Digital Payment Adoption: Review of Literature

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Abstract

This study tries to explore the previous literature retrieved from Scopus databases regarding the factors that affect the adoption of digital payments. We screen the papers following PRISMA method. Following a systematic literature review method, a final sample of 64 research articles was identified and analyzed. The publication year of the articles are ranging from 2014 to 2022. The method that is most widely used is a quantitative method with the method of collecting data using a survey or questionnaire. We use NVIVO 12 Plus to analyze the data. The most widely used theories in adopting digital payments are TAM and UTAUT. Security is the most often factor that is used in digital payment adoption. Digital payments have merits as well as drawbacks, but still, the benefits are outnumbering the barriers. Digital payments provide convenience to all generations from younger users like gen z and millennials to older generations including x generations and baby boomers. Future research can focus on the security of digital payments and consider the impact of technological advances on adopting digital payment.

Keywords
Digital Payment, TAM, UTAUT, adoption, security.

1. Introduction
Digital payments are flourishing in our developing world, and they can support financial inclusion (Ligon et al. 2019). Financial inclusion can be defined as the proportion of people who can access financial services (Naumenkova, Mishchenko, and Dorofeiev 2019; Lutfi et al. 2021). Financial inclusion can enhance financial stability, develop the economy, reduce unemployment rates, enhance financial access, reduce financial illicit activities and decrease the poverty level (Lutfi et al. 2021). Digital payment has significantly changed customers' behaviors (Jiaxin Zhang, Luximon, and Song 2019). Forms of digital payments can be varied from mobile banking, debit/credit cards, e-wallets, internet banking, ATMs, QR code, Real Time Gross Settlement (RTGS), Near-Field-Communication (NFC), PoS, and other online payment applications. (Simatele and Mbedzi 2021; Das and Mahapatra 2019; Chaveesuk, Khalid, and Chaiyasoonthorn 2021a; Johari et al. 2021; Khan 2021; Omarini 2018). However, the adoption rate of digital payments in some countries remains low, although the government has already promoted it (Ligon et al. 2019; Chaveesuk, Khalid, and Chaiyasoonthorn 2021a; Lutfi et al. 2021). Government plays important role in digital payments adoption, on the one hand, the government can support by giving numerous digital initiatives (Saxena and Joshi 2019), but on the other hand government policies can be a barrier to adopting digital payment, including taxes on digital payment, high agency fees, and structural rigidities (Seethamraju and Diatha 2018; Simatele and Mbedzi 2021).

Digital payments can provide benefits for companies and customers vis-à-vis flexibility, efficiency, mobility, and convenience (Sahi et al. 2021; Chaveesuk, Khalid, and Chaiyasoonthorn 2021a), but security becomes an important thing in adopting digital payments. Risk and cost were important inhibitors in adopting digital payments (Ligon et al. 2019; Lutfi et al. 2021; Seethamraju and Diatha 2018).

1.1 Objectives
The objective of this research is to explore the factors that affect the adoption of digital payments.

2. Literature Review

Numerous Theories or Models that are commonly used in Digital Payment Adoption are as follows (Ariffin, Ahmad, and Haneef 2020; Santosa et al. 2021) :

1. Technology Acceptance Model (TAM) is mentioned in 14 documents
2. Unified Theory of Acceptance and Use of Technology (UTAUT) is mentioned in 9 documents
3. Innovation Diffusion Theory (IDT) is mentioned in 2 documents
4. The theory of reasoned action (TRA) is mentioned in 6 documents
5. The theory of planned behavior (TPB) is mentioned in 5 documents
6. The motivational model (MM) is mentioned in 3 documents
7. The model of PC utilization (MPCU) is mentioned in 3 documents
8. Social cognitive theory (SCT) is mentioned in 4 documents

The most widely used theory regarding the adoption of digital payments is TAM and UTAUT.

2.1 Technology Acceptance Model (TAM)

Technology Acceptance Model (TAM) was originally proposed by Davis in 1989, as an IT acceptance theory. TAM investigates user intention toward information technology (IT). There are four main steps in TAM Model : (1) examines the effect of external factors on Perceived Usefulness (PU) and Perceived Ease of Use (PEoU) of IT. (2) When the PU and PEU affect the user's Attitude Towards Using (ATU) a particular system. (3) PU and ATU determine the usage intention. (4) final decision to accept or reject the use of technology (Lutfi et al. 2021).

2.2 Unified Theory of Acceptance and Use of Technology (UTAUT)

UTAUT clarify intentions to accept and use information system and technology. Four constructs to justify acceptance of technology adoption are effort expectancy (equivalent to perceived ease of use), performance expectancy (equivalent to perceived usefulness), social influence, and facilitating conditions (Dillon and Morris 1996). UTAUT2, a continuing version of UTAUT, integrates three additional constructs; price value, hedonic motivation, and habit (Venkatesh, Thong, and Xin Xu 2012).

3. Methods

This study reviews the literature which is taken following PRISMA method (Figure 1).

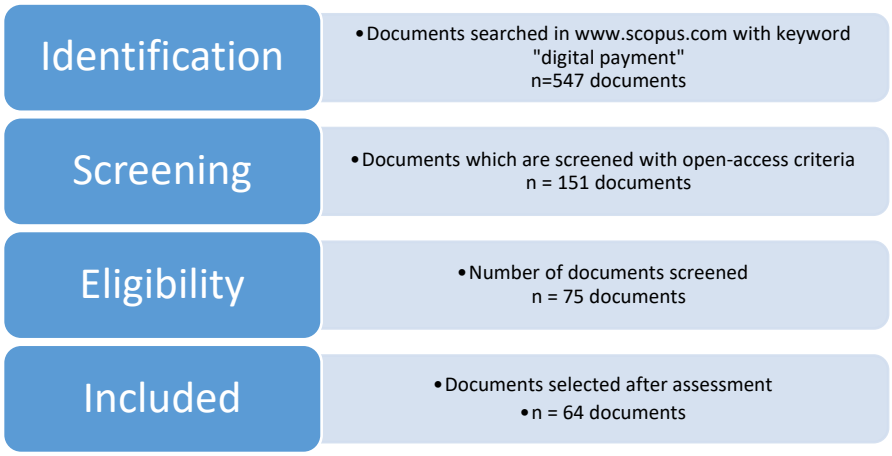

Figure 1. Process of paper selection

4. Data Collection

The data were collected from www.scopus.com with the keyword "digital payment" and the results are 547 documents. By narrowing the scope and also choosing the "open-access" documents, we finally take a sample of 64 documents. The publication year of the articles are ranging from 2014 to 2022 (Figure 2).

