, became more and more popular worldwide. Notably, in Indonesia, e-wallets securely held customer payment information for transactions. This research applied the Innovation Resistance Theory to user-related Innovation Resistance problems in e-wallet services. It looked into hurdles such as Use, Value, Risk, Tradition, and Image, highlighting how crucial it was to meet user needs in order to improve e-wallet adoption[5].

Ferdiana, A. M. K., & Darma, G. S. (2019) studied that a qualitative study examined young people's interest in and awareness of financial technology, namely GO-PAY for cashless transactions. In-depth interviews and deliberate unintentional sampling showed that young people were generally aware of financial technologies. TAM Theory suggested that GO-PAY might see growth in the future, despite the lack of interest in it at the time. The adoption of Financial Technology was expected to be facilitated by public brainstorming sessions and other educational initiatives, which would ensure the technology's continued growth in the realm of cashless transactions[20].

Gichaba, Z. O., & Oluoch, O. (2019) saw scope in Global advances in digital and technological fields, the open entry of non-banking entities, and consumer desire for effective solutions that all contributed to the evolution of payment systems. The influence of cashless payment

technologies on cash management at Kenyan county referral hospitals was investigated in this study, with particular attention paid to credit cards, debit cards, mobile money, and electronic fund transfers. Academics, policymakers, hospital managers, and administrators of healthcare facilities were expected to gain from the findings. Analysis of secondary data from 2014 to 2018 was done using SPSS [22].

Glennow, E., & Granström, A. (2019) studied the benefits of digital payments, such as lower crime rates, cost savings, and economic growth, were driving up their use globally. An investigation of the relationship between a country's innovation and money circulation, known as a correlation analysis, indicated a relationship between the Global Innovation Index and the GDP percentage. This emphasized how technology development and economic behavior were intertwined, pointing to a positive feedback loop between innovation and the uptake of cashless systems [23].

Ilankumaran, G., & Darling Selvi, V. (2019) analysed that although cash transactions still accounted for the majority of payments in India, electronic or digital payments were becoming more and more popular. The expansion of digital payment systems was fueled by lower transaction costs, simpler mobile banking, and electronic fund transfers. This study looked at the digital payment infrastructure in India and the difficulties respondents in the Tamil Nadu town of Tirunelveli faced. The results emphasized problems related to infrastructure, awareness, and operations. Structural equation modeling indicated possible remedies, such as more government backing and internet access [28].

Jumba, J., & Wepukhulu, J. M. (2019) determined that globally, the need for cashless payment methods was growing as e-commerce expanded. Kenya had a 27% cashless consumer payment rate, although Nairobi County's supermarkets were not as adoptive as they could have been. The influence of cashless payments on supermarket financial performance was examined in this study, with particular attention paid to transaction costs, cash management, financial accessibility, and innovation. The study found that these parameters had a significant impact on financial success using linear regression on data from 147 supermarkets (2015-2017). To increase adoption and performance, it suggested making these characteristics more accessible and lowering transaction costs [30].

Rattanawalee, P., & Jantarakolica, T. (2019) studied that looked at the behavior of Chinese users of WeChat Pay and Alipay, two crucial platforms in China's quick transition to a cashless society. Interviews and a survey of 700 samples from 350 Chinese respondents were used to assess the factors influencing the adoption of e-payments utilizing TAM, TRA, and network externality. Utilizing analytical methods like Factor Analysis and Regression, the results were verified and revealed information about the degree of technical adoption between WeChat Pay and Alipay as well as the acceptance of e-payments [51].

Ya'Acob, N. et. al. (2019) compared virtual money to cash, which was vulnerable to fraud; virtual money came in the form of plastic cards or online accounts and provided protection [14]. Low Frequency (LF) RFID technology was used in this Cashless Payment Transaction

(CPaT) system to facilitate transactions at schools. Using email notifications, a MySQL database, and radio frequency identification (RFID), parents could keep an eye on their spending. PHP programming made deduction computations easier, allowing for cashless school payments and in-the-moment parent supervision [57].

