The Effectiveness of Bank Indonesia's SME Development Strategies, Policies, and Support in Financial Technology

Cakra Wirabuana*
Faculty of Computer Science, Universitas Indonesia
Kampus UI, Depok, 16424, Indonesia
cakra.wirabuana31@ui.ac.id

Betty Purwandari
Faculty of Computer Science, Universitas Indonesia
Kampus UI, Depok, 16424, Indonesia
bettyp@cs.ui.ac.id

Imairi Eitiveni
Faculty of Computer Science, Universitas Indonesia
Kampus UI, Depok, 16424, Indonesia
imairi@cs.ui.ac.id

Erisva Hakiki Purwaningsih
Faculty of Computer Science, Universitas Indonesia
Kampus UI, Depok, 16424, Indonesia
erisvaha.kiki@ui.ac.id

Abstract

This study aims to assess the effectiveness of strategies, policies, and support offered by Bank Indonesia for the growth of Small and Medium Enterprises (SMEs) in the Financial Technology (FinTech) sector. Using qualitative methods, thematic analysis, and frequency analysis, this study highlights the existing gaps in research on institutional support for SMEs during the digital era, especially within the Indonesian framework. A significant contribution of this research is the detailed exploration of SMEs' perspectives on the support they receive, focusing on areas such as infrastructure, digital literacy, and regulatory frameworks. Findings show that SMEs are generally positive about Bank Indonesia's initiatives, despite challenges in technical, administrative, and networking aspects. In addition, this research proposes actionable recommendations for Bank Indonesia and other relevant bodies to improve FinTech infrastructure, increase awareness and education, and revise regulations to better facilitate SME development. In addition, this research lays the groundwork for future longitudinal and comparative analyses to measure the long-term impact of Bank Indonesia's policies and to create predictive models that can pinpoint important elements that influence the use and success of digital payment solutions among SMEs. In addition to offering policy insights for Indonesia, this research also contributes to the broader global context by understanding the role of institutional support in advancing SMEs in the FinTech industry.

Keywords: bank indonesia, digital payment, financial technology, SMEs, technology adoption, thematic analysis, frequency analysis

Introduction

As the trend of shopping through digital platforms grows, technology, especially in the financial sector, provides many conveniences. Making transactions is now easier, and consumers can now make

* Corresponding Author with contact details email address and full postal address

payments without using physical money, simply by using a smartphone to access payment applications or digital wallets (Mansour, 2022). The reason for this rising trend is also driven by its practicality and widespread adoption, becoming a way of payment on various buying and selling platforms (Antareza et al., 2021). Figure 1 (Septiani, 2023) shows that digital payment transactions using e-wallets (such as OVO, GoPay, ShopeePay, DANA, LinkAja, Sakuku, iSaku, JakOne Mobile, and Doku) are the most popular among the public in 2023.

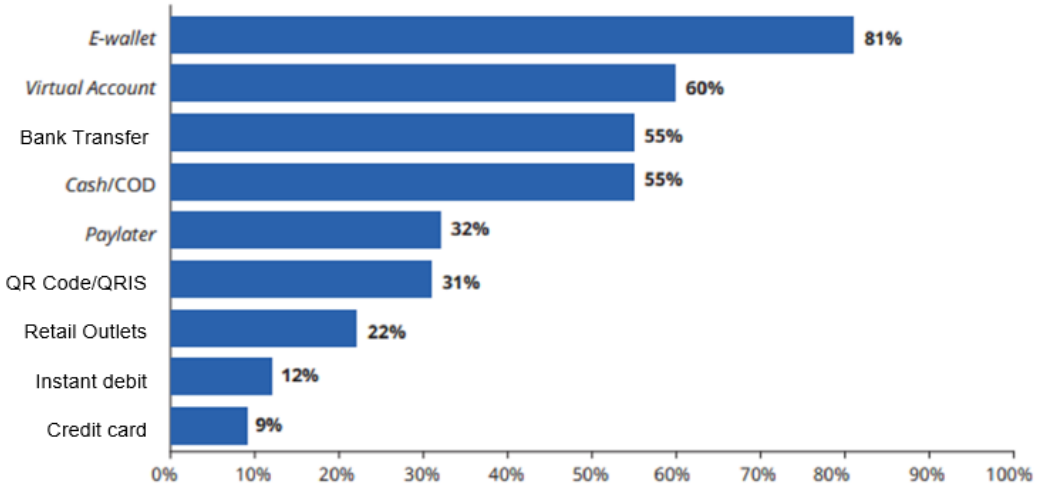

Figure 1. Indonesia's Digital Payment Trends in 2023 (Septiani, 2023)

The emergence of new services in the banking and finance industry has been heavily influenced by telebanking, online/mobile banking, and other financial technologies (fintech). These developments have enabled the industry to meet the common challenges associated with facilitating cross-industry transactions, thanks to improvements in affordability, speed, efficiency, effectiveness, and information disclosure (Mbaidin et al., 2023). Mobile devices such as cell phones, PDAs, wireless tablets, and similar devices that can connect to mobile telecommunications networks facilitate payments. Also, the mobile payment industry has undergone rapid changes, characterized by the emergence of new technologies, different business models, new applications, and fluctuations in business development (Au & Kauffman, 2008).

MSMEs are one of the main pillars in the Indonesian economy. According to data from the Ministry of Cooperatives and SMEs, there are currently around 64.2 million MSMEs that contribute 61.07% to GDP, or around 8,573.89 trillion rupiah. In addition, MSMEs also have a major role in absorbing labor, employing around 117 million people, which covers 97% of the total workforce in Indonesia, and are able to attract around 60.4% of total investment in the first semester of 2021 (Junaidi, 2023). Bank Indonesia also encourages the digitalization of MSMEs as one of the strategic steps to expand financial access and improve the competitiveness of MSMEs amid the development of the digital era (Departemen Komunikasi, 2022). For this reason, the SME sector was chosen as the object of this research.

Other factors driving the increasing utilization of digital money are the conditions of the COVID-19 pandemic and restrictions on social interaction, which encourage people to switch to online transactions to reduce the risk of spreading the virus through paper money (Rosmayanti, 2021). Perry Warjiyo, Governor of Bank Indonesia, revealed that there was an increase of 30.84% in electronic money transactions in 2022, reaching a value of IDR 399.6 trillion compared to 2021. For 2023, it is estimated that there will be a surge of around 23.9% in electronic money transactions, reaching a value of IDR 495.2 trillion. Meanwhile, digital banking transactions also experienced a 28.72% increase in 2022, to IDR 52,545.8 trillion, compared to the previous year. Bank Indonesia projects that by 2023, the value of digital banking transactions will grow by 22.13%, reaching Rp 64,175.1 trillion (Jannah, 2023). Bank Indonesia plans to prioritize digital finance by 2025, including converting the banking sector to digital and unifying the digital economy and finance at the national level. However, based on a report from the Indonesian Payment System Association (ASPI) for the first quarter of 2021, transactions using QRIS in 2020 only reached 123.92 million, with a total value of around IDR 8182 trillion. This number is still

lower when compared to transactions using debit cards, which in the same year were recorded at 6658 million transactions with a total value of IDR 6243 trillion, of which 3999 million were cash withdrawal transactions worth IDR 2991 trillion. This condition is of particular concern given Bank Indonesia's goal to make digital financial transactions a top priority by 2025 (Tenggino & Mauritsius, 2022).