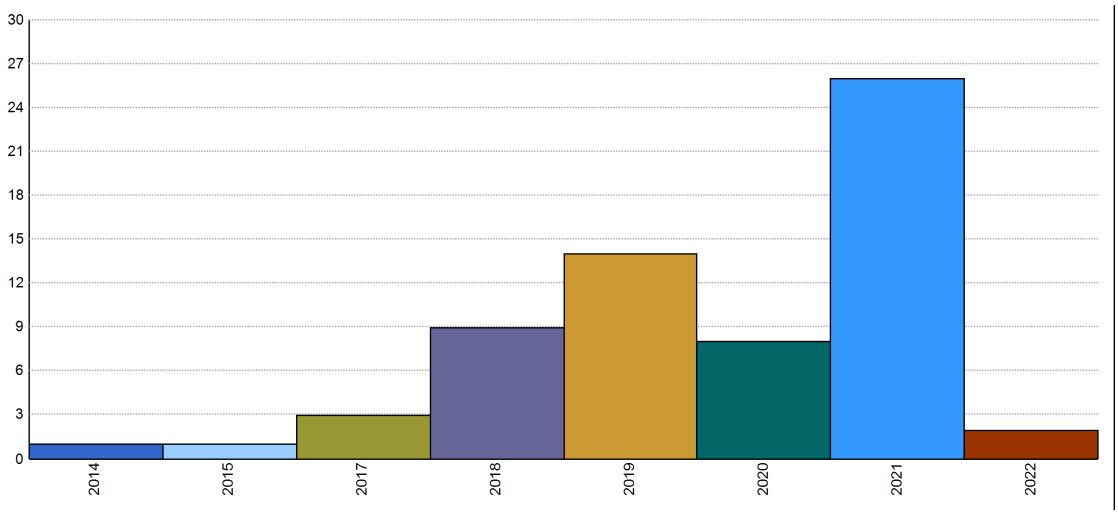

Figure 2. Publication year of the articles

2014-1; 2015-1; 2017-3; 2018-9; 2019-14; 2020-8; 2021-26; 2022-2. Most of the articles are recently published, with the most in 2021 with 26 papers.

5. Results and Discussion

The following Table 1 present results of literature review.

Table 1. Results of Literature Review

No.	Author	Findings	Research Method	Data Collection Methods
1	(Yang et al. 2021)	PU, PEOU, lifestyle compatibility, social influence, and perceived trust had a significant positive effect on the intentions of adopting an e-wallet.	Quantitative	Questionnaire
2	(Kandpal, Mehrotra, and Gupta 2019)	Different forms of digital payment options	Mixed-Method	Questionnaire and Interview
3	(De, Pandey, and Pal 2020)	In a post-pandemic situation, digital payments are likely to have a key role.	Qualitative	Conceptual
4	(Lutfi et al. 2021)	The behavioral intention in using the m-payment system is significantly and positively affected by perceived usefulness and perceived financial cost	Quantitative	Questionnaire
5	(Peneder 2022)	Major digital platforms will extend their current dominance in digital payments and money	Qualitative	Conceptual
6	(Yao et al. 2018)	The technological innovation of payment has promoted the development of the financial industry and accelerated the process of industrial evolution.	Quantitative	Secondary data
7	(Broby 2021)	The financial services will change significantly	Qualitative	Conceptual
8	(Seldal and Nyhus 2022)	Mobile payment users were less financially vulnerable than nonusers especially younger generations and those with low financial literacy.	Quantitative	Questionnaire
9	(Khan 2021)	Demographic factors significantly affect the adoption of the various digital payment services	Quantitative	Questionnaire
10	(Chen et al. 2021)	The government's roles for supporting digital transformation: 1. build a digital platform for small service businesses, 2. promote mobile/digital payment, 3. provide digital training, and 4. build a digital collaboration ecosystem.	Qualitative	Case Study
11	(Bagale et al. 2021)	The increased rate of SMEs has increased significantly due to the advent of Digital Technology (DT).	Mixed-Method	Questionnaire and Interview
12	(Sahi et al. 2021)	A single theory has failed to comprehensively explain the complex nature of electronic payment adoption	Qualitative	Literature Review
13	(Jiaxin Zhang, Luximon, and Song 2019)	Perceived security was identified to have a strong impact on continuous intention to use mobile payment.	Quantitative	Questionnaire
14	(Zalengera et al. 2021)	The role of digital payments enhances preparedness and continuity of operations for the energy sector	Qualitative	Interviews, FGD

15	(Wilczek et al. 2021)	Significant differences between two content strategies and two commercial strategies (revenue diversification and digital payment models)	Quantitative	Questionnaire
16	(Ligon et al. 2019)	The adoption of digital payments is both feasible and inexpensive.	Quantitative	Questionnaire
17	(Johnson et al. 2018)	ease of use, relative advantage, visibility, and perceived security positively influence the intention to use m-payment services	Quantitative	Questionnaire
18	(Y. Park, Sur, and Rhee 2018)	Digital payment system whose implementation relies on cryptographic techniques, which makes it possible to develop a practical credit-based incentive scheme on the vehicular networks at a low cost	Qualitative	Conceptual
19	(Kolodiziev et al. 2020)	The effectiveness of using automatic machine learning algorithms to synthesize fraud detection models in digital payment systems	Quantitative	Experiment
20	(Dimitrova, Öhman, and Yazdanfar 2022)	The adopters-accepters, privacy, and access barriers can be obstacles to the full adoption of Digital Payment Methods	Quantitative	Questionnaire
21	(van Wegberg, Oerlemans, and van Deventer 2018)	Some of the examined services provide an excellent, professional, and well-reviewed service at a competitive cost. Whereas others turned out to be scams, accepting bitcoin but returning nothing in return	Quantitative	Experiment
22	(Purba, Samuel, and Budiono 2021)	All variables have a positive strong effect on driving the choice of digital FinTech technology in ordering food and others to survive during the pandemic of COVID-19	Quantitative	Questionnaire
23	(Simatele and Mbedzi 2021)	A strong preference for cash, coupled with cash shortages and inadequate infrastructure for electronic payments, has resulted in a multitiered pricing system, with significant premiums for digital payments	Quantitative	Questionnaire
24	(Santosa et al. 2021)	This study breaks the stereotype that the elderly generation tends to resist and difficult to accept technology	Quantitative	Questionnaire
25	(Chaveesuk et al., 2021)	Satisfaction mediated the effects of perceived usefulness, perceived ease of use, and social distancing on continuous intention to use	Quantitative	Questionnaire
26	(Adil and Hatekar 2020)	Envisaging more banks was rapidly overtaken by the massive uptake of digital payment methods	Quantitative	econometric research
27	(Tang et al. 2021)	Service quality, perceived risk, perceived security, perceived ease of use, social influence, and compatibility have a significant influence on consumer's intention to use digital payment, except for age.	Mixed-Method	Questionnaire and Interview
28	(Su et al. 2021)	More effective measures to enhance adoption rates of online purchases and sales, innovation in rural market-oriented digital financial products and services, systematic training for farmers in e-commerce skills as well as digital financial literacy, and differentiated support measures for different groups of farmers to reduce the gap are urgently needed in China.	Quantitative	Questionnaire

