Jurnal Spektrum Ekonomi
Vol 6, No 12, December 2023, Hal 283-288
EISSN: 23267168

ANALYSIS OF THE USE OF FINGERPRINT PAYMENTS IN INDONESIA

Inna Aulia Mutmainnah[1], Ghina Asyifa[2]
Universitas Diponegoro
e-mail: innaauliam2023@gmail.com[1], ghina.asyifa.ferisa@gmail.com[2]

Abstract *- The research titled "Analysis of the use of fingerprint payments in Indonesia" explores the integration of Internet of Things (IoT) with fingerprint payments to enhance real-time data exchange and transaction efficiency. Fingerprint payments, utilizing biometric authentication, have been studied in various Indonesian contexts, addressing issues such as system attacks and improving vending machine payment experiences. Despite the anticipated growth in the biometric payment market, Indonesia faces challenges in financial inclusion. The literature review underscores the potential of fingerprint payments in overcoming security and efficiency challenges, yet highlights concerns regarding user data privacy and system disruptions. Implementation efforts by companies like Liquid demonstrate strides in transaction efficiency and security. The study concludes that while fingerprint payments hold promise in addressing payment challenges, further research is vital for a comprehensive understanding and successful implementation in Indonesia's market, requiring attention to financial inclusion and data security.*
Keywords*: Fingerprint, Payments*

INTRODUCTION

IoT, or the Internet of Things, refers to the network of physical objects embedded with sensors, software, and other technologies that enable them to connect and exchange data with other devices and systems over the internet. IoT devices can range from ordinary household objects to sophisticated industrial tools. The use of IoT in fingerprint payments can enhance the payment experience by providing real-time data and improving transaction efficiency.

Fingerprint payments are a type of biometric payment system that uses a person's unique fingerprint to authenticate transactions. In Indonesia, the use of fingerprint payments has been studied in various contexts.

One study (Hutomo, Sukarno, & Yasirandi, 2020) shows that the payment authentication system can solve the problem of the risk of system attack, the risk of topping up fails, and it can improve the payment experience of a drink vending machine. Another study (Wibisono & Rokhim, 2019) analyzes factors that influence the behavioral intention to use e-payment systems on e-commerce in Indonesia.

The biometric payments market is expected to witness stunning growth with a CAGR of 16.5% (Moorena, et al., 2020). The study objectives of this report are to analyze the global biometric payments market status, future forecast, growth opportunity, key players, and to define, describe, and forecast the market by product type, end-users, and key regions.

A study (Unknown, 2017) examines the predictive factors that most influence Indonesian people to use the mobile payment system. The current study focuses on the mobile payment system, but it is relevant to the use of fingerprint payments since they are both types of biometric payment systems.

Overall, the use of fingerprint payments in Indonesia has been studied in various contexts, and the biometric payments market is expected to grow significantly in the coming years.

Indonesia faces several payment issues, including a lack of accessible accounts for unbanked individuals and limited financial capabilities for those with accounts. According to a study by Muralidharan et al. (2020), there is a significant exclusion error in the

country's food distribution program. However, digitization efforts have been mixed, with some studies finding no evidence of exclusion from India's national workfare program (MGNREGS) (Ram, 2023).

Fingerprint payments in Indonesia have been introduced by companies like Japanese tech firm Liquid, which launched a biometric payments service in the country (Wibisono & Rokhim, 2019). This service operates at the point of sale and aims to improve transaction efficiency and security. According to a study by Muralidharan et al. (2016), there was no evidence of exclusion from India's national workfare program (MGNREGS) using fingerprint payments (Ram, 2023). However, more research is needed to understand the impact of fingerprint payments on payment issues in Indonesia.

In conclusion, fingerprint payments in Indonesia have the potential to address some payment issues, such as transaction security and efficiency. However, more research is needed to understand the impact of these payments on the broader Indonesian market and to address concerns related to digitization and financial inclusion.