Havidz, I. L. H. et. al. (2018) explained that Global ICT development was crucial since it was increasing smartphone ownership and changing the nature of business. Using the UTAUT 2 Theory, this study investigated the uptake of mobile payments among Indonesians residing in China. Along with behavioral intention to embrace WeChat mobile payment, four independent variables were examined: performance expectancy, effort expectancy, social influence, and facilitating conditions. Facilitating conditions were revealed by structural equation modeling to be a strong predictor, highlighting their crucial function [25].

Abbas, A. E. (2017) showed that research, despite the increasing acceptability of a cashless society as a solution to problems with currency usage, non-cash transactions in Indonesia only made up about 0.6% of all transactions. Indonesia was considered to be in its early stages because of the slight improvement observed in trend analysis between 2011 and 2017. To speed up this change, innovative payment methods and strong government leadership were crucial. This study highlighted how important it was to assess progress in order to understand the current state of affairs and decide what needed to be done going forward [8].

Frederick, H. (2017) analyzed that research

looked at how financial technology had advanced to enable international money transfers, which could eventually result in a single universal currency. It sought to ascertain public opinion regarding a single worldwide currency and a society that was completely cashless through polls. In order to determine people's readiness for global currency standardization, it also examined issues like privacy, globalization, and patriotism [21].

Wulandari, N. (2017) determined that technology had a big influence on the growth of tourism, especially with cashless payment methods. Governments supported cashless travel, but there was still little data on how well-liked it was by visitors. This study looked into the acceptability of cashless payments using the Technology Acceptance Model (TAM). The survey results provided insights into client responses in tourism contexts, taking into account perceived risk reducer and familiarity, as well as factors of attitude towards cashless payment [].

Bezovski, Z. (2016) determined that in addition to addressing security concerns, this study examined the global environment and prospects for mobile payments and electronic payment systems. It also analyzed the variables influencing customer acceptance. Notwithstanding reservations, the ease of mobile payments pointed to further expansion, maybe surpassing the use of credit and debit cards. Proactive steps were necessary to address recognized problems in this evolving industry to secure a promising future [11]

Misango, S. B., Njeru, P. W., & Kithae, P. (2016) analyzed that research looked at how industry pressure affected Nairobi's adoption of cashless payment systems, specifically in the Matatu

sector. It used a mixed-method technique to poll 99 managers of SACCOs who were chosen by systematic random sampling. The adoption of cashless payments was not significantly impacted by industry pressure, according to regression analysis, which did not imply that the null hypothesis was rejected [38].

Objectives of the paper

- To investigate the various dimensions of innovations in cashless payment technology
- To explore the future prospects of innovations in cashless payment technology.

Methodology

Using secondary data from a variety of sources, including websites, academic publications like Google Scholar and Springer Link, newspapers, and websites, this exploratory investigation finds important elements in cashless payment technology. Many pertinent papers from various areas and research models were found after a thorough literature search and evaluation of bibliographies. Endnote X7 was used to organise these, and NVivo 11 Plus was used to analyse the qualitative data. A total of 45 publications that looked at people's attitudes, views, and experiences with financial socialization were reviewed. Through word frequency queries, NVivo 12 Plus enabled a thorough studied of various data kinds, improving material understanding. The findings are outlined in the next section.

Findings and Discussion

For the analysis and interpretation of extant literature in context to innovation in cashless payment technology, various tools have been

used within NVivo [15].

First, the “word frequency query” (WFQ) was used. This tool tells how frequently words or key concepts appear in the literature, in an attempt to find out how many times different authors have mentioned or have talked about a specific word in their studied. For literature analysis, the WFQ was run for all internal sources to identify 100 most frequent words with a minimum length of 5. Results are summarized in a tabular form as follows:

Table 1 Most frequent words (Top 30 words)

Word	Length	Count	Weighted Percentage (%)
Payment	7	4389	1.12
Mobile	6	2310	0.59
Cashless	8	2163	0.55
Technology	10	1964	0.50
Payments	8	1838	0.47
Money	5	1395	0.36
System	6	1395	0.36
Research	8	1188	0.30
Transactions	12	1187	0.30
Studied	5	1132	0.29
Business	8	1044	0.27
Credit	6	1039	0.26
Cards	5	1023	0.26
Banking	7	1012	0.26
Innovation	10	1003	0.26
Digital	7	983	0.25
Services	8	920	0.23
Value	5	886	0.23
Journal	7	856	0.22
Adoption	8	832	0.21
Financial	9	824	0.21
Using	5	801	0.20
Management	10	771	0.20
Model	5	736	0.19
Table	5	736	0.19
Electronic	10	733	0.19
Consumers	9	703	0.18
Based	5	697	0.18
Information	11	693	0.18
Economic	8	676	0.17

For convenience the above table shows only 30 most frequent words and the number of times they have appeared in literature. This gives an idea of what most authors are talking about in terms of the keywords, thereby, highlighting the importance of words like value, consumers, payment, services, technology and so on.