29	(Danchev, Gatopoulos, and Vettas 2020)	(i) the law had a statistically significant, positive impact on card usage, (ii) the penetration of electronic payments had a significant positive impact on tax compliance	Quantitative	Secondary data
30	(Daud et al. 2022)	Digital finance had a positive and significant effect on the financial performance, digital payment had a positive and significant effect on the financial performance and digital marketing had a positive and significant effect on the finance performance.	Quantitative	Questionnaire
31	(Hossain et al. 2020)	The role of education in the better understanding of consumers toward the application of online modes of transaction through mobile phones, but also indicates that there are security issues, although these have been resolved to some extent by technological advances	Quantitative	Questionnaire
32	(Ariffin, Ahmad, and Haneef 2020)	Factors contributing to mobile payments are significant	Quantitative	Questionnaire
33	(Cheng 2022)	The legislative balance between the protection of personal information and the regulation of illicit financial activities, and the delineation of rights and responsibilities between dissemination institutions, payment service providers, and end-users needs to be further redefined and clarified.	Qualitative	Literature Review
34	(Balaji and Vijayakumar 2019)	Ease of use and security are the most important factor for the adoption of digital payments	Quantitative	Questionnaire
35	(Naumenkova, Mishchenko, and Dorofeiev 2019)	The need to adhere to the basic principles of digital financial inclusion to regulate activities of financial institutions and their agents in the digital provision of financial services, strengthen regulatory control over the use of innovative financial products and service systems, and protect the rights of consumers of financial services in Ukraine.	Quantitative	Secondary data
36	(Johari et al. 2021)	Digital payments using QR codes, especially during a pandemic, require more security and productivity	Quantitative	Questionnaire
37	(Soutter, Ferguson, and Neubert 2019)	Enabling environments (Kenya) do jumpstart adoption and difficult frameworks (Nigeria) do evolve	Qualitative	Case Study and Interview
38	(Chaveesuk, Khalid, and Chaiyasoonthorn 2021b)	Behavioral intention to use digital payment innovation in Thailand was influenced by Perceived Risk (PR), Facilitating Condition (FC), Performance Expectancy (PE), and Attitudes (AT) of people	Quantitative	Questionnaire
39	(Abdullah, Redzuan, and Daud 2020)	Four factors are found to significantly influence e-wallet acceptance, which consists of Performance Expectancy (PE), Social Influence (SI), Facilitating Conditions (FC), and Trust (T)	Quantitative	Questionnaire
40	(Sybirianska et al. 2018)	The necessity of the Information Platform on Support for SMEs' Innovations and the demand for it from the SMEs	Quantitative	Questionnaire

41	(S. Kumar et al. 2018)	A large number of farmers have a bank account and are availing facilities of debit cum ATM card, but their functional literacy and infrastructure are inadequate. Farmers' expressed both merits and demerits about digital payments.	Quantitative	Questionnaire
42	(Khaled et al. 2021)	Product variety, digital payment, scheduling, free delivery, and lower speed have a significant effect on customer behavior	Quantitative	Questionnaire
43	(Alam et al. 2021)	satisfying time for enhancing customers' buying experiences with Digital payment systems and a customizable and cost-effective IoT-based intelligent vending machine to introduce for mass production.	Quantitative	Experiment
44	(K. W. Park and Baek 2017)	OPERA is an offline peer-to-peer digital cash transaction system that addresses the three challenges	Qualitative	Conceptual
45	(S. N. Kumar and Puttanna 2018)	The policy of demonetization and resultant reduced supply of currency notes has provided the impetus to the Indian public to move towards digital platforms, and the increased supply of currency notes thereafter has not led to a complete reversal of this shift in this change in consumer preference	Quantitative	Secondary data
46	(Afrianto, Sasmita, and Atin 2021)	Acceptance of the usefulness of the system being built, as well as the optimism of its users to be able to take advantage of this system both technologically and functionally, so it can be a part of the digital transformation of the traditional market to the electronic market and has become one of the solutions in reducing the spread of the current covid-19 pandemic.	Qualitative	Prototype Research
47	(Mlambo and Msosa 2020)	Mobile Subscriptions (MS) and ATMs (Automated Teller Machines) have a negative relationship with money demand (MD).	Quantitative	Secondary data
48	(Papadopoulos 2015)	Proposed framework for the evolutionary analysis of money and economic value	Qualitative	Conceptual
49	(Petrushenko et al. 2018)	High potential of FinTech for cross-border payment processing.	Quantitative	Secondary data
50	(Daqar et al. 2021)	Higher Fintech perception and behavior among Fintech users will help in reducing the spread of COVID-19 by avoiding the use of contact payment methods.	Quantitative	Questionnaire
51	(S. P. Kumar and Chakravarthi 2019)	The banking sector plays a significant role in digital payment	Qualitative	Conceptual
52	(Dasgupta and Grover 2019)	SWIFT still enjoys a monopoly in the market in terms of its huge network and the number of banks it partners with across 200 + countries in the world	Qualitative	Case Study/Grounded Theory
53	(Saxena and Joshi 2019)	Proper infrastructure is made available and there is strong willpower to plan and implement to challenge the status quo, digitalization can be implemented	Qualitative	Case Study
54	(Omarini 2018)	The evolution of payments in the market; the concept of ecosystem applied to the new payment landscape, and it outlines the banks' roles in the new mobile payment environment.	Qualitative	Conceptual
55	(Ravikumar et al. 2019)	Digital payments impact economic growth significantly in the short run. But, digital payments don't impact economic growth in the long-run	Quantitative	Secondary data