RESEARCH METHOD

The method used in this paper entitled "Analysis of the use of fingerprint payments in Indonesia" is a literature review. The study aims to analyze the use of fingerprint payments in Indonesia, which has been studied in various contexts. One study conducted a mixed-method analysis to determine how fingerprint payments can improve the payment experience of a drink vending machine (Hutomo, Sukarno , & Yasirandi , 2020). Another study conducted a systematic literature review to examine the factors that affect customers to use mobile payment continually, including fingerprint payments (Putri, Purwandari , & Hidayanto, 2023). Additionally, a critical review of the literature was conducted to analyze the factors affecting the intention to use biometrics in payment services (Trawnih, Al-Adwan, Yaseen, & Al-Rahmi, 2023). The literature review also highlights the mixed research findings regarding payments with biometric authentication in Indonesia (Moorena, et al., 2020). The review draws primarily from experimental or quasi-experimental literature on electronic money and payment technologies, savings, credit, and e-commerce (Moorena, et al., 2020). The Biometric Payments Market is expected to witness stunning growth with a CAGR of 16.5% (Ram , 2023). The literature review method provides a comprehensive analysis of the use of fingerprint payments in Indonesia, highlighting evidence gaps and areas for future research.

RESULT

The Internet of Things (IoT) system works for fingerprint payments by integrating biometric authentication with various payment applications and devices. A study on the user experience aspect assessment method for digital wallet mobile applications in Indonesia introduced a fingerprint analysis method to improve the payment experience (Hutomo, Sukarno, & Yasirandi, 2020). This demonstrates the potential for fingerprint technology to enhance the overall payment process, particularly in the context of digital wallet applications. Additionally, in the context of secure cashless payment governance in Indonesia, a systematic literature review analyzed the hybrid securing digital payment system through risk perception, involving fingerprint authentication in the mutual authentication process (Kartika, Ariani, & Supangkat, 2018). This indicates the integration of fingerprint authentication within the broader framework of secure digital payment systems, highlighting its relevance in the context of cashless payments.

The use of fingerprint technology in payment systems has been shown to address various challenges and improve the overall payment experience. For instance, a research

study in Indonesia demonstrated that the payment authentication system using fingerprints can solve the problem of the risk of system attacks and the risk of topping up failures, thereby enhancing the reliability and security of the payment process (Hutomo, Sukarno, & Yasirandi, 2020). This highlights the practical benefits of integrating fingerprint technology within payment systems, particularly in addressing security concerns and potential system vulnerabilities. Moreover, a systematic literature review on the determinant factors of user acceptance of mobile payment systems in Indonesia compared fingerprint-based biometric authentication with traditional authentication methods for e-payment, emphasizing the potential of fingerprint technology to enhance the security and user acceptance of mobile payment systems (Suryono, Budi, & Purwandari, 2020).

In summary, the integration of fingerprint technology within the IoT system for payment applications and devices has shown promising results in addressing security concerns, enhancing the overall payment experience, and improving the reliability of payment processes. These findings underscore the potential of fingerprint payments within the broader landscape of digital payment systems, particularly in the context of addressing security challenges and improving user acceptance of mobile payment solutions.

Fingerprint system

Consumers use fingerprint payments by registering their fingerprint with a payment provider or a specific payment app, such as Apple Pay, Samsung Pay, or Google Pay (Hutomo, Sukarno, & Yasirandi, 2020). When making a payment, the user places their registered finger on the fingerprint sensor of the device, and the sensor then authenticates the user's identity based on the unique fingerprint pattern (Kartika, Ariani, & Supangkat, 2018). This process eliminates the need for entering card information or memorizing passwords, leading to increased customer satisfaction and loyalty (Hutomo, Sukarno, & Yasirandi, 2020).

The integration of fingerprint technology within the IoT system for payment applications and devices has shown promising results in addressing security concerns and enhancing the overall payment experience. For instance, a research study in Indonesia demonstrated that the payment authentication system using fingerprints can solve the problem of the risk of system attacks and the risk of topping up failures, thereby enhancing the reliability and security of the payment process (Trawnih, Al-Adwan, Yaseen, & Al-Rahmi, 2023). This highlights the practical benefits of integrating fingerprint technology within payment systems, particularly in addressing security concerns and potential system vulnerabilities. Moreover, a systematic literature review on the determinant factors of user acceptance of mobile payment systems in Indonesia compared fingerprint-based biometric authentication with traditional authentication methods for e-payment, emphasizing the potential of fingerprint technology to enhance the security and user acceptance of mobile payment systems (Suryono, Budi, & Purwandari, 2020).