The banking industry continues to transform digitally in line with the changing mindset within the sector (Malinka et al., 2022). However, despite the increasing use of digital money, many businesses in Indonesia, especially SMEs, have yet to fully utilize this payment method. Despite the government's target of 30 million SMEs going digital, including in terms of payments (Kemenkop UKM, 2021); (Rizkinaswara, 2020), only about 21% have made the switch by 2021. So far, the transformation has mainly focused on adding facilities rather than full integration as the main strategy. This suggests that Small and Medium Enterprises (SMEs) in Indonesia have yet to optimize the possibilities offered by digital payment systems. As a result, they are becoming more vulnerable to competition from faster-adapting businesses. It is important to emphasize that SMEs are the backbone of the Indonesian economy. Without an increase in digital adoption, negative impacts are likely to occur on the national economy and potentially harm SMEs themselves. The success of businesses often depends on their ability to adjust to the evolution of technology and changing consumer needs (Gunawan, 2021). As one of the country's financial supervisors, Bank Indonesia plays an important role in stimulating the use of fintech, especially to support SMEs. The title of this paper, reflects the way the policy was developed and its effect on SME growth, one of which is in 2022 through an MSME onboarding program including the adoption and utilization of QRIS (Departemen Komunikasi, 2022).

QR Code is a series of codes that can be scanned using a special device and contains data or information, the identity of the merchant or user, the amount of payment, and the type of currency (Sofwatunnisa et al., 2023). From another perspective, QR Codes are a data storage method that utilizes a dot matrix or two-dimensional bar code, developed by Denso Wave. These codes can be printed or displayed on a screen and read by a specialized scanner, providing more detailed information than traditional barcodes (Liébana-Cabanillas et al., 2015). Quick Response Code Indonesian Standard, known as QRIS (pronounced as 'KRIS'), is an integration of various types of QR codes from various Payment System Service Providers (PJSP) through the use of QR Codes. QRIS is jointly designed by the payment system industry and Bank Indonesia to facilitate, accelerate, and maintain the security of QR Code transactions. All PJSPs that want to utilize the QR Code for payments must implement QRIS. With QRIS, payment applications from all PJSPs, including banks and non-banks, used by the public, can be used in various places such as shops, merchants, stalls, parking areas, tourist ticket purchases, and donations that have the QRIS logo, even though the QRIS provider at the merchant is different from the application used by consumers. Merchants only need to open an account or account with one of the QRIS providers that has received permission from BI. After that, they can accept payments from various payment applications regardless of the provider (Bank Indonesia, 2022).

To understand the factors that influence the adoption of financial technology by MSMEs, this study uses the Technology Acceptance Model (TAM) as a framework. This model has been proven effective in analyzing how users' perceptions of the benefits and ease of use of technology influence adoption decisions. In the context of SMEs in Indonesia, TAM is very relevant because it can evaluate how SMEs accept and use financial technology, such as digital payment systems. Some previous studies, such as Thathsarani & Jianguo (2022), Nugraha et al (2022), and Wiradinata (2018), have also used TAM to evaluate technology adoption in the SME and fintech/digital sectors, which confirms the relevance of this model in the context of this study.

Based on the background described above, the research questions to be answered in this paper can be formulated, namely: (1) How do SMEs respond to the policies and support provided by Bank Indonesia for the adoption of financial technology by SMEs in Indonesia? (2) What are the factors that encourage SMEs to switch to digital payment methods and what are the perceived impacts? (3) What are the main barriers faced by SMEs in the process of financial technology adoption? (4) What is the role and effectiveness of QRIS implementation in supporting the adoption of financial technology by SMEs in Indonesia?

The problem limitations in this study are: (1) The unit of analysis in this study is SMEs. (2) The context of adoption of SMEs that have applied digital payment methods. (3) The research was conducted qualitatively. (4) The factors explored fall within the TAM framework.

The purpose of this research is to explore and analyze: (1) Find out how SMEs in Indonesia respond to policies and support provided by Bank Indonesia for the adoption of financial technology. (2) Identify the factors that encourage SMEs to switch to digital payment methods and assess the perceived impact of the transition. (3) Identify the main barriers faced by SMEs in the fintech adoption process. This research is expected to provide theoretical and practical benefits as follows:

1. Theoretical benefits.
    a. Contribute to the academic literature on how policies and financial institution support affect technological adaptation among SMEs, especially in the context of developing economies such as Indonesia, and contribute to filling the knowledge gap that so far there has never been literature that discusses SME digitalization from the point of view of SME entrepreneurs themselves and from the point of view of central bank officials/experts.
    b. Enrich the existing literature with empirical data related to the factors that encourage SMEs to switch to digital payments, as well as the impacts arising from such adoption.
    c. Contribute to the theory on the challenges and barriers in the adoption of financial technology, particularly in the context of SMEs in developing countries.
2. Practical benefits (contributing to the practical-knowledge gap).
    a. The research findings can be used by Bank Indonesia and other relevant institutions to design and implement more effective policies and support for SMEs in the adoption of financial technology.
    b. SMEs can use the results of this study to understand the benefits and challenges of switching to digital payment methods, facilitating better decision-making in technology adoption.
    c. The results of the study can provide practical guidance for SMEs on how to overcome the barriers they may face in the process of financial technology adoption, including strategies to overcome technical and regulatory challenges.

Literature Review

Technology Acceptance Model

The questionnaire development stage in this study was carried out by adopting the dimensions of the Technology Acceptance Model (Wicaksono, 2022), which is an effective method for evaluating how and why SMEs accept and use FinTech technology supported by Bank Indonesia policies, so TAM can be very relevant. TAM will help in analyzing factors such as perceived usefulness and perceived ease of use that influence technology acceptance. A typical TAM model is shown in Figure 2 below (Wicaksono, 2022).

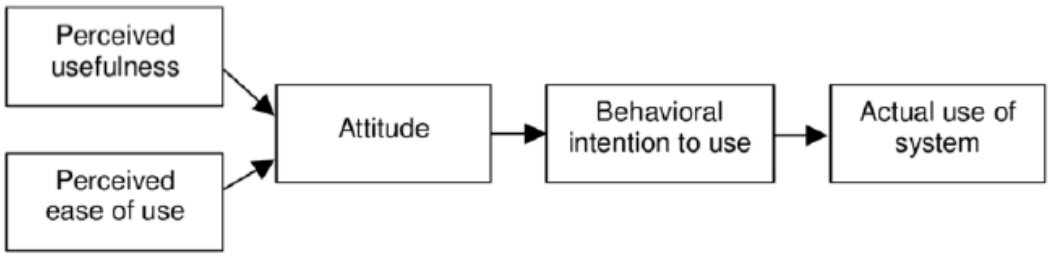

Figure 2. TAM Model

Perceived Usefulness is the extent to which SMEs feel that the use of financial technology will benefit their business, including ease of payment and financial management. This includes various aspects that help improve operational efficiency and effectiveness. Whereas Perceived Ease of Use is the extent to which SMEs feel that the use of financial technology is easy and can be integrated with their business (Wicaksono, 2022). The choice of the Technology Acceptance Model (TAM) over other frameworks

that are more specific to switching intention, such as the Push-Pull-Mooring Model (PPM) (Fan et al., 2021), is based on its ability to more broadly identify factors that influence technology adoption, such as perceived usefulness and perceived ease of use. This research focuses not only on switching intention, but also on how MSMEs accept and utilize digital payment technology, so TAM is seen as more comprehensive in this context.