These words can also be seen in a visual form through ‘word cloud’.

a. Word cloud

Figure 1 : Word Cloud (top 1000 words)



Figure 2 : Word Cloud (top 30 words)

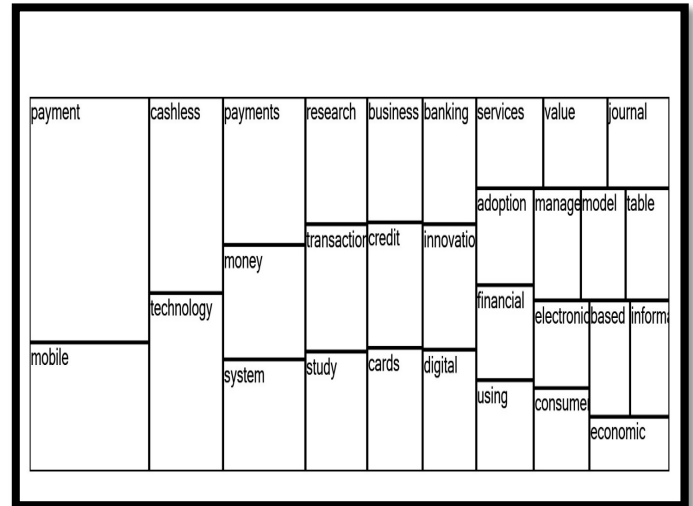


b. Tree map

The type innovation in cashless payment technology - An exploratory studied of hierarchy chart shown below is called a 'tree map'. It visualizes coding for multiple articles and authors in the literature and clearly shows which topics are more and which are less important. This tree map indicates according to

the box size that 'payment' is the most prominent term followed by 'mobile', 'cashless', 'technology' and so on.

Figure 3: Tree Map (top 30 words)



c. Cluster map

“Cluster analysis” function was performed. It’s an exploratory tool used for visualizing patterns in data analysis by graphically grouping nodes or sources that appear similar on any characteristics such as words, attributes values etc. Its results are shown below in form of a ‘cluster map’ based on coding similarities using jaccard’s coefficient. This map depicts that the nodes which are appearing together are more similar as compared to those which are far apart. In Figure 4a,4b & 4c, ‘online’, ‘services’, ‘factors’, ‘mobile’ and ‘payment’ are closely related, whereas ‘transactions’, ‘intention’, ‘consumer’, ‘adoption’ are not related identically or similarly.

Figure 4a: Cluster Analysis Chart (top 30 words)

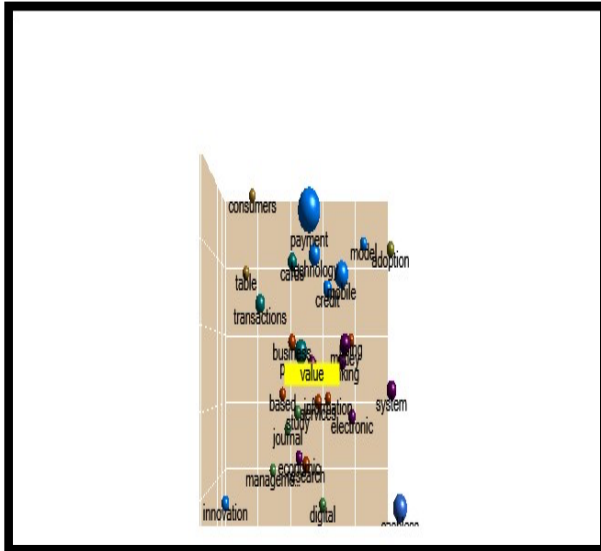


Figure 4b: Cluster Analysis Chart (top 30 words)