The integration of fingerprint technology within the IoT system for payment applications and devices has shown promising results in addressing security concerns and enhancing the overall payment experience. One of the most significant benefits of biometric authentication in the payment arena is increased security, as biometric identifiers are unique to each individual, making it difficult for fraudsters to copy or mimic them. Biometric features, unlike passwords or PINs, cannot be readily forgotten or shared, minimizing the risk of unwanted access even further. Biometric verification gives an extra degree of security to payment transactions, lowering the risk of fraud and identity theft (Finance Magnets, 2023).

Another significant benefit of fingerprint payments is the convenience and ease of use. Fingerprint payments can improve the payment experience of various devices, such as

drink vending machines (Hutomo, Sukarno, & Yasirandi, 2020). This technology eliminates the need for entering card information or memorizing passwords, leading to increased customer satisfaction and loyalty (INDONESIA LOCAL BANK, 2023). Moreover, a systematic literature review on the determinant factors of user acceptance of mobile payment systems in Indonesia compared fingerprint-based biometric authentication with traditional authentication methods for e-payment, emphasizing the potential of fingerprint technology to enhance the security and user acceptance of mobile payment systems (Hutomo, Sukarno, & Yasirandi, 2020).

In summary, the integration of fingerprint technology within the IoT system for payment applications and devices has shown promising results in addressing security concerns, enhancing the overall payment experience, and improving the reliability of payment processes. These findings underscore the potential of fingerprint payments within the broader landscape of digital payment systems, particularly in the context of addressing security challenges and improving user acceptance of mobile payment solutions.

DISCUSSION

The literature review method used in the research entitled "Analysis of the use of fingerprint payments in Indonesia" highlights the potential negative impact of fingerprint payments. One potential negative impact of fingerprint payments is the privacy and security of users' biometric data (Finance Magnets, 2023). Users may be concerned about the potential for unauthorized access to their biometric data, which could lead to identity theft or other security breaches. This highlights the need for robust security measures and data protection protocols to ensure the safe and secure use of fingerprint payments.

Another potential negative impact of fingerprint payments is the potential for system failures or errors. A study on the user experience aspect assessment method for digital wallet mobile applications in Indonesia introduced a fingerprint analysis method to improve the payment experience (Hutomo, Sukarno, & Yasirandi, 2020). However, the study also highlighted the potential for system errors or failures, which could lead to payment delays or other issues. This underscores the need for reliable and efficient payment systems that can handle the volume of transactions and ensure the smooth operation of fingerprint payments.

Moreover, the literature review highlights the need for further research to understand the impact of fingerprint payments on financial inclusion and to address concerns related to digitization and financial capabilities. While fingerprint payments offer a convenient and secure method for users to complete transactions, there may be challenges related to access and affordability for certain segments of the population. Therefore, further research is needed to understand the impact of fingerprint payments on financial inclusion and to address concerns related to digitization and financial capabilities.

The research entitled "Analysis of the use of fingerprint payments in Indonesia" highlights the countries that have implemented fingerprint payments. One country that has implemented fingerprint payments is Indonesia, where a Japanese tech firm launched a biometric payments service that operates at the point of sale. This service aims to improve transaction efficiency and security. The study shows that the payment authentication system can solve the problem of the risk of system attack, the risk of topping up fails, and it can improve the payment experience of a drink vending machine (Hutomo, Sukarno, & Yasirandi, 2020).

Another study analyzed secure cashless payment governance in Indonesia and involved fingerprint authentication in the mutual authentication process (Kartika, Ariani, & Supangkat, 2018). The study found that the hybrid securing digital payment system

through risk perception can improve the security of cashless payments. Moreover, a systematic literature review on the determinant factors of user acceptance of mobile payment systems in Indonesia compared fingerprint-based biometric authentication with traditional authentication methods for e-payment (Suryono, Budi, & Purwandari, 2020). The study emphasized the potential of fingerprint technology to enhance the security and user acceptance of mobile payment systems.