56	(Son, Liem, and Khuong 2020)	Having an account at a financial intermediary and using mobile money services generally have a positive effect on participation in non-cash transactions	Quantitative	Secondary data
57	(Khurana, Kaur, and Singh 2019)	Significant effect of age, gender, education, occupation, marital status, and income of respondents on users' satisfaction	Quantitative	Questionnaire
58	(Padmaja and Venkata Durga Rao 2019)	The transformation has taken place in the payment industry from coins to paper, to plastic money, and now to e-wallets.	Quantitative	Secondary data
59	(Sukaris et al. 2021)	Performance expectancy, social influence, facilitating condition, hedonic motivation, and trust influence the behavioral intention of digital wallets, and effort expectancy does not affect the behavioral intention of a digital wallet	Quantitative	Questionnaire
60	(Seethamraju and Diatha 2018)	loss of control, costs of technologies, customer's low socio-economic background, suppliers' influence, tax and security implications, bureaucracy, and lack of trust in the regulatory and external environment are the challenges	Qualitative	Conceptual
61	(Das and Mahapatra 2019)	The customer perception toward payment bank	Quantitative	Questionnaire
62	(Baker 2021)	Digitally enhanced financial inclusion techniques may steer low-income workers toward mainstream finance institutions modeled on the global economy	Qualitative	Conceptual
63	(Sahu and Singh 2017)	Anonymity, Bank Involvement, Drawer, Infrastructure, Mobility, Parties, Popularity, Range of Payment, Risk, Security, Transfer limit, Transfer mode, and Transfer time for successful implementation of digital payment at Allahabad city	Qualitative	Literature Review
64	(Henningsson and Hedman 2014)	Use of the Digital Ecosystem Technology Transformation (DETT) framework by a case study of transformation in the digital payment ecosystem.	Qualitative	Case Study

The following Table 2 presents the factors that affect the adoption of digital payments:

Table 2. Factors that affect the intention of adopting digital payments

Number	Author	Factors
1	Chaveesuk et al., 2022	perceived ease of use, attitude, social distancing, and satisfaction
2	Ariffin et al., 2020	performance and effort expectancy, habit, privacy, social influence, facilitating conditions, intentions, and perceived security
3	Ligon et al., 2019	tax liability, costs
4	Padmaja & Venkata Durga Rao, 2019	Convenience, Time-saving, Acts as a record, risk of robbery, Discounts from taxes, less commission, money under control, cashback, economical fees
5	Khan, 2021	demographic attributes, service quality, satisfaction, reliability, and security
6	Son et al., 2020	Mobile money and financial inclusion
7	Kumar et al., 2018	Education and attitude
8	Ivashchenko et al., 2018	legislation system in different countries, the level of Internet penetration, ICT infrastructure
9	Omarini, 2018	Technology-enabled innovations, Regulatory intervention, and Shift in consumers‟ preferences.
10	Tang et al., 2021	service quality, perceived security, perceived risk, perceived ease of use, compatibility, social influence, and age
11	Abdullah et al., 2020	Performance Expectancy, Facilitating Conditions, Trust and Social Influence
12	Soutter et al., 2019	institutions, customers, and technology
13	Musyaffi et al., 2021	performance expectations, security, and trust
14	Lutfi et al., 2021	perceived financial cost and perceived usefulness
15	Das & Mahapatra, 2019	Security, privacy, and convenience
16	Santosa et al., 2021	UTAUT2, satisfaction, continuance intention and inertia
17	Dimitrova et al., 2022	privacy, security, access trust, and impersonalisation barriers
18	Yang et al.	Perceived usefulness, social influence, perceived ease of use, facilitating condition, perceived trust, and lifestyle compatibility
19	Seethamraju & Diatha, 2018	Perceived loss of control, costs of technologies, customer's background, security implications, suppliers influence, tax, poor digital infrastructure, bureaucracy, lack of trust, inadequate access to and poor reliability of digital technologies

As we see the factors which are mentioned above, perceived security/security is the most often factor that affects digital payment adoption. The gap between users' perceived security and actual security raises interesting questions for researchers about the effect of perceived security on adoption (Zhang et al. 2019). Previous studies claim that mobile payments are more secure than traditional payment methods (Johnson et al. 2018), but many consumers still regard them as less secure (Zhang et al. 2019). Moreover, recent high-profile security cracks made users wary of using payment technologies (Johnson et al. 2018). On the other hand, digital payment not only increase convenience but also increase security, ease of use, speed, and time-saving (Abdullah, Redzuan, and Daud 2020). According to Yang et al., 2021, e-wallets pose security risks, then, Gao et al., 2015 add that security has a significant negative effect on

trust, flow, and satisfaction which can be strong predictors of continuation of m-commerce usage, while Shao et al., 2019 suggest that continued use of the system is based on actual security. So it is still unclear how perceived security affects users' intention regarding mobile payment services (Jiaxin et al. 2019).

Based on previous research, although using digital payments has potential risks of being hacked or cracked, it is still safer than traditional payments and it is worth using. The government can help to protect the user by regulating digital payments and the financial service provider also have to ensure its security of it.

The intention to adopt digital payment also depends on the perception of the customer about its benefits and risks of it. Digital payments can provide benefits for customers vis-à-vis flexibility, efficiency, and mobility (Sahi et al. 2021; Chaveesuk 2021a), provide convenience and efficacy such as reminders of unpaid bills, recharges, cashback, and rewards (Khan 2021), customer can purchase on e-commerce platform (Lin, Lin, and Ding 2020), reducing frictions of transacting in cash, reducing distance-related costs, increasing financial transparency, increasing security and improving record-keeping (Townsend 2015; Jack, Suri et al. 2010), simplifying selling and purchasing transactions (Yang et al. 2021), increase users' financial access, reduce transaction costs and expenditures (Yao et al. 2018).