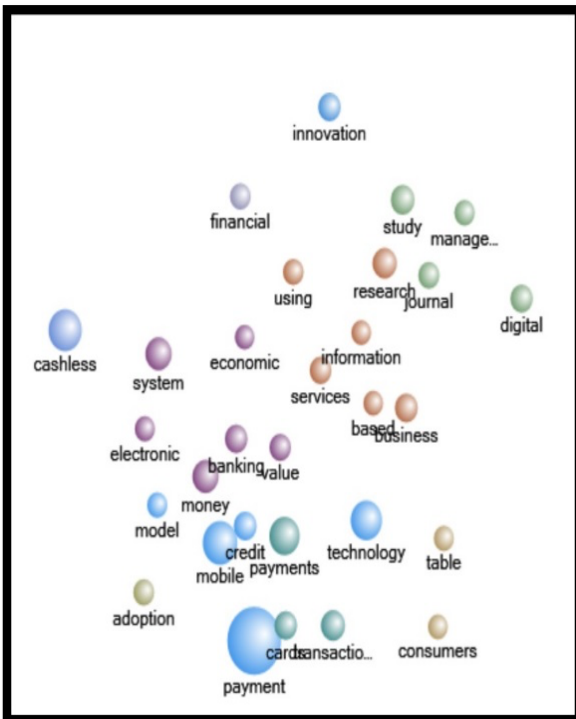


Figure 4c: Cluster Analysis Chart (top 30 words)

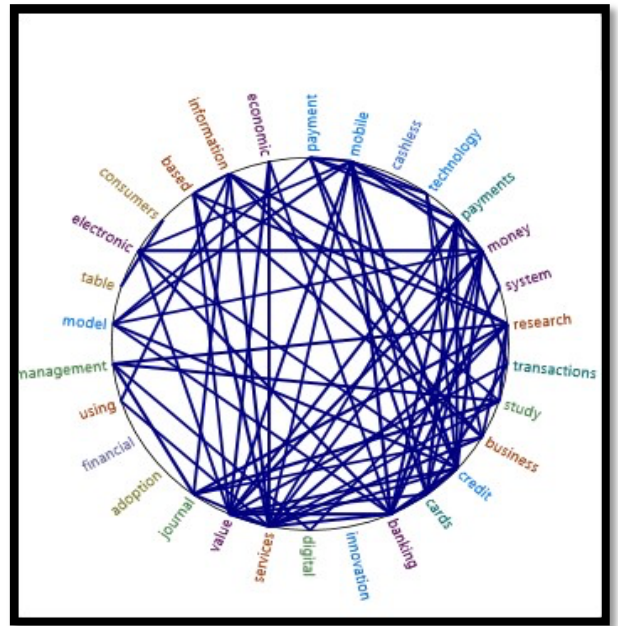


Figure 5: Word tree

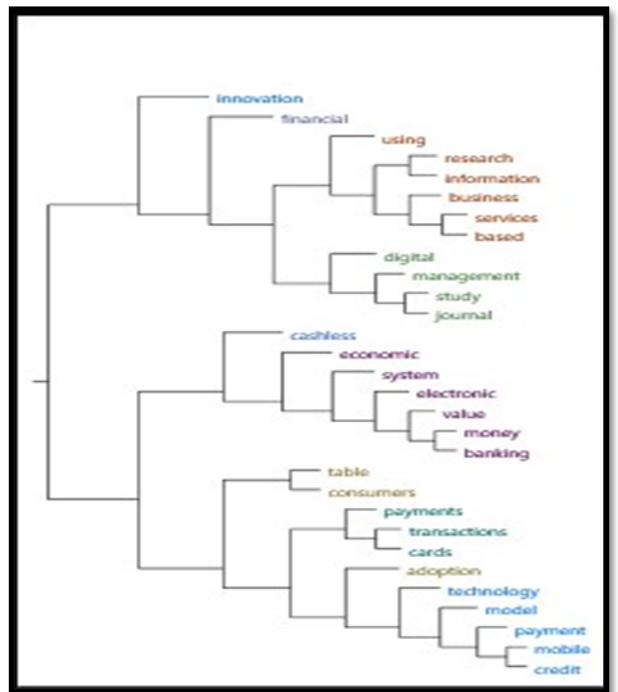


Figure 5 shows what different authors are saying or writing frequently about innovations, financial, research, digital, cashless, economic, consumers, transactions and payment.