In summary, fingerprint payments in Indonesia offer enhanced security, convenience, and ease of use, with the potential to improve overall payment systems. However, concerns regarding the privacy and security of biometric data, possible system failures, and affordability challenges need to be addressed. Despite their implementation, further research is essential to understand the impact of fingerprint payments on financial inclusion and to mitigate issues related to digitization and financial capabilities. The literature underscores the necessity for robust security measures and data protection protocols to ensure the safe and secure use of fingerprint payments, emphasizing their potential to enhance the overall security and convenience of payment systems in Indonesia.

CONCLUSION

This study, titled "Analysis of the use of fingerprint payments in Indonesia," employs the literature review method to investigate the utilization of fingerprint payments in Indonesia. It was found that the simultaneous use of the Internet of Things (IoT) with fingerprint payments can enhance the payment experience by providing real-time data and improving transaction efficiency. Several studies have been conducted to explore the context of fingerprint payments in Indonesia, including enhancing the payment experience of drink vending machines and analyzing factors influencing the intention to use electronic payment systems in e-commerce.

Despite the expected significant growth in the biometric payment market, Indonesia still faces various payment challenges, including limited access to accounts for those without bank accounts and financial capability constraints. The implementation of fingerprint payments by companies such as Liquid in Indonesia indicates efforts to improve transaction efficiency and security.

The results of the literature review indicate that the use of fingerprint technology in payment systems can address several challenges, such as transaction security and efficiency. However, concerns about the privacy and security of users' biometric data and the potential for system disruptions exist. These findings emphasize the need for further action to ensure the security and acceptance of fingerprint payment technology in Indonesia.

In conclusion, while fingerprint payments have the potential to address various payment challenges, including security and efficiency, further research is needed to understand their overall impact on the Indonesian market. Challenges related to financial inclusion and data security need to be addressed for the successful implementation of fingerprint payment technology. The scholarly references used in this study provide a solid foundation for a comprehensive understanding of the status of fingerprint payment usage in Indonesia.

REFERENCE

Finance Magnets. (2023). The Impact of Biometric Authentication Entering the Payment Space. Finance Magntes.

Hutomo, S., Sukarno, P., & Yasirandi, R. (2020). How Can Fingerprint Improves The

Payment Experience of a Drink Vending Machine? IEEE Xplore, 1-179.
INDONESIA LOCAL BANK. (2023). Biometric Authentication for Bank Teller Management in Indonesia. Indonesia: Aratek.
Kartika, H., Ariani, Y., & Supangkat, S. H. (2018). Secure Cashless Payment Governance in Indonesia: A Systematic Literature Review. Research Gate.
Moorena, L., Rabb, M., Rusdinar, A., Simone, S., Tangoren, C., & Theys, N. (2020). TOWARDS INCLUSIVE DIGITAL FINANCE IN INDONESIA. Inclusive Financial Innovation Initiative (IFII) White Paper, 1-43.
Putri, M. F., Purwandari, B., & Hidayanto, A. N. (2023). What do affect customers to use mobile payment continually? a systematic literature review. UI scholar.
Ram, A. (2023). Biometric Payments Market to Witness Stunning Growth with a CAGR of 16.5%.
Suryono, R. R., Budi, I., & Purwandari, B. (2020). Challenges and Trends of Financial Technology (Fintech): A Systematic Literature Review. MDPI.
Trawnih, A. A., Al-Adwan, A. S., Yaseen, H., & Al-Rahmi, W. M. (2023). Determining perceptions of banking customers regarding fingerprint ATMs. Sage Journals.
Unknown. (2017). Japanese firm unveils fingerprint payments in Indonesia. Identity week.
Wibisono, D., & Rokhim, R. (2019). Perceived Mobile Payment Acceptance in Indonesia. UI Scholar, 221-240.