Besides security cracks, previous researchers found some barriers to digital payment adoption. Johnson et al., 2018 stated that mobile payment requires a complex infrastructure and there are many parties involved in mobile payment services. Risk and cost are important inhibitors in adopting digital payments (Ligon et al. 2019; Lutfi et al. 2021). Some inconveniences using digital payment are network disruption, service fees that are higher than traditional payment, and technical problems (Chaveesuk, Khalid, and Chaiyasoonthorn 2021b). Ligon et al., 2019 add some barriers, for example, users have to possess bank accounts, smartphones/appropriate devices, internet access, pay usage fees, and technological literacy.

The barriers and risks of digital payment adoption can be overcome and mitigated by technological advances, for instance, the security level can be increased by enhancing authentication and authorization. The smartphones / technological devices are available from low to high prices to access digital payments. The most important thing is to increase financial and technological literacy for digital payment users. Fintech providers, banks, and other providers can increase the service quality, accessibility, and also facility so more users can be reached, and finally can increase digital payment adoption.

Digital payment has changed people's life dramatically, especially after the covid-19 pandemic, which affects people's lifestyles including the X generation and baby boomers (Santosa et al. 2021). Most people regardless of their age are used to shopping online and adopt digital payment (Tang et al. 2021). Young people are more interested in using new products and technology (Arning and Ziefle 2007; Dean 2008; Phang et al. 2006). Discounts and cashback have a strong impact on digital payment usage among young generations (Yang et al. 2021). Younger generations are found to be more likely users of digital payment methods. This result is as expected considering that younger generations are more used to digital tools than older generations, the younger generation's lower financial literacy, and lack of knowledge about security issues related to various payment technologies (Seldal and Nyhus 2022). But, the research result from Tang et al., 2021, no significant correlation between age and customers' intention to use WeChat Payment. Before the covid-19 pandemic, it is believed that younger people have higher technology adoption, but now age is not relevant anymore to be used as a factor that affects digital payment adoption, because all people nowadays like it or not have to get used to using digital payment. But still, age may influence payment choices (Simatele and Mbedzi 2021).

Elderly people (over 80 years) grew up in a different landscape than younger ones in terms of finance and digital technology (Dunphy et al. 2014). They also need somebody else to do the shopping and also make the transaction. They have limited physical ability or even have a disability or illness, so for this age category, digital payment adoption certainly becomes a big challenge for them. Young generations are less impacted by adoption challenges, which differs from older people (Dzogbenuku et al. 2022). Age has a significant effect on technological adoption and digital payment behavior (Li et al. 2008; Dzogbenuku et al. 2022). The younger the age, the easier to use the adoption of mobile payment (Joseph et al. 2018).

Digital Payment is needed by all people regardless of their age, especially if it is forced by regulation or policy of the government or any other financial providers. If people want to buy online or make an online transaction, it is more profitable if use digital payment than cash, because there are cashback or discounts. Moreover, there are some tenants

or providers that do not receive a cash payment. So we all have to adapt to this change. On the other hand, there is a limitation for older people especially over 70 or 80 years old in adopting digital payment, so they have to be assisted to do the digital transaction. Financial Providers including banks have to provide special services or treatment for elderly people. As a consequence, the adoption rate of digital payment will increase as well as the financial inclusion, finally it can contribute to economic growth.

6. Conclusion

Digital payment keeps growing in this digital era, and it can support financial inclusion. Financial inclusion can help to develop the economy and financial stability. Government can motivate usage by implementing a cashless policy. People began using digital payments in their daily lives. There are a lot of factors that influence digital payment adoption. The most often factor mentioned in previous research is security. Security is very important in the perception of digital payment users. Digital payment is more secure than traditional payment (cash/check), but there is another issue of security in digital payment, such as hacking or cracking. Governments can overcome that by regulating digital payment effectively. The most widely used theory for explaining digital payment adoption is TAM and UTAUT. Digital payment can provide benefits for users, such as convenience, efficiency, time-saving, rewards, discounts, cashback, and transparency, but still, security becomes an important thing in adopting digital payments. Digital payments have merits as well as drawbacks, but still, the benefits are outnumbering the barriers. There are some barriers to digital payment adoption, like internet connection, technological problems, usage costs, financial and technology literacy, etc., so it has to be overcome by technological advances or other innovative solutions.

Digital payments provide convenience to all generations not only young people so banks or other financial technology providers can expand their market from younger users like gen z and millennials to older generations including x generations and baby boomers. But still, there is a limitation of age in adopting digital payment because the higher the age, the more complex to adopt. Especially the people over 80 need assistance in using digital payment, so they have to be excluded from the range of age that must/often use digital payment. There is still few articles research on the effect of age, security, and technological advances on digital payment adoption, so future research can focus on the security of digital payments and consider the impact of technological advances on adopting digital payment by using age as a moderating or control variable and it is better to do the research in many contexts and across the globe to ensure the generalizability of the result.

The limitation of this research is only reviewed 64 articles. It is better to add the samples. Most of the previous research is done with the quantitative method so it is better to do other methods like qualitative or mixed-method.

References

Abdullah, N., Redzuan, F., and Daud, N.A., 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, 2020.

Adil, M.H., and Hatekar, N.R., Demonetisation, Banking and Trust in “Bricks” Or “Clicks”, *South Asia Research*, vol. 40, no. 2, pp. 181–198, 2020.

Afrianto, I., Sasmita, M. H. H., and Atin, S., Prototype Mobile Contactless Transaction System in Traditional Markets to Support the Covid-19 Physical Distancing Program, *Bulletin of Electrical Engineering and Informatics*, vol. 10, no. 6, pp. 3303–3312, 2021.

Alam, W., Sarma, D., Chakma, R. J., Alam, M. J., and Hossain, S., Internet of Things Based Smart Vending Machine Using Digital Payment System, *Indonesian Journal of Electrical Engineering and Informatics*, vol. 9, no. 3, pp. 719–731, 2021.