Financial Technology

Regulations related to payment services are determined based on the principles of business law applicable in each country. These types of services and transactions include Real-Time Gross Payment System (RTGS), electronic payments, local and international card usage, as well as mobile and e-wallet payments (Simatele & Mbedzi, 2021). Digital-based financial services also have the potential to help customers increase their income through service offerings such as loans and savings, more practical payment methods, and others (Hao & Yin, 2023). The main feature of digital payments is that they are cash-free. This cashless payment method varies from country to country. These cashless solutions can be categorized based on the level of digitization required for implementation, the payment technology as the latest solution, and the supporting infrastructure available (Rafferty & Fajar, 2022).

Financial Technology (FinTech) is a combination of financial services and technology that has changed the business model from conventional to modern. Initially, to make a payment, one had to meet face-to-face and carry cash, but now, transactions can be done remotely in a matter of seconds. The emergence of FinTech is in line with the changing lifestyle of people who are currently dominated by the use of information technology, which demands everything to be faster. FinTech helps overcome problems in buying and selling transactions and payments, such as difficulty finding goods in physical stores, needing to go to a bank or ATM to transfer funds, or avoiding visits to certain places due to unsatisfactory service. In other words, FinTech improves efficiency and economy in buying and selling and payment transactions, while maintaining their effectiveness. FinTech is also capable of replacing the role of formal financial institutions such as banks. In the context of payment systems, FinTech plays a role in providing a market for businesses, being a tool for payment, settlement, and clearing, helping to make investments more efficient, reducing the risks of conventional payment systems, and helping individuals save, borrow, and invest (Departemen Komunikasi, 2018).

As conventional financial institutions increase their investment in FinTech, the combination of the latest technology and traditional financial services is becoming more integrated, which will create a technological domino effect to improve the efficiency of financial institutions (Wu & Chen, 2023). One of the bottlenecks in the payment system is transaction costs. These include the cost of sending money across borders through correspondence banks, fees associated with using international credit cards, as well as various other costs arising from foreign currency exchange and physical cash management (Yamaoka, 2023).

FinTech has become a key innovation in the financial sector, expanding at a remarkable pace. This growth is largely fueled by economic progress, favorable regulations, and advances in internet technology. Fintech today offers the potential for fundamental change in the financial world by improving service efficiency, cutting costs, opening new markets, and contributing to a more inclusive and stable financial landscape. Developments in IT infrastructure, big data analytics, and advances in mobile devices have provided opportunities for fintech startups to challenge traditional financial institutions by offering more innovative, customized, and personalized services (Wiradinata, 2018). The benefits of FinTech for consumers, businesses, and countries are (Departemen Komunikasi, 2018):

1. For consumers:
    a. Improved service quality.
    b. A wider variety of choices.
    c. More affordable costs.
2. For business people (product or service providers):
    a. Simplify the flow of transactions.
    b. Reduction of operational and capital costs.
    c. Stopping the movement of information.

3. For a country:
    a. Encourage the spread of economic policies.
    b. Increase the rate of money circulation, which in turn can spur economic growth.
    c. In Indonesia, FinTech also supports the achievement of the National Strategy for Financial Inclusion (SNKI).

Bank Indonesia

As the central bank, Bank Indonesia aims to achieve rupiah stability, maintain Payment System stability, and maintain Financial System Stability to support sustainable economic growth. To achieve these objectives, Bank Indonesia is responsible for three areas, namely Monetary, Payment System, and Financial System Stability. Integration of these three areas of duties is required so that the single goal can be achieved effectively and efficiently. The strong impetus from technological developments in the payment system motivates Bank Indonesia, which is the central bank of the Republic of Indonesia, to ensure that payment traffic affected by technology continues to operate with high order and security, and provides support for the achievement of Bank Indonesia's vision and mission.

In the context of providing a platform for business actors, Bank Indonesia ensures the protection of consumers with a primary focus on maintaining the confidentiality of consumer data and information through the use of a reliable cybersecurity system. Meanwhile, in the aspects of payment, settlement, and clearing processes, Bank Indonesia ensures the protection of consumer interests, especially by prioritizing the confidentiality of consumer data and information through a strong cyber security infrastructure. Bank Indonesia ensures security and regularity in payment traffic with the following roles (Departemen Komunikasi, 2018):

1. As a facilitator, Bank Indonesia facilitates the provision of infrastructure for payment traffic.
2. As an intelligent business analyst, Bank Indonesia collaborates with international authorities and partners to analyze the FinTech industry and provide guidance to businesses on how to develop a safe and orderly payment system.
3. Bank Indonesia monitors and assesses every business activity that uses FinTech technology in the payment system.
4. Bank Indonesia coordinates with relevant authorities and communicates actively to support the development of FinTech payment systems in Indonesia. In addition, Bank Indonesia is also committed to providing periodic guidance to businesses in Indonesia regarding FinTech.

Digital Payments

The transition to digital payment systems has resulted in the widespread adoption of artificial intelligence (AI) technologies, including machine learning, neural networks, and adaptive algorithms (Miglionico, 2023). These innovations automate decision-making and accelerate the provision of financial services, playing an important role in strengthening and streamlining national payment systems. This, in turn, supports sustainable development and contributes positively to Gross Domestic Product (GDP) growth (Lutfi et al., 2021).

In the current era, digital payments and online banking are ubiquitous due to the surge in digital and online services coupled with the decline in cash usage. Therefore, access to payments must evolve simultaneously to remove barriers to public participation (Dai et al., 2023). The ever-evolving landscape of the digital ecosystem is pushing the banking sector to adapt to new business models that meet digital demands and re-evaluate their fundamental services and processes to improve interactions with customers (Stefanelli & Manta, 2023).

Banks are increasingly focusing on digitizing their service offerings, moving away from traditional physical services. Key strategic approaches include reducing physical service counters, expanding ATM services, and improving customer interfaces, such as increasing electronic payment devices. This shift has been further accelerated by the pandemic, which has led to a decline in physical banking activities and an increase in consumer preference for digital and mobile banking (Stefanelli & Manta, 2023).

Digital payments streamline the role of intermediaries in assessing customer profiles and product suitability. This makes the assessment process more efficient and accurate. These changes are part of the wider impact of technology on the financial industry and public services, demonstrating how payment systems are integral to this transformation (Miglionico, 2023).

Methodology

This chapter describes the research methodology used, including the approach, target respondents, stages, research flow, instruments used, data collection and analysis methods.

Research Approaches

The purpose of this study is to identify and explore the effectiveness of SME development strategies, policies, and support that have been or are being conducted by Bank Indonesia in the FinTech field. There are many factors that may hinder or encourage SME entrepreneurs in adopting and implementing FinTech in their daily operations. This research uses a qualitative method with a case study approach, which is an in-depth and detailed research method on individuals or groups that focuses on exploring and describing a phenomenon (Forman et al., 2008). The selected case studies are SMEs in the Jakarta area and its surroundings, as well as outside Jakarta, especially those engaged in the trade and service sectors. We focus on SMEs that have started implementing digital payment technologies such as QRIS. This region was chosen due to its high technology adoption rate and adequate infrastructure, making it suitable for evaluating Bank Indonesia's policy. Data was obtained through interviews with SME owners as well as representatives from Bank Indonesia, to dig deeper into their experiences and challenges in using digital payment technology.