Future Prospects

- a) **Enhanced Security Measures:** Use of biometrics (fingerprint, facial recognition) to authenticate payments. Blockchain technology to ensure secure and transparent transactions. Advanced encryption and fraud detection algorithms [14].
- b) **Integration with Internet of Things (IoT):** Smart devices and wearables (e.g., smartwatches, rings) enabling seamless payments. Connected cars facilitating in-car payments for fuel, tolls, and parking [33].
- c) **Artificial Intelligence and Machine Learning:** Personalized financial services and spending insights [58]. Improved fraud detection through behavioural analysis and anomaly detection [32].
- d) **Contactless Payments Expansion:** Wider adoption of NFC (Near Field Communication) and QR code payments. Growth in the use of mobile wallets like Apple Pay, Google Wallet, and Samsung Pay.
- e) **Cryptocurrencies and Digital Currencies:** Central Bank Digital Currencies (CBDCs) gaining traction as a form of national currency. Wider acceptance and integration of cryptocurrencies in mainstream

transactions [9].

- f) **Global Payment Networks and Interoperability:** Cross-border payment systems becoming faster and more cost-effective. Enhanced interoperability between different payment platforms and networks.
- g) **Voice-Activated Payments:** Integration of voice assistants (e.g., Amazon Alexa, Google Assistant) for hands-free payments. Improved natural language processing for secure and efficient transactions.
- h) **Augmented Reality (AR) and Virtual Reality (VR):** AR and VR environments incorporating payment systems for immersive shopping experiences [37]. Virtual stores and marketplaces offering seamless in-app purchases[36].
- i) **Decentralized Finance (DeFi):** Growth of DeFi platforms offering peer-to-peer payment solutions without traditional intermediaries [53]. Smart contracts automating and securing transactions.
- j) **Sustainable and Inclusive Payment Solutions:** Development of eco-friendly payment technologies reducing carbon footprint [16]. Solutions aimed at financial inclusion, providing access to banking for the unbanked population.

Conclusion

The evolution of cashless payment technology has revolutionized the way transactions occur globally, reshaping economies, businesses, and consumer behaviour. As we stand at the

intersection of innovation and convenience, it's evident that cashless payment systems have transcended mere transactions to become a cornerstone of modern finance. Firstly, the proliferation of cashless payment options has fostered financial inclusion by providing access to banking services for previously underserved populations [19]. With the rise of mobile banking and digital wallets, individuals lacking traditional banking infrastructure can now participate in the formal economy, empowering them economically and socially. Moreover, the continuous innovation in cashless payment technology has significantly enhanced security measures, mitigating risks associated with fraud and theft. Advanced encryption algorithms, biometric authentication, and tokenization have bolstered the security of digital transactions, instilling trust among consumers and businesses alike [3].

Furthermore, the integration of cashless payment solutions into various sectors has streamlined processes, driving efficiency and productivity gains. From retail and e-commerce to transportation and healthcare, the seamless nature of cashless transactions has simplified payment experiences, reduced friction and enhancing customer satisfaction. Additionally, the data generated through cashless transactions has become a valuable resource for businesses, enabling personalized marketing strategies and data-driven decision-making. By leveraging insights derived from consumer spending patterns, businesses can tailor their

offerings to meet evolving customer preferences, fostering loyalty and driving growth. Looking ahead, the trajectory of innovation in cashless payment technology is poised to continue, fuelled by advancements in artificial intelligence, blockchain, and Internet of Things (IoT) technologies. From contactless payments and peer-to-peer transfers to the emergence of digital currencies and decentralized finance (DeFi), the landscape of cashless payments will continue to evolve, shaping the future of commerce and finance [48].