Ariffin, N. H. M., Ahmad, F., and Haneef, U. M., Acceptance of Mobile Payments by Retailers Using UTAUT Model, *Indonesian Journal of Electrical Engineering and Computer Science*, vol. 19, no. 1, pp. 149–155, 2020.

Arning, K., and Ziefle, M., Understanding Age Differences in PDA Acceptance and Performance, *Computers in Human Behavior*, vol. 23, pp. 2904–2927, 2007.

Bagale, G. S., Vandadi, V. R., Singh, D., Sharma, D. K., Garlapati, D. V. K., Bommisetti, R. K., Gupta R. K., Setsiawan, R., Subramaniyaswamy, V. and Sengan, Sudhakar., Small and Medium-Sized Enterprises’ Contribution in Digital Technology, *Annals of Operations Research*, 2021.

Baker, L., Everyday Experiences of Digital Financial Inclusion in India’s “Micro-Entrepreneur” Paratransit Services, *Environment and Planning A*, vol. 53, no. 7, pp. 1810–1827, 2021.

Balaji, R. P. and Vijayakumar, T., Diffusion Modelling of Digital Payments, *Journal of Engineering and Applied*

Sciences, pp. 3707–3710, 2019.

Broby, D., Financial Technology and the Future of Banking, *Financial Innovation*, vol. 7, no. 1, pp. 1-19, 2021.

Chaveesuk, S., Khalid, B. and Chaiyasoonthorn, W., Continuance Intention to Use Digital Payments in Mitigating the Spread of COVID-19 Virus, *International Journal of Data and Network Science*, vol. 6, no. 2, pp. 527–536, 2021.

Chaveesuk, S., Khalid, B. and Chaiyasoonthorn, W., Digital Payment System Innovations: A Marketing Perspective on Intention and Actual Use in the Retail Sector. *Innovative Marketing*, vol. 17, no. 3, pp. 109–123, 2021.

Chen, C. L., Lin, Y.C., Chen, W. H., Chao, C. F. and Pandia H., Role of Government to Enhance Digital Transformation in Small Service Business, *Sustainability (Switzerland)*, vol. 13, no. 3, pp. 1–26, 2021.

Cheng, P., Decoding the Rise of Central Bank Digital Currency in China: Designs, Problems, and Prospects, *Journal of Banking Regulation*, vol. 13, no. 7, 2022.

Danchev, S., Gatopoulos, G. and Vetta,s N., Penetration of Digital Payments in Greece after Capital Controls: Determinants and Impact on VAT Revenues, *CESifo Economic Studies*, vol. 66, no. 3, pp. 198–220, 2020.

Daqar, M. A., Constantinovits, M., Arqawi, S. and Daragmeh, A., The Role of Fintech in Predicting the Spread of Covid-19, *Banks and Bank Systems*, vol. 16, no. 1, pp. 1–16, 2021.

Das, K. K. and Mahapatra R., Customer Perception towards Payment Bank: A Case Study of Cuttack City, *International Journal of Management*, vol. 10, no. 4, pp. 1–8, 2019.

Dasgupta, S. and Grover, P., Critically Evaluating SWIFT's Strategy as a Monopoly in the Fintech Business, *International Journal of Innovative Technology and Exploring Engineering*, vol. 8, no. 12, pp. 3839–3844, 2019.

Daud, I., Nurjannah, D., Mohyi, A., Ambarwati, T., Cahyono, Y., Haryoko, A. D. E., Handoko, A. L., Putra, R. S., Wijoyo, H., Ariyanto, A. and Jihadi, M., The Effect of Digital Marketing, Digital Finance and Digital Payment on Finance Performance of Indonesian SMEs, *International Journal of Data and Network Science*, vol. 6, no. 1, pp. 37–44, 2022.

Davis, F. D, Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology, *MIS Quarterly*, vol. 13, no. 3, pp. 319–340, 1989.

De, R., Pandey, N. and Pal, A., Impact of Digital Surge during Covid-19 Pandemic : A Viewpoint on Research and Practice, *International Journal of Information Management*, 2020.

Dean, D. H., Shopper Age and the Use of Self-Service Technologies, *Managing Service Quality: An International Journal*, vol. 18, no. 3, pp. 225-238, 2008.

Dillon, A. and Morris, M. G., User Acceptance of Information Technology : Theories and Models, *Annual Review of Information Science and Technology*, vol. 31, pp. 1-29, 1996.

Dimitrova, I., Öhman, P. and Yazdanfar D., Barriers to Bank Customers' Intention to Fully Adopt Digital Payment Methods, *International Journal of Quality and Service Sciences*, vol. 14, no. 5, pp. 16–36, 2022.

Dunphy, P., Monk, A., Vines, J., Blythe, M. and Olivier, P., Designing for Spontaneous and Secure Delegation in Digital Payments, *Interacting with Computers*, vol. 26, no.5, pp. 417–432, 2014.

Dzogbenuku, R. K., Amoako, G. K., Kumi, D. K. and Bonsu, G. A., Digital Payments and Financial Wellbeing of the Rural Poor: The Moderating Role of Age and Gender, *Journal of International Consumer Marketing*, vol. 34, no. 2, pp. 113–136, 2022.

Gao, L. L., Waechter, K. A. and Bai, X., Understanding Consumers' Continuance Intention towards Mobile Purchase: A Theoretical Framework and Empirical Study - A Case of China, *Computers in Human Behavior*, vol. 53, pp. 249–62, 2015.

Henningsson, S. and Hedman, J., Transformation of Digital Ecosystems: The Case of Digital Payments, *Lecture Notes in Computer Science (Including Subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)*, pp. 46–55, 2014.

Hossain, S. F. A., Xi, Z., Nurunnabi, M. and Hussain, K., Ubiquitous Role of Social Networking in Driving M-Commerce: Evaluating the Use of Mobile Phones for Online Shopping and Payment in the Context of Trust, *SAGE Open*, vol. 10 no. 3, 2020.

Jack, W., Suri, T. and Townsend R., Monetary Theory and Electronic Money: Reflections on the Kenyan Experience, *Economic Quarterly*, vol. 96, no. 1, pp. 83–122, 2010.

Jiaxin Z., Jiaxin, Luximon, Y. and Song, Y., The Role of Consumers' Perceived Security, Perceived Control, Interface Design Features, and Conscientiousness in Continuous Use of Mobile Payment Services, *Sustainability (Switzerland)*, vol. 11, no. 23, 2019.