Target Respondents

In this study, the selected respondents consisted of representatives of SMEs and Bank Indonesia officials who have an important role in the adoption and implementation of digital payment technologies. The criteria for selecting respondents from among SMEs was quite selective. The SMEs selected are those that have been using digital payment methods, specifically QRIS, for at least 1 year. This ensures that the interviewees have enough in-depth experience to provide valuable insights. Also, the interviewees were owners or managers who play an active role in technology-related decision-making in their business, so their views reflect the strategic decisions of the SMEs. The SMEs involved come from various sectors such as trade, services, and manufacturing, and are spread across the Greater Jakarta area as well as several other regions in Java and outside Java. Thus, the perspectives obtained were diverse and representative.

On the other hand, resource persons from Bank Indonesia were selected based on strict criteria. Respondents are officials with a minimum position of Assistant Director in the Department of Payment System Policy (DKSP). They have long working experience, at least 5 years, in the field of financial technology and financial inclusion policy development. This ensures that they have a good understanding of the dynamics and challenges faced in implementing related policies. In addition, they have also been directly involved in the implementation and supervision of the QRIS program and other policies that support SMEs. With this background, their views are highly relevant and reliable in the context of this study.

Research Flow

The flow of research conducted by researchers begins with identifying problems, studying literature to build a theoretical framework, interviewing respondents, collecting data, analyzing and calculating data, and developing conclusions and suggestions.

In this qualitative research, data collection was carried out through semi-structured interviews. For sample selection, a purposive sampling strategy was used, meaning that samples were selected based on specific objectives (Amin, 2023). The respondents consisted of Bank Indonesia officials in the Department of Payment System Policy (DKSP), and SME entrepreneurs who want to/have already implemented digital payment methods. In this case, Bank Indonesia plays a crucial role in expanding SMEs' affordability and access to financial services by developing SMEs as a strategic step to support

financial system stability, improve people's welfare, and encourage sustainable economic growth (Bank Indonesia, n.d.). Meanwhile, SME entrepreneurs play a role as parties who directly benefit and other impacts from various supports provided by Bank Indonesia. To make it easier to understand the research flow in this paper, it can be seen in Figure 3 below:

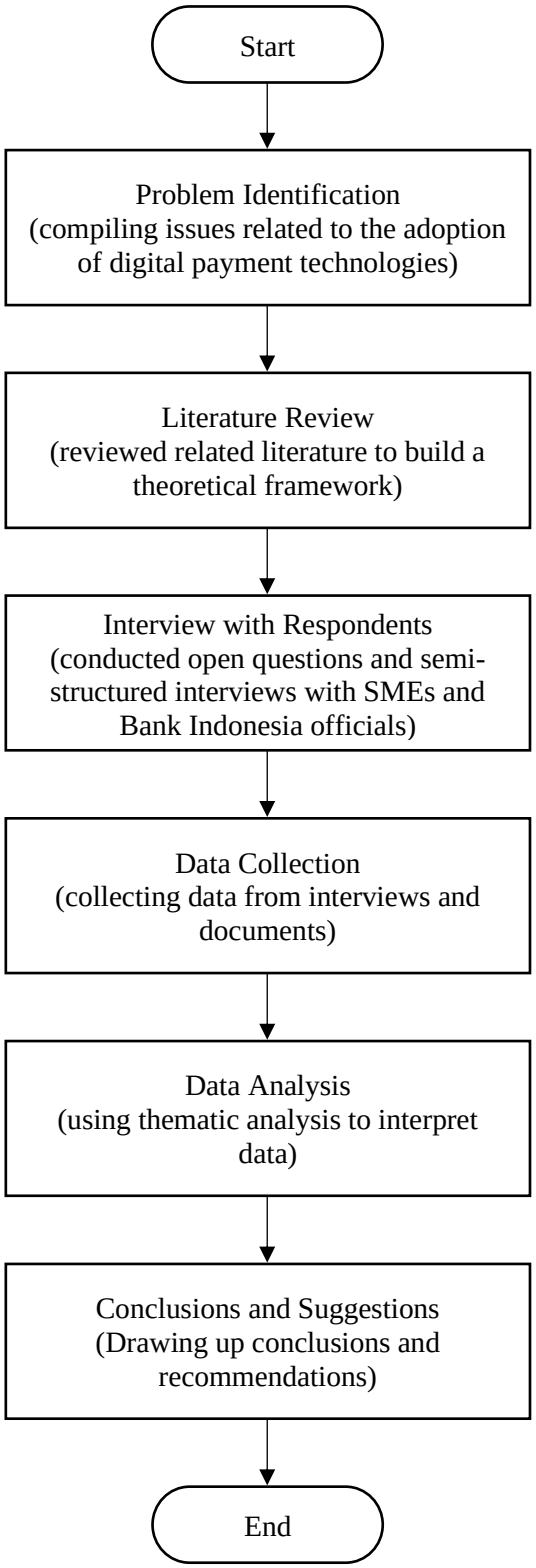

Figure 3. Research Flow Diagram

The results of this stage include interview transcripts and supporting documents relevant to the case. Once the data was collected, the next stage was data analysis, using the thematic analysis and frequency

analysis method. Text data from interview transcripts were categorized and irrelevant ones were reduced, followed by data analysis and presentation according to the research model to facilitate interpretation. The final step is the interpretation of the data that results in the research findings. The findings of the analysis are described in detail, followed by conclusions that answer the research question or problem. This stage also discusses the limitations of the research and the possibility of further study.

Research Instruments

In this study, the instruments used included open-ended research questions. In addition, a semi-structured interview draft was used for interaction with respondents. Detailed questions and interview drafts were developed to ensure consistency and completeness of the data collected. The interviews were semi-structured with an in-depth approach, so some open-ended questions would arise based on the answers provided by the respondents. The list of interview questions used for SME entrepreneurs and Bank Indonesia officials can be seen in Table 1 and Table 2 in the appendix. These questions are designed to answer research questions related to financial technology adoption and the TAM framework, such as Perceived Usefulness and Perceived Ease of Use.

Data Collection

The data collection method is by doing:

1. Interviews with SMEs entrepreneurs who want to or have already implemented digital payment methods, using an open question questionnaire distributed via WhatsApp from November 29 to December 11, 2023.
2. Interviews with Bank Indonesia officials/experts, Jakarta, in the Department of Payment System Policy (DKSP), with the rank of Assistant Director through online interviews conducted using the Microsoft Teams application on December 11, 2023.

This method is very relevant to the research question because it is expected to be able to answer research questions both from the point of view of SME entrepreneurs who experience the impact of policies and support from Bank Indonesia themselves, as well as from the point of view of Bank Indonesia as the Central Bank that issues policies and support to SMEs. Qualitative data collection steps with the TAM method (Wicaksono, 2022):

1. Determine the survey objectives to be achieved, such as knowing the factors that affect technology acceptance in respondents, evaluating the effectiveness of technology implementation, or knowing the problems faced by users in using technology. The survey objectives will serve as a reference in designing questions and conducting the survey.
2. Determine the group of respondents to be studied, namely employees from Bank Indonesia appointed by Bank Indonesia, and several SMEs until saturation of their answers is found.
3. Design questions that are relevant to the objectives of the survey and the respondents studied, using open or semi-open questions that allow respondents to answer freely and in detail about their views on the technology used.
4. Start interviewing the interviewees.
5. Ensure that respondents clearly understand the survey questions and objectives.
6. Analyze the data.