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References

1. Anandan K. An Empirical Study on Factors Influencing Consumer Adoption of Cashless Payment in Bengaluru. *Asian Journal of Organic & Medicinal Chemistry*. 2022 Apr.
2. Adam BM, Besari AR, Bachtiar MM. Backend server system design based on rest api for cashless payment system on retail community. In 2019 International Electronics Symposium (IES) 2019 Sep 27 (pp. 208-213). IEEE.
3. Angel GA. Limits to Cashless Payments and the Persistence of Cash. *Hypotheses*

- About Mexico. The Book of Payments: Historical and Contemporary Views on the Cashless Society. 2016:117-29.
4. Arabadzhy K, Zharnikova V, Sobolieva-Tereshchenko O. Transformation of cashless payments in the European payment card market. *Management and Entrepreneurship: Trends of Development*. 2021 Mar 20;1(15):8-23.
 5. Aransyah MF, Roy J, Aprianti Y. Innovation resistance and perceive novelty on e-wallet services. In *MICEB: Mulawarman International Conference on Economics and Business 2019* (Vol. 2, No. 1, pp. 115-122).
 6. Aminata J, Sjarif GE. Towards a cashless society in indonesia: The impact on economic growth and interest rate. *Indonesian Journal of Economics, Entrepreneurship, and Innovation*. 2020;1(2):62-8.
 7. Agarwal S, Qian W, Ren Y, Tsai HT, Yeung BY. The real impact of FinTech: Evidence from mobile payment technology. Available at SSRN 3556340. 2020 Mar 18.
 8. Abbas AE. Literature review of a cashless society in Indonesia: evaluating the progress. *International Journal of Innovation, Management and Technology*. 2017 Jun;8(3):193-6.
 9. Al-Amri R, Zakaria NH, Habbal A, Hassan S. Cryptocurrency adoption: current stage, opportunities, and open challenges. *International journal of advanced computer research*. 2019 Sep 1;9(44):293-307.
 10. Agrawal S, Badrinarayanan S, Mohassel P, Mukherjee P, Patranabis S. BETA: biometric-enabled threshold authentication. In *IACR International Conference on Public-Key Cryptography 2021* May 1 (pp. 290-318). Cham: Springer International Publishing.
 11. Bezovski Z. The future of the mobile payment as electronic payment system. *European Journal of Business and Management*. 2016 Mar 31;8(8):127-32.
 12. Brown M, Hentschel N, Mettler H, Stix H. Financial innovation, payment choice and cash demand—causal evidence from the staggered introduction of contactless debit cards. Working Paper; 2020.
 13. Bwigenge S, Sensuse DI, Suryono RR. Passengers Acceptance of Cashless Payment System for Public Bus Transportation System in Kigali City (Rwanda). In *2020 International Conference on Advanced Computer Science and Information Systems (ICACISIS) 2020* Oct 17 (pp. 341-350). IEEE.
 14. Chatterjee P, Das D, Rawat DB. Digital twin for credit card fraud detection: Opportunities, challenges, and fraud detection advancements. *Future Generation Computer Systems*. 2024 Apr 30.
 15. Dhakal K. NVivo. *Journal of the Medical Library Association: JMLA*. 2022 Apr 4;110(2):270.
 16. Erdoğan S, Gedikli A, Cevik EI, Erdoğan F. Eco-friendly technologies,