Johari, R., Juhaida, Rosnidah, I., Sari, D. A. P., Amal, M. I., Innaka, Tasyrifania, S. A. P. and Sutanti, F. D., Digital Payment during Pandemic: An Extension of the Unified Model of QR Code, *Academic Journal of Interdisciplinary Studies*, vol. 10, no. 6, pp. 213–23, 2021.

Johnson, V. L., Kiser, A., Washington, R. and Torres, R., Limitations to the Rapid Adoption of M-Payment Services: Understanding the Impact of Privacy Risk on M-Payment Services, *Computers in Human Behavior*, vol. 79, pp.

111–122, 2018.

Joseph, J., Sriram, K. V., Rodrigues, L. L. R., Mathew, A. O. and Gana, K. C., An Empirical Study on Customer Adoption of Mobile Payment Application in India, *International Journal of Enterprise Network Management*, vol. 9, no. 3–4, pp. 363–75, 2018.

Kandpal, V., Mehrotra, R. and Gupta, S., A Study of Post-Demonetization Impact of Limited-Cash Retailing in Uttarakhand, India, *Humanities and Social Sciences Reviews*, vol. 7, no. 5, pp. 1007–1020, 2019.

Khaled, A. S. D., Alshaketheep, K. I., Tabash, M. I., Khan, M. A. and Al-Omari, M. A., Impact of COVID-19 on Unorganized Indian Retail Markets, *Innovative Marketing*, vol. 17, no. 3, pp. 99–108, 2021.

Khan, M. A., Netizens' Perspective towards Electronic Money and Its Essence in the Virtual Economy: An Empirical Analysis with Special Reference to Delhi-NCR, India, *Complexity*, vol. 2021, 2021.

Khurana, S., Kaur, B. and Singh, J., The Impact of Demographic Factors on Satisfaction of Users for Various Digital Payment Methods, *International Journal of Innovative Technology and Exploring Engineering*, vol. 8, no. 9, pp. 900–905, 2019.

Kolodiziev, O., Mints, A., Sidelov, P., Pleskun, I. and Lozynska, O., Automatic Machine Learning Algorithms for Fraud Detection in Digital Payment Systems, *Eastern-European Journal of Enterprise Technologies*, vol. 5, no. 107. pp. 14–26, 2020.

Kumar, S. P., and Chakravarthi, C. S. G., A Novel Work on Digital Payments in India. *International Journal of Recent Technology and Engineering*, vol. 8, no.2, pp. 215–217, 2019.

Kumar, S., Jain R., Jhajhria, A., Bangaraju, S. V. and Balaji, S. J., Has Demonetization Triggered Farmers to Move towards Cashless Transactions?, *Indian Journal of Agricultural Research*, vol. 52, no. 3, pp. 305–309, 2018.

Kumar, S. N. and Puttanna, K., Payments Transition in India – Consumer Preferences and Policy Shifts. *Banks and Bank Systems*, vol. 13, no. 4, pp. 17–30, 2018.

Li, S., Glass R. and Records H., The Influence of Gender on New Technology Adoption and Use-Mobile Commerce, *Journal of Internet Commerce*, vol. 7, no. 2, pp. 270–289, 2008.

Ligon, E., Malick, B., Sheth, K. and Trachtman C., What Explains Low Adoption of Digital Payment Technologies? Evidence from Small-Scale Merchants in Jaipur, India, *PLoS ONE*, vol. 14, no. 7, pp. 1–22, 2019.

Lin, W. R., Lin, C. Y. and Ding, Y. H., Factors Affecting the Behavioral Intention to Adopt Mobile Payment: An Empirical Study in Taiwan, *Mathematics*, vol. 8 no. 10, pp. 1–19, 2020.

Lutfi, A., Al-Okaily, M., Alshirah, M. H., Alshira'h, A. F., Abutaber, T. A. and Almarashdah, M. A., Digital Financial Inclusion Sustainability in Jordanian Context, *Sustainability (Switzerland)*, vol. 13, no. 11, pp. 1–13, 2021.

Mlambo, C. and Msosa, S. K., The Effect of Financial Technology on Money Demand: Evidence from Selected African States, *International Journal of Economics and Business Administration*, vol. 8, no.1, pp. 366–373, 2020.

Naumenkova, S., Mishchenko, S. and Dorofeiev, D., Digital Financial Inclusion: Evidence from Ukraine, *Investment Management and Financial Innovations*, vol. 16, no. 3, pp. 194–205, 2019.

Omarini, A. E., Fintech and the Future of the Payment Landscape: The Mobile Wallet Ecosystem - A Challenge for Retail Banks?, *International Journal of Financial Research*, vol. 9, no. 4, pp. 97–116, 2018.

Padmaja, C. H. and Rao, P. V. D., The Rise and Growth of Digital Payments in India, *International Journal of Innovative Technology and Exploring Engineering*, vol. 8, no. 12, pp. 359–363, 2019.

Papadopoulos, G., The Ontology of Money: Institutions, Power and Collective Intentionality, *Erasmus Journal for Philosophy and Economics*, vol. 8, no. 1. pp. 136–138, 2015.

Park, K. W. and Baek, S. H., OPERA: A Complete Offline and Anonymous Digital Cash Transaction System with a One-Time Readable Memory, *IEICE Transactions on Information and Systems*, vol. 10. pp. 2348–2356, 2017.

Park, Y., Sur C. and Rhee, K. H., A Secure Incentive Scheme for Vehicular Delay Tolerant Networks Using Cryptocurrency, *Security and Communication Networks*, vol. 2018, 2018.

Peneder, M., Digitization and the Evolution of Money as a Social Technology of Account, *Journal of Evolutionary Economics*, vol. 32, no. 1. pp. 175–203, 2022.

Petrushenko, Y., Kozarezenko, L., Glinska-Newes, A., Tokarenko M. and But, M., The Opportunities of Engaging FinTech Companies into the System of Crossborder Money Transfers in Ukraine, *Investment Management and Financial Innovations*, vol. 15, no. 4. pp. 332–344, 2018.

Phang, C. W., Sutanto, J. and Kankanhalli, A., Senior Citizens ' Acceptance of Information Systems : A Study in the Context of e-Government Services, vol. 2006, 2006.