Data Analysis

The researcher will analyze the data using Thematic Analysis, a method for examining data to identify patterns or themes from the data that has been collected (Braun & Clarke, 2006). This method is particularly effective when the research objective is to dig deeper and understand the relationship between various patterns in a phenomenon, as well as to understand the phenomenon from the researcher's perspective (Fereday & Muir-Cochrane, 2006). It has been successfully employed in previous studies on banking and FinTech in Indonesia (Indriasari et al., 2022) and (Suryono et al., 2020). Thematic analysis is basic in qualitative research (Holloway & Todres, 2003). The stages, namely (Heriyanto, 2018):

1. Understanding the data.

In qualitative research, interview recordings and transcripts are rich sources of information and should be scrutinized in depth to understand their content. The researcher needs to reread, listen to, or watch the recordings to fully understand the data. It is important for the researcher to listen to the recordings again and make personal notes about important aspects or meanings contained in them. The purpose of this stage is to ensure that the researcher fully understands the data and finds its relevance to the research question.

2. Coding.
   The second stage in Thematic Analysis is coding. This process is similar to determining the subtitle in a book or finding the main idea in a paragraph. Codes are labels assigned to data elements that are relevant to the research question. These codes are then checked for relevance. There are two types of coding: semantic, which captures what is explicitly visible in the data; and interpretive, which seeks to understand the meaning behind participants' words. Once codes were developed, those with similar meanings were grouped together and named accordingly.
3. Searching for themes.
   At this stage, the researcher's focus shifts from searching for codes to searching for themes that are in line with the research objectives. Themes are important aspects of the data related to the research problem, representing patterns of the phenomenon under study. The process is not to look for hidden themes, but rather to choose a way to interpret the data. Provisional themes were determined based on the similarity in meaning of the code groups. During this process, interview transcripts were reviewed to ensure consistency, and provisional themes were compared to determine their significance, relevance and uniqueness.

Results

In this study, the first step in data analysis was data transformation and selection, which involved the process of cleaning the data to ensure the accuracy and relevance of the information obtained. Next, the data was coded by grouping similar answers into common themes. This process enabled the identification of significant patterns in respondents' answers. Finally, data visualization was conducted to facilitate interpretation of the analysis results. This process provides an effective graphical representation of the research findings (Klepek & Bauerová, 2020).

Questionnaire Results and Thematic Findings

From the questionnaire results, 39 respondents were obtained, their responses on the effectiveness of Bank Indonesia's strategies, policies and support in FinTech resulted in 19 thematic units, as listed in Table 3 (see Appendix). The majority of respondents from SMEs are from the Small Business category as much as 92.3% whose business locations are in the Jakarta, Bogor, Depok, Tangerang, Bekasi (Jabodetabek) area as much as 76.9%. The payment methods they use daily are mostly through bank transfers 84.6%, and there are still many who use cash as much as 74.4%, followed by QRIS with 64.1%, and e-wallets as much as 46.2%, as illustrated in Figure 4 below:

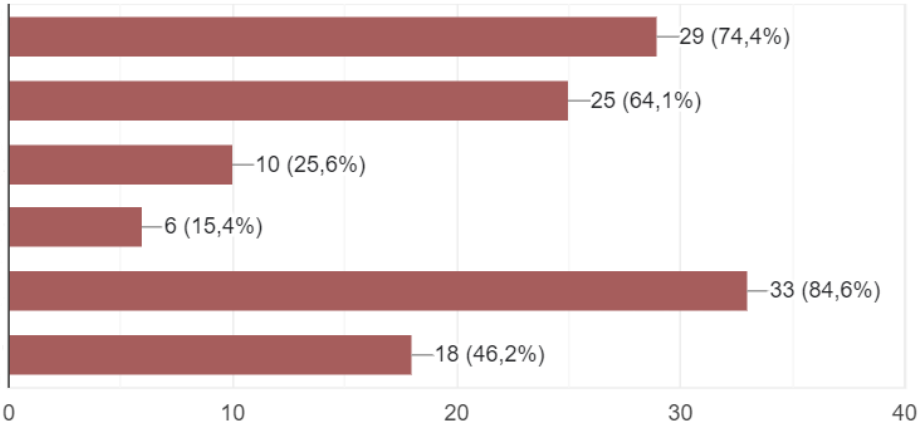

Figure 4. Demographic Questionnaire for Payment Method of Business Daily

Legend of Figure 4:

74,4%: Cash money

64,1%: QRIS

25,6%: Debit card

15,4%: Credit card

84,6%: Bank transfer

46,2%: E-Wallet (such as OVO, GoPay, etc)

From the interview results summarized in Table 3, there are some important findings related to SMEs' perceptions towards the implementation of digital payment technologies such as QRIS. If generalized from the results of the Table 3 analysis, SME entrepreneurs prefer digital payments due to practicality, efficiency, security, and ease of supervision, despite technical and administrative constraints. They perceive great benefits in the form of increased efficiency and ease of transactions.

The majority of SMEs appreciate Bank Indonesia's role in supporting the adoption of this technology, but expect improved socialization, education, and related regulations, as well as reduced transaction costs. The main challenges faced by some SMEs are lack of technical knowledge and network infrastructure issues, especially in less developed regions.

Furthermore, Table 3 shows that nearly 80% of the respondents feel that the adoption of this technology adds value to their customers, while another 20% are still hesitant due to technical barriers. They also emphasized the importance of improved infrastructure and access to digital payment services, including wider networks and instant transactions. Perceived ease of use and perceived usefulness are the main drivers of the adoption of digital payment technology by SMEs.

Frequency Analysis Process

Frequency analysis of SMEs' responses to the impact of Bank Indonesia's policies and support for fintech answered the research questions. To answer the first, second, and third research questions, the data collected showed varied perceptions among SMEs regarding Bank Indonesia's support. This result illustrates that although policies and support are in place, their effectiveness is perceived differently by each SME depending on their context and situation.

To answer the first research question, 56.41% of SME responses had a Positive Perception, indicating that more than half of the SME respondents expressed a positive perception of the support provided by Bank Indonesia. This perception can indicate the real benefits felt by SMEs from various programs and policies implemented. Then as many as 35.90% of SME responses responded Negatively or Don't Know. A significant proportion, indicating a negative response or ignorance of the programs organized by Bank Indonesia. This may indicate a lack of information or socialization about the programs, or perhaps the programs are less relevant to the specific needs of certain SMEs. A further 7.69% of responses or a small proportion of respondents chose to be neutral. This attitude could reflect a lack of direct experience with the Bank Indonesia program in question or it could be uncertainty about the benefits of the program.

To answer the second research question, SME respondents identified several drivers for switching to digital payment methods and the perceived impact of Bank Indonesia's policy. The driving factor is that 58.06% of SME responses consider practical value and efficiency as their main reason for utilizing FinTech technology, while 20.97% of responses consider it because of the ease of monitoring and control of cash flow, then 17.74% of responses are interested in the security aspect, and there are 3.23% of responses because they follow digital trends. On the impact or benefits they feel, as many as 65.45% of responses feel the benefits of security and accessibility from using digital payment technology, and as many as 34.55% of responses rate practicality and efficiency as the main benefits.

To answer the third research question, where SME respondents also revealed obstacles and provided input for improving Bank Indonesia's policies and strategies, as follows:

1. Obstacles faced:
   a. A total of 48.98% of SME responses considered technical and administrative constraints as the main problem.
   b. 40.82% of responses faced network and signal problems.
2. Suggestions and feedback from SMEs:
   a. 46.81% of responses suggested infrastructure and accessibility improvements.
   b. 31.91% of responses emphasized the need for improved socialization, education, and regulation.
   c. 19.15% of responses suggested reducing or eliminating administrative fees.