- international tourism and carbon emissions: Evidence from the most visited countries. *Technological Forecasting and Social Change*. 2022 Jul 1;180:121705.
17. Eing TJ, Kamsin IF. Touchless Parking Payment System Using RFID Technology Integrated FinTech Payment Solutions. *Journal of Applied Technology and Innovation* (e-ISSN: 2600-7304). 2023;7(3):46.
18. Firdaus N, Aziz A. Go-Payment: towards cashless payment system for smart village application in Indonesia. In 2021 3rd International conference on cybernetics and intelligent system (ICORIS) 2021 Oct 25 (pp. 1-6). IEEE.
19. Fedyshyn MF, Abramova AS, Zhavoronok AV, Marych MG. Management of competitiveness of the banking services. *Financial and credit activity problems of theory and practice*. 2019 Mar 29;1(28):64-74.
20. Ferdiana AM, Darma GS. Understanding Fintech Through Go-Pay. *International Journal of Innovative Science and Research Technology*. 2019;4(2):257-60..
21. Frederick H. *Technology in Money: How Innovations in Technology are Moving the World Towards a Global Currency* (Doctoral dissertation, Appalachian State University).
22. Gichaba ZO, Oluoch O. Effect of Cashless Payment Systems on Cash Management of County Referral Hospitals in Kenya. *Journal of International Business, Innovation and Strategic Management*. 2019 Jul 25;3(2):81-100.
23. Glenow E, Granström A. Cashless society: Is there a relationship between innovation and cash circulation in economy?.
24. Gupta R, Kapoor C, Yadav J. Acceptance towards digital payments and improvements in cashless payment ecosystem. In 2020 International Conference for Emerging Technology (INCET) 2020 Jun 5 (pp. 1-9). IEEE.
25. Havidz IL, Aima MH, Wiratih HW. Determinants of intention to recommend WeChat mobile payment innovation in china to be implemented in Indonesia. *Int. J. Adv. Eng. Res. Sci*. 2018;5(7):297-310.
26. Hajazi MA, Chan SS, Ya'kob SA, Siali F, Latip HA. Usage intention of QR mobile payment system among millennials in Malaysia. *International Journal of Academic Research in Business and Social Sciences*. 2021 Jan;11(1):645-61.
27. Havidz IL, Aima HM, Ali H, Iqbal MK. Intention to adopt WeChat mobile payment innovation toward Indonesia citizenship based in China. *International Journal of Application or Innovation in Engineering & Management*. 2018;7(6):105-17.
28. Ilankumaran G, Darling Selvi V. Customer purview of cashless payment system in the digital economy of India. *Int. J. Innov. Technol. Explor. Eng*. 2019 Jun;8:87-93.
29. Jaiswal D, Mohan A, Deshmukh AK.

- Cash rich to cashless market: Segmentation and profiling of Fintech-led-Mobile payment users. *Technological Forecasting and Social Change*. 2023 Aug 1;193:122627.
30. Jumba J, Wepukhulu JM. Effect of cashless payments on the financial Performance of supermarkets in Nairobi County, Kenya. *International Journal of Academic Research Business and Social Sciences*. 2019 Mar;9(3):1372-97.
31. Kilay AL, Simamora BH, Putra DP. The influence of e-payment and e-commerce services on supply chain performance: Implications of open innovation and solutions for the digitalization of micro, small, and medium enterprises (MSMEs) in Indonesia. *Journal of Open Innovation: Technology, Market, and Complexity*. 2022 Sep 1;8(3):119.
32. Karim F, Yusoff WS, Ismail MN, Mazlan A, Ghani NI, Muhammad N. A cashless society: Understanding adoption of new technology. In *AIP Conference Proceedings 2021 May 3 (Vol. 2339, No. 1)*. AIP Publishing.
33. Kartika H, Fatimah YA, Supangkat SH. Secure cashless payment governance in indonesia: A systematic literature review. In *2018 International Conference on ICT for Smart Society (ICISS) 2018 Oct 10 (pp. 1-4)*. IEEE.
34. Lew MM, Atan SA. Applying technology acceptance model towards cashless payment usage among consumers in Kulai, Johor. *Research in Management of Technology and Business*. 2021 Jun 11;2(1):349-60.
35. Lu MP, Kosim Z. An empirical study to explore the influence of the COVID-19 crisis on consumers' behaviour towards cashless payment in Malaysia. *Journal of Financial Services Marketing*. 2024 Mar;29(1):33-44.
36. Maixé-Altés JC. From teleprocessing to cashless payment technologies: "La Caixa" 1960–2015. *The Book of Payments: Historical and Contemporary Views on the Cashless Society*. 2016:107-16.
37. Moorhouse N, tom Dieck MC, Jung T. Technological innovations transforming the consumer retail experience: a review of literature. *Augmented Reality and Virtual Reality: Empowering Human, Place and Business*. 2018:133-43.
38. Misango SB, Njeru PW, Kithae P. Analysis of industry pressure on the adoption of cashless payment system among passenger service vehicles in Nairobi city county, Kenya.
39. Mamudu ZU, Gayovwi GO. Cashless policy and its impact on the Nigerian economy. *International Journal of Education and Research*. 2019;7(3):111-32.
40. Mettler MB, Stix H. *Financial Innovation, Payment Choice and Cash Demand*–.
41. Mumtaza QM, Nabillah SI, Amaliya S, Rosabella Y, Hammad JA. Worldwide mobile wallet: a futuristic cashless system. *Bulletin of Social Informatics Theory and Application*. 2020 Sep 15;4(2):70-5.