Purba, J. T., Samuel S. and Budiono, S., Collaboration of Digital Payment Usage Decision in COVID-19 Pandemic Situation: Evidence from Indonesia, *International Journal of Data and Network Science*, vol. 5, no. 4, pp. 557–568, 2021.

Rahman, M. A., Sarker, B. R. and Escobar, L. A., Peak demand forecasting for a seasonal product using Bayesian approach, *Journal of the Operational Research Society*, vol. 62, pp. 1019-1028, 2011.

Ravikumar, T., Suresha, B., Sriram, M. and Rajesh, R., Impact of Digital Payments on Economic Growth: Evidence from India, *International Journal of Innovative Technology and Exploring Engineering*, vol. 8, no. 12, pp. 553–557, 2019.

Sahi, A. M., Khalid, H., Abbas, A. F. and Khatib, S. F.A., The Evolving Research of Customer Adoption of Digital Payment: Learning from Content and Statistical Analysis of the Literature, *Journal of Open Innovation: Technology, Market, and Complexity*, vol. 7, no. 4, 2021.

Sahu, G.P. and Singh, N. K., Paradigm Shift of Indian Cash-Based Economy to Cash-Less Economy: A Study on Allahabad City, *IFIP International Federation for Information Processing*, pp. 453–461, 2017.

Santosa, A. D., Taufik, N., Prabowo, F. H. E. and Rahmawati M., Continuance Intention of Baby Boomer and X Generation as New Users of Digital Payment during COVID-19 Pandemic Using UTAUT2, *Journal of Financial Services Marketing*, vol. 26, vol. 4, pp. 259–273, 2021.

Saxena, D. and Joshi, N., Digitally Empowered Village: Case of Akodara in Gujarat, India, *South Asian Journal of Business and Management Cases*, vol. 8, no. 1, pp. 27–31, 2019.

Seethamraju, R., and Diatha, K. S., Adoption of Digital Payments by Small Retail Stores, *ACIS 2018 - 29th Australasian Conference on Information Systems*, pp. 1–11, 2018.

Seldal, M. M. N. and Nyhus, E. K., Financial Vulnerability, Financial Literacy, and the Use of Digital Payment Technologies, *Journal of Consumer Policy*, vol. 45, no. 2, pp. 281–306, 2022.

Shao, Z., Zhang, L., Li, X. and Guo, Y., Antecedents of Trust and Continuance Intention in Mobile Payment Platforms: The Moderating Effect of Gender, *Electronic Commerce Research and Applications*, vol. 33, 2019.

Simatele, M. and Mbedzi, E., Consumer Payment Choices, Costs, and Risks: Evidence from Zimbabwe, *Cogent Economics and Finance*, vol. 9, no. 1, 2021.

Son, T. H., Liem, N. T. and Khuong N. V., Mobile Money, Financial Inclusion and Digital Payment: The Case of Vietnam, *International Journal of Financial Research*, vol. 11, no. 1, pp. 417–424, 2020.

Soutter, L., Ferguson, K. and Neubert, M., Digital Payments: Impact Factors and Mass Adoption in Sub-Saharan Africa, *Technology Innovation Management Review*, vol. 7, no. 10, pp. 41–55, 2019.

Su, L., Peng, Y., Kong, R. and Chen, Q., The Impact of E-Commerce Adoption on Farmers' Participation in Farmland Transfer: Evidence from Rural China, *Land*, vol. 10, no. 12, pp. 1434–1457, 2021.

Sukaris, Renedi, W., Rizqi, M. A. and Pristyadi, B., Usage Behavior on Digital Wallet: Perspective of the Theory of Unification of Acceptance and Use of Technology Models, *Journal of Physics: Conference Series*, vol. 1764, 2021.

Sybirianska, Y., Dyba, M., Britchenko, I., Ivashchenko, A., Vasylyshen, Y. and Polishchuk, Y., Fintech Platforms in Sme's Financing: Eu Experience and Ways of Their Application in Ukraine, *Investment Management and Financial Innovations*, vol. 15, no. 3, pp. 83–96, 2018.

Tang, Y. M., Chau, K. Y., Hong, L., Ip, Y. K. and Yan, W., Financial Innovation in Digital Payment with Wechat towards Electronic Business Success, *Journal of Theoretical and Applied Electronic Commerce Research*, vol. 16, no. 5, pp. 1844–1861, 2021.

Townsend, R. M., Economic Organization with Limited Communication, *American Economic Association*, vol. 77, no. 5, pp. 954–971, 2015.

Venkatesh, V., Thong, J. Y. L. and Xu, X., Consumer Acceptance and Use of Information Technology: Extending the Unified Theory of Acceptance and Use of Technology, *MIS Quarterly*, vol. 36, no. 1, pp. 157–178, 2012.

Wegberg, R. V., Oerlemans, J. J. and Deventer, O V., Bitcoin Money Laundering: Mixed Results?: An Explorative Study on Money Laundering of Cybercrime Proceeds Using Bitcoin, *Journal of Financial Crime*, vol. 25, no. 2. pp. 419–435, 2018.

Wilczek, B., Stanoevska-Slabeva, K., Kernbach, K. and Meckel M., Un-Locking Strategic Lock-Ins of Local Media: An Investigation of Local Media's Preferences towards Public Support for Strategic Innovation, *Digital Journalism*, vol. 9, no. 3, pp. 276–299, 2021.

Yang, M., Mamun, A. A., Mohiuddin, M., Nawi, N. C. and Zainol, N. R., Cashless Transactions: A Study on Intention and Adoption of e-Wallets, *Sustainability (Switzerland)*, vol. 13, no. 2. pp. 1–18, 2021.

Yao, M., Di, H., Zheng, X. and Xu, X., Impact of Payment Technology Innovations on the Traditional Financial Industry: A Focus on China, *Technological Forecasting and Social Change*, vol. 135, pp. 199–207, 2018.

Zalengera, C., Chitawo, M. L., Chitedze, I., To, L. S., Mwale, V., Gondwe, K. T. and Maroyi, T., Unbending the Winding Path of a Low-Income Country's Energy Sector amid the Covid-19 Pandemic: Perspectives from Malawi, *Energies*, vol. 14, no. 21, 2021.

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