Through the completion of the three research questions, key elements in the TAM framework such as Perceived Usefulness and Perceived Ease of Use became clearer in this study. These findings allow researchers to not only ascertain the importance of these elements in the technological application domain under study, but also to investigate their interactions with different variables in a given environment. Such an approach facilitates a deeper understanding of users' reasons and behaviors for adopting and using technology in a particular context, while offering guidance for adaptation or enhancement of the TAM model to better align with the different conditions or situations being analyzed.

Interviews with Bank Indonesia Officials

An interview with the Assistant Director of the Payment System Policy Department of Bank Indonesia revealed the strategic aspects and challenges faced:

1. BI's Digital Payment Strategy for SMEs:
   a. Focus on QRIS as the main payment system, replacing the term 'Fintech' with 'Non-Bank Payment Service Provider'.
   b. Target 2023: 45 million users and 1 billion QRIS transactions, more efficient than EDC systems.
2. Challenges in the adoption of digital payment technology by SMEs:
   a. Improve technology literacy and education.
   b. Socialization of digital payments to older SME owners.
   c. Determination and socialization of service fees, or what is commonly called the Merchant Discount Rate (MDR).
   d. Accelerate the settlement of funds to the merchant's account.
   e. Address network and signal issues, in collaboration with the Ministry of Communications and Informatics.
3. Digital Payment Regulation.
   Merchants are prohibited from charging consumers a surcharge.
4. BI Collaboration for SME Digitalization:
   Cooperate and elaborate with various ministerial agencies and communities/associations for the expansion of SME digitalization, such as the Coordinating Ministry for Maritime Affairs and Investment, Coordinating Ministry for Economic Affairs, Ministry of Trade, Ministry of Communication and Informatics, Indonesian Retailers Association (Aprindo), National Amil Zakat Agency (Baznas), Indonesian Mosque Council (DMI).
5. Integration of Digital Payment Systems in BI-assisted SMEs:
   The Go-Digital MSME program successfully integrated digital payment systems.
6. BI's 2024 Targets:
   a. Encourage the use of QRIS: 55 million users, 2 billion transactions.
   b. New QRIS features: MPM, CPM, TTM, and cross-border.
   c. Cross-border QRIS opens up international markets, especially in Japan, UAE, India, and China.

Table 4 (see appendix), shows the frequency analysis and ranking of the themes that get the most responses from 39 respondents, from the previous 19 themes can be simplified into the top 7 themes based on responses from respondents in this study. From the top 7 themes, it is known that respondents positively welcome FinTech technology in digital payments, because it is cashless, practical and

efficient, and in terms of security and accessibility it can be more reliable than conventional payment methods using cash. Although technical and administrative constraints are the main highlights, they still consider FinTech in digital payments a positive thing that needs to be maintained and even improved by stakeholders and regulators in the government, especially improvements in terms of infrastructure and access. The frequency analysis is also presented in graphical form as seen in Figure 5, which allows comparison of the results from Table 4.

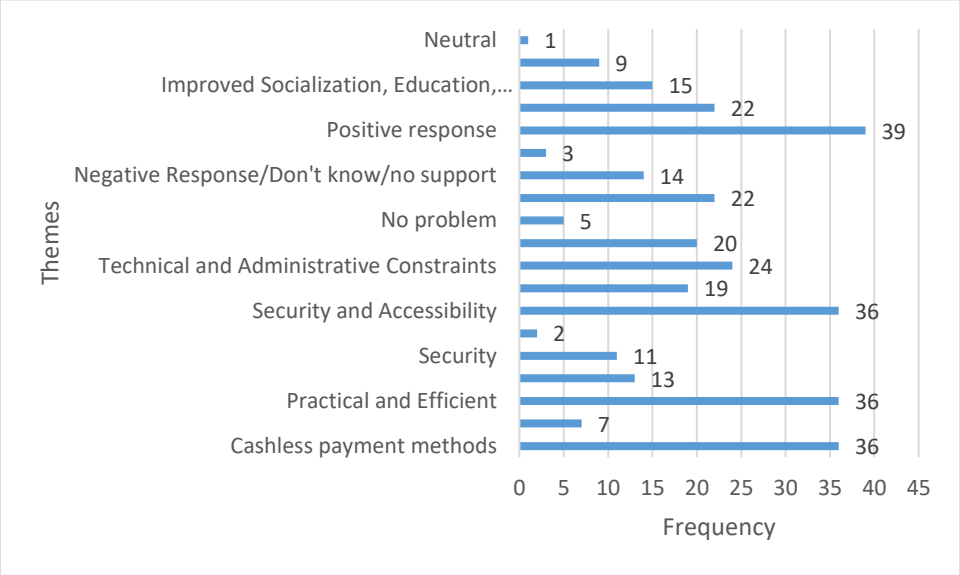

Figure 5. Graph of Frequency Analysis

Discussion

In analyzing the results of this study, it is important to highlight the profound implications of Bank Indonesia's support for SMEs in the context of using digital payment technologies. The positive response of the majority of SMEs to the initiative reflects an awareness and willingness to adapt to technological change. However, the challenges faced, including technical and administrative constraints, suggest that there is still considerable room for improvement. The importance of Bank Indonesia's initiative lies not only in the implementation of technology, but also in the aspect of digital education and literacy. This is critical, given that one of the main obstacles is the lack of understanding and readiness of SMEs in adopting new digital payment systems.

Furthermore, transaction security is a major highlight in SMEs' choice to use digital payments. This is in accordance with what Verma et al (2022), said that the surge in the use of digital payments has led to an increase in cyber attacks, so transaction security is a major concern (Verma et al., 2022). This signals a growing awareness of cybersecurity risks, as well as an important indicator for Bank Indonesia to continuously improve and ensure security in digital payment systems. Moreover, the finding that digital payments make it easier to monitor and manage cash flow for SMEs provides insight that this technology is not only a transaction tool, but also an effective financial management tool, where this is in accordance with what Najib and Fahma (2020), said that the various things that drive the adoption of this technology include how people see the ease of use, the benefits obtained, their views on digital payments, and the extent to which they trust it. (Najib & Fahma, 2020). When SMEs join digital payment systems, they not only make financial processes simpler, but also improve their ability to compete in the international market (Febrianto et al., 2023).

From a policy perspective, these findings encourage Bank Indonesia to review and update existing regulations. This could include initiatives to improve digital infrastructure, especially in areas with limited internet access, as well as reducing administrative barriers perceived by SMEs. Such an approach will not only help SMEs transition to the digital economy, but will also strengthen the FinTech ecosystem as a whole.

On the other hand, the study also highlights the importance of digital literacy for SMEs. Upgrading these skills will not only enable SMEs to fully utilize the benefits of digital payment technologies, but also to protect them from the associated risks. Broader and deeper education and training for SME owners and employees will be key in driving successful digital transformation. Digital understanding influences SMEs' shift towards digitalization by encouraging them to leverage digital technology. (Zahoor et al., 2023).

Finally, the results of this study pave the way for further studies. For example, future research could focus on evaluating the long-term impact of Bank Indonesia's policies and strategies on the growth and sustainability of SMEs in the FinTech sector. Comparative research involving SMEs in different regions and sectors would be valuable to identify best practices and highlight areas that require specific interventions. Research on fintech and financial inclusion in Indonesia shows that financial literacy can strengthen fintech's impact on financial inclusion. This financial inclusion, in turn, can drive improvements in SMEs' financial performance and help their businesses grow in the future (Mutamimah & Indriastuti, 2023). As such, the findings of this study not only provide important insights into the current situation, but also open up a range of opportunities for future research and policy, all aimed at increasing SME engagement in the ever-evolving digital economy.