42. Namahoot KS, Jantasri V. Integration of UTAUT model in Thailand cashless payment system adoption: the mediating role of perceived risk and trust. *Journal of Science and Technology Policy Management*. 2023 Jun 1;14(4):634-58.
43. Ng D, Kauffman RJ, Griffin P, Hedman J. Can we classify cashless payment solution implementations at the country level?. *Electronic commerce research and applications*. 2021 Mar 1;46:101018.
44. Nada DQ, Suryaningsum S, Negara HK. Digitalization of the quick response Indonesian standard (QRIS) payment system for MSME development. *InJournal of International Conference Proceedings 2021 Dec 28 (Vol. 4, No. 3, pp. 551-558)*.
45. Olipas CN, Esperon RM. The Design and Development of a Cashless Payment System with an Automatic Identification and Data Collection (AIDC) Technology. *Online Submission*. 2020 Mar;9(3):6718-23.
46. Puspitasari A, Salehudin I. Quick Response Indonesian Standard (QRIS): Does Government Support Contribute to Cashless Payment System Long-term Adoption?. *Journal of Marketing Innovation (JMI)*. 2022 Mar 20;1(2):27-41.
47. Padmawidjaja L, Sutrisno TF, Setiani N. Student preference towards ovo as a cashless payment facility (Study at students of faculty of business in Surabaya City). *Jurnal Aplikasi Manajemen*. 2020 Aug 29;18(3):548-54.
48. Pelagidis T, Kostika E. Investigating the role of central banks in the interconnection between financial markets and cryptoassets. *Journal of Industrial and Business Economics*. 2022 Sep;49(3):481-507.
49. Pazarbasioglu C, Mora AG, Uttamchandani M, Natarajan H, Feyen E, Saal M. Digital financial services. *World Bank*. 2020 Apr;54.
50. Priyananda I, Stevani M, Sutanto TI, Mariani M. Grassroots economy towards cashless society: An empirical analysis of micro-merchant's readiness in continuing the usage of cashless payment system. *International Journal of Scientific & Technology Research*. 2020 Mar;9(3):929-8.
51. Rattanawalee P, Jantarakolica T. Financial innovation: modern method of payment in China. *Thammasat University*. <https://search.ebscohost.com/login.aspx>. 2019.
52. Rafferty NE, Fajar AN. Integrated QR payment system (QRIS): cashless payment solution in developing country from merchant perspective. *Asia Pacific Journal of Information Systems*. 2022 Sep;32(3):630-55.
53. Scharfman J, Scharfman J. Decentralized finance (DeFi) compliance and operations. *Cryptocurrency Compliance and Operations: Digital Assets, Blockchain and DeFi*. 2022:171-86..
54. Sudirjo F, Bakri AA, Ismail A, Haes PE, Hakim S. Level of Acceptance and Use Measurement of Electronic Money Technology Using UTAUT Model.

Jurnal Sistim Informasi Dan Teknologi.
2023 Aug 1:11-6.

55. Wulandari N. Cashless payment in tourism. An application of technology acceptance model. Journal of Environmental Management & Tourism. 2017:1550-3.
56. Wang MX, Chua C, Ho HR, Mohd Johan MR, Annuar N. Assessing resistance towards the adoption of cashless payment: a survey among Generation X in Klang Valley/Mary Wang Xie Ling...[et al.]. Jurnal Intelek. 2023;18(2):163-78.
57. Ya'Acob N, Yusoff A, Sarnin SS, Ali DM, Naim NF, Kassim M, Azni NA. A cashless payment transaction (CPaT) using RFID technology. Indones. J. Electr. Eng. Comput. Sci. 2019 Oct.
58. Yun W, Hanson N. Weathering consumer pricing sensitivity: The importance of customer contact and personalized services in the financial services industry. Journal of Retailing and Consumer Services. 2020 Jul 1;55:102085.