Conclusion

This study explores how strategies, policies, and support from Bank Indonesia affect Small and Medium Enterprises (SMEs) in the fintech sector. The results show that most SMEs have a positive view of the support from Bank Indonesia, with 56.41% of respondents indicating a positive response to the policies provided. Nonetheless, some technical and administrative challenges remain. The findings answer the question of how SMEs respond to the policies and support provided by Bank Indonesia.

The main factors that encourage SMEs to switch to digital payment methods are practicality, efficiency, and ease of monitoring and managing cash flow. A total of 58.06% of respondents considered practical value and efficiency as the main reasons for using FinTech, while 65.45% perceived benefits in terms of security and accessibility. This answers the question of the factors that drive SMEs to adopt digital payment methods and the perceived impact.

The biggest challenges faced by SMEs are technical and administrative barriers, especially network and connectivity issues. About 48.98% of respondents cited technical constraints as the main problem they face. While SMEs generally welcomed the initiative from Bank Indonesia, these challenges show that there is still room for improvement, especially in terms of infrastructure, digital literacy, and regulation. This answers the question of the main barriers in the process of fintech adoption by SMEs.

Bank Indonesia's implementation of QRIS has been effective in supporting the adoption of fintech by SMEs. As many as 80% of respondents feel that the adoption of this technology adds value to their customers. However, there is a need to improve infrastructure and better regulation for more optimal results to be achieved. These findings answer the question of the role and effectiveness of QRIS implementation in supporting the adoption of financial technology by SMEs in Indonesia.

Limitations and Future Works

In addition to the limitations mentioned in the Introduction regarding the unit of analysis, the context of technology adoption, the qualitative approach, and the use of the TAM framework, this study also has some additional limitations. First, the majority of this research was conducted on SMEs in the Greater Jakarta area and several other regions in Java. This means that the results of this study may not be representative of SMEs in other parts of Indonesia, especially in areas where technological infrastructure is still not well developed.

Second, the approach used in this study was qualitative, with semi-structured interviews as the data collection method. While this approach provides in-depth insights, the limited number of respondents may not cover a wider variety of perspectives among SMEs. In addition, results from qualitative methods cannot always be generalized to a larger population.

Third, technical constraints such as network or signal issues reported by respondents are based solely on their personal experiences. This means there is no direct verification of the actual infrastructure conditions on the ground, so the information obtained may not be entirely accurate. Other external factors such as social conditions, government policies, or cultural aspects are also not explored in depth in this study.

Finally, this study is limited by the use of the Technology Acceptance Model (TAM) framework, which focuses on the ease-of-use and perceived benefits factors in technology adoption. Other aspects that might influence SMEs' decision to adopt technology, such as competitive pressure or regulatory push, were not explored in detail. These limitations provide opportunities for further research that is more in-depth and broader in scope.

From these insights, several recommendations are proposed for Bank Indonesia and related entities:

1. Improve Infrastructure and Accessibility: Bank Indonesia's primary focus should be on improving infrastructure to facilitate widespread adoption of digital payment technologies.
2. Intensify Socialization and Education Efforts: A high commitment to socializing and educating digital payments is essential to increase understanding and adoption among SMEs.
3. Revise and Update Regulations: It is imperative to reassess and modify existing regulations to ensure that they support the growth of SMEs and are not a hindrance.

This study paves the way for various future research opportunities by conducting long-term studies to assess the long-term impact of Bank Indonesia's strategies and policies on SMEs in the FinTech sector, by conducting comparative analyses through comparative investigations among SMEs in different regions or sectors to see the different impacts of Bank Indonesia's policies based on different environments, or by conducting the development of predictive models to identify important factors that influence the adoption and success of digital payments in SMEs. In addition, further research could examine specific aspects of the policy that are most effective in supporting SMEs. In summary, this study offers valuable insights into how SMEs perceive and experience support from Bank Indonesia in the FinTech sector, providing important guidance for refining strategies and policies to foster SME growth in the digital age.

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Appendix

Table 1. Open-ended Questionnaire Questions with SME Entrepreneurs

Inquiry	**Revised**	**Data Collection Procedure**
Demographics		
Current email (if any)	Email (Optional)	Short Answer Text
Phone number for reward purposes (Optional)		Short Answer Text
Business Category	Radio Button: ○ Small Business (Definition according to the 2008 MSME Law: Those with annual sales of Rp300 million to Rp2.5 billion) ○ Medium Enterprises (Definition according to the 2008 MSME Law: Those with annual sales of IDR 2.5 billion to IDR 50 billion)	
Domicile of place of business	Radio Button: ○ Jakarta, Bogor, Depok, Tangerang, Bekasi (Jabodetabek) ○ Java island (Non-Jabodetabek) ○ Others: ...	-
Payment method for buying and selling at your place of business on a daily basis (the answer can be more than 1 option)	Check Box: □ Cash □ QRIS □ Debit card □ Credit card □ Bank transfer □ E-Wallet (such as OVO, GoPay, ShopeePay, DANA, LinkAja, Sakuku, iSaku, JakOne Mobile, and Doku) □ Others: …	-
INTERVIEW QUESTIONS (Free form, can be filled in as completely as possible)		
As with the previous question about payment methods (cash, QRIS, Debit Card, Credit Card, Bank Transfer, E-Wallet, etc.), which payment method do you prefer to use as an SME entrepreneur?		Long Answer Text
What are some of the reasons you would use digital (non-cash) payment methods?		Long Answer Text
What are some of the benefits you feel most from using digital (non-cash) payments?		Long Answer Text
What problems might or often do you face in using digital (non-cash) payments?		Long Answer Text

Inquiry	Revised	Data Collection Procedure
How have programs or support from Bank Indonesia helped you overcome these issues?		Long Answer Text
How do you see the role of digital (non-cash) payment technology for your business growth?		Long Answer Text
What advice or input can you give to Bank Indonesia to improve their programs or support to SMEs, especially in relation to digital (non-cash) payments?		Long Answer Text

Table 2. Online Interview Questions with Bank Indonesia Officials

Inquiry	Data Collection Procedure
Are there any specific strategies that Bank Indonesia has implemented to encourage the integration of SMEs into the payment system fintech ecosystem?	Interview answers (semi-structured)
Can you share the challenges faced by SMEs in adopting payment system fintech and how BI is helping to overcome those challenges?	Interview answers (semi-structured)
What do you think about merchants charging consumers a surcharge, and are there any sanctions against them?	Interview answers (semi-structured)
How does Bank Indonesia collaborate with other stakeholders, such as government or financial institutions, to support the development of SMEs in the payment system fintech sector?	Interview answers (semi-structured)
Are there any case studies or successful examples of SMEs that have been well integrated in the payment system fintech ecosystem due to policies from BI?	Interview answers (semi-structured)
What are the next steps planned by BI to continue supporting SMEs in the utilization of financial technology, especially in digital payment systems?	Interview answers (semi-structured)

Table 3. Most Frequent Responses in Thematic Units (Source: Own Research) (Klepek & Bauerová, 2020)

Num.	Inquiry	Thematic Unit	Typical Responses
1	Preferred payment method	Cash payment method	Cash
			All
			Cash and QRIS
			Cash & bank transfer
		Cashless payment method	QRIS
			All
			Bank transfer

Num.	Inquiry	Thematic Unit	Typical Responses
			QRIS, E-Wallet
			Transfer, Debit/Credit card, QRIS
			QRIS and bank transfer
			Bank transfer or e-wallet
			Cashless (non-cash)
2	Reasons for using digital (non-cash) payment methods	Practical and efficient	More practical and recorded if cash risk is used outside of business purposes.
			Easy, can be tracked if there is an error, no need to look for change.
			More practical & directly into the Company's account.
			Practical, fast, no hassle carrying large amounts of money.
		Security	Safer and more practical.
			Avoiding crime by not needing to carry cash, making it easier because there is no need to prepare change.
			No need for change, avoiding counterfeit money.
			Safer because it goes directly to the bank account and can be monitored.
		Ease of monitoring and control	Easy, can be tracked if there is an error, no need to look for change (small cash).
			Make it easier to verify/check transactions anywhere, especially when we are not standby at the store, no need to bother providing petty cash for change transactions etc.
		Adaptation to the times	Keep up with the times.
			Simpler and customers are more familiar with digital money.
3	Most perceived benefits of using digital (non-cash) payments	Safety and accessibility	Securely accessible anytime and anywhere.
			Safe & in the current era it is easier to record mutations in the account.
			Safe because it avoids counterfeit money and does not need to provide change.
		Practical and efficient	Practical, real time, no need for change.
			Easy because everything is well recorded, starting from the type of payment, customer data, tracking if there is an error in the transaction.
			More effective and efficient.
4		Network and signal issues	Network, balance

Num.	Inquiry	Thematic Unit	Typical Responses
	Problems faced when using digital (non-cash) payments		Signal, payment does not enter the bank account mutation and the customer is no longer recorded
			Signal that is sometimes less supportive and the entry of funds for QRIS is delayed for several hours
			Provider signal or interference from m-banking
			Slow network
			Depends on the quality of the buyer's wifi signal/cellphone data package
			Server disruption, no signal
			Maybe when constrained by offline networks, or transaction limits
		Technical and administrative constraints	Quite large QRIS deductions
			Funds do not enter or double cut
			Unavailability of cash when needed suddenly
			Delayed payments from customers (debt) and if there are technical problems / signal disturbances it is rather difficult to transact
			QR is not read, customers still use a lot of cash
			Delay in funds entering the account
			Sometimes it takes a long time when doing interbank transactions in large amounts
			Bank differences, sometimes customers do not want to be charged interbank transfer fees
			In terms of sellers, merchants from EDC have deductions for the seller for each transaction, if you can eliminate this fee it's better but if you can't as maintenance costs etc. it's not a problem actually, it's just that it is emphasized that the maintenance service is also improved sometimes if there are complaints related to stuck funds, or EDC machines with problems (often low battery and no signal) also the process is a bit long.
			Wrong transfer, long time for payment to arrive, large deduction fee
		No problem	None
			There are no problems yet

Num.	Inquiry	Thematic Unit	Typical Responses
5	The role of Bank Indonesia's programs or support in overcoming problems	Positive response	Many benefits and modern
			Very good because the socialization of the program is very often held and facilitated by Bank Indonesia.
			Bank Indonesia's policy of not charging transaction fees for purchases through QRIS will help MSMEs entrepreneurs
			With the existence of BI fast it is very helpful in reducing costs because there are so many transactions between banks
			Currently, due to the existence of BI Fast, transaction costs are cheaper than real time, others don't know yet.
		Neutral	Enough
			N/A
		Negative response/do not know/no support	No idea
			None
			Not yet
			I don't know the action yet
			Deactivation of personal QRIS adds to the problem
			Apart from determining interest rates, I have not been able to see the role of Bank Indonesia in MSME transactions. It could be due to lack of socialization or MSMEs that have not been educated.
			Yes, even though there is already fast, sometimes there are still problems with customers, there is a flip application, but it is still not familiar to the public.
6	The role of digital (non-cash) payment technology for business growth	Positive response	Good and needs to be developed, but in practice there are still many who have not felt the benefits, especially small businesses.
			Very good & the era of digitalization is needed in the development of the MSME sector.
			Very rapidly growing, and helps in the process of running a business (convenience & security)
			Very important and influential because it helps facilitate transactions so that customers are happier.
			Good because more and more people are lazy to carry large amounts of cash.

Num.	Inquiry	Thematic Unit	Typical Responses
7	Suggestions to Bank Indonesia to improve programs or support to SMEs related to digital (non-cash) payments	Improved socialization, education, regulation	This program should be more focused on SMEs located in areas that have minimal knowledge about digital payments. It is also necessary to conduct a survey to see the level of readiness of the area in using digital payments.
			Widespread education to the public about digital payments and their convenience, as well as providing the best service in terms of information technology, so as to overcome the technical problems that often occur.
			More socialization because not everyone dares to use non-cash transactions (especially for non-city communities)
			So far, it's been pretty good, maybe the suggestion is for QRIS registration to be made easier for SMEs that don't have a store/store because when registration is required to provide a photo of the store, it is sometimes rejected by the bank.
			Create policies that help the growth of SMEs through digital payment methods
		Cost reduction or elimination	If possible, the 0.3% margin should not be charged to MSMEs/merchants
			BI-FAST 0 Rupiah
			MDR QRIS small businesses & the provision of EDC debit/credit cards are still quite costly because many suppliers still use cash as well considering that small business suppliers are other MSME grocery stalls.
			As much as possible, we try not to have inter-bank transfer fees, because if we transact more than 20 times in 1 day, how much does it cost? While our margins are limited, as a result we will cover the costs from our business margins.
		Infrastructure and access improvement	Hopefully there will be more convenience for digital payments and can be directly entered into the account without a lot of time lag like money transfers
			Input for bank QRIS to enter accounts per transaction to make it easier and more precise in recapitulation (currently cumulative)

Num.	Inquiry	Thematic Unit	Typical Responses
			My suggestion is to be able to present innovations in flexible integration for interbank transactions, so as to reduce the waiting time to be delivered.
			Increase digital services throughout Indonesia, especially those living in villages or remote areas who have difficulty accessing the internet due to limitations on the internet network.
		Neutral	Enough

Table 4. Frequency Analysis (Source: Own Research) (Klepek & Bauerová, 2020)

Code	Thematic Unit	Freq.	Rank.	Percentage
1a	Cashless payment methods	36	1	83,72%
1b	Cash payment methods	7	2	16,28%
2a	Practical and Efficient	36	1	58,06%
2b	Ease of monitoring and control	13	2	20,97%
2c	Security	11	3	17,74%
2d	Age Adaptation	2	4	3,23%
3a	Security and Accessibility	36	1	65,45%
3b	Practical and Efficient	19	2	34,55%
4a	Technical and Administrative Constraints	24	1	48,98%
4b	Network and Signal Issues	20	2	40,82%
4c	No problem	5	3	10,20%
5a	Positive Response	22	1	56,41%
5b	Negative Response/Don't know/no support	14	2	35,90%
5c	Neutral	3	3	7,69%
6	Positive response	39	1	100,00%
7a	Infrastructure and Access Improvement	22	1	46,81%
7b	Improved Socialization, Education, Regulation	15	2	31,91%
7c	Fee Reduction or Elimination	9	3	19,15%
7d	Neutral	1	4	2,13%

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