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The Effectiveness of QRIS Tap in Improving the Speed and Efficiency of Payment Systems in Indonesia

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***ABSTRAK**: Transformasi digital telah mendorong perubahan signifikan dalam sistem pembayaran di Indonesia, salah satunya melalui inovasi Quick Response Code Indonesian Standard (QRIS). Perkembangan terbaru berupa QRIS Tap berbasis Near Field Communication (NFC) diperkenalkan untuk meningkatkan kecepatan dan efisiensi transaksi digital, khususnya pada sektor dengan frekuensi transaksi tinggi. Penelitian ini bertujuan untuk menganalisis konsep, mekanisme, efektivitas, serta tantangan implementasi QRIS Tap dalam meningkatkan kinerja sistem pembayaran nasional. Metode penelitian yang digunakan adalah kualitatif dengan pendekatan studi literatur, melalui pengumpulan dan analisis berbagai sumber ilmiah terkait sistem pembayaran digital di Indonesia. Analisis dilakukan menggunakan teknik analisis tematik untuk mengidentifikasi pola dan hubungan antar konsep. Hasil penelitian menunjukkan bahwa QRIS Tap mampu meningkatkan kecepatan transaksi secara signifikan dibandingkan metode pemindaian QR konvensional dan pembayaran tunai, dengan proses otorisasi real-time serta sistem enkripsi yang meningkatkan keamanan. Implementasi QRIS Tap juga berkontribusi pada efisiensi operasional, interoperabilitas antar penyedia jasa pembayaran, dan perluasan inklusi keuangan. Namun demikian, terdapat tantangan berupa keterbatasan perangkat yang mendukung NFC, kesiapan infrastruktur, literasi digital masyarakat, serta aspek keamanan siber. Oleh karena itu, diperlukan penguatan infrastruktur, regulasi perlindungan data, dan edukasi publik agar implementasi QRIS Tap dapat optimal dan berkelanjutan.*

***Kata kunci**: QRIS Tap, sistem pembayaran digital, NFC, efisiensi transaksi, inklusi keuangan*

***ABSTRACT**: Digital transformation has significantly reshaped Indonesia's payment system, particularly through the innovation of the Quick Response Code Indonesian Standard (QRIS). The latest development, QRIS Tap based on Near Field Communication (NFC) technology, was introduced to enhance transaction speed and efficiency, especially in high-frequency transaction sectors. This study aims to analyze the concept, mechanism, effectiveness, and implementation challenges of QRIS Tap in improving the performance of the national payment system. The research employs a qualitative method using a literature review approach by collecting and analyzing relevant academic sources related to digital payment systems in Indonesia. The data were examined through thematic analysis to identify patterns and conceptual relationships. The findings indicate that QRIS Tap significantly increases transaction speed compared to conventional QR scanning and cash payments, supported by real-time authorization and encrypted security systems. Its implementation contributes to operational efficiency, interoperability among payment service providers, and broader financial inclusion. However, several challenges remain, including limited NFC-enabled devices, infrastructure readiness, digital literacy gaps, and cybersecurity concerns. Therefore, strengthening infrastructure, enhancing data protection regulations, and promoting public digital literacy are essential to ensure the optimal and sustainable implementation of QRIS Tap.*

***Keywords**: QRIS Tap, digital payment system, NFC, transaction efficiency, financial inclusion*

1. INTRODUCTION

Digital transformation has significantly changed the global payment system landscape over the past two decades. The development of financial technology has driven the shift from cash transactions to a cashless society, with electronic payment systems becoming faster, safer, and more efficient. This shift shows that the world community is increasingly adopting fast, practical, and efficient payment systems. The development of financial technology has accelerated the emergence of the concept of a cashless society. In this system, transactions no longer rely on physical money but instead use electronic payment instruments such as debit cards, credit cards, digital wallets, and mobile banking applications. Electronic payment systems provide various advantages, including easier access, faster transactions, and higher security levels compared to conventional payment methods. As a result, people are increasingly accustomed to using digital technology in their daily financial transactions.

On January 1, 2020, Bank Indonesia officially implemented a policy requiring the use of the Indonesian Standard Quick Response Code (QRIS) as the national standard for QR code-based payments (Sriekaningsih, 2020). This standard was designed by regulators in collaboration with the Indonesian Payment System Association (ASPI) to unify various digital payment systems into a single integrated code. Through the implementation of QRIS, every electronic money transaction uses the same QR code standard, thereby simplifying cross-platform payment processes. This policy aims to improve the efficiency of the payment system, accelerate the digitization of transactions, and encourage the expansion of financial inclusion in Indonesia. The implementation of QRIS has had a positive impact on the development of digital payment systems in Indonesia. Through this system, both merchants and consumers can conduct transactions more easily, quickly, and efficiently without needing multiple QR codes from different payment service providers. QRIS also plays an important role in expanding access to digital financial services, especially for micro, small, and medium enterprises (MSMEs) that previously faced limitations in accepting non-cash payments.

QRIS itself functions as a payment method that can be accessed via a smartphone connected to the internet and integrated with a server-based electronic wallet that has obtained official permission from Bank Indonesia as a legal means of payment (Trihayunda et al., 2023).Although QRIS has accelerated payment digitization, conventional QR code-based transaction mechanisms still have practical limitations such as dependence on cell phone cameras, searching for QR codes on payment machines, and the potential for longer queues when transaction volumes are high (Mulya, 2024). This situation has driven the need for further innovation in more efficient digital payment systems, especially in high-mobility environments such as public transportation services, large-scale retail, and public services. QRIS contributes to improving financial inclusion in Indonesia. By utilizing smartphones connected to the internet, people can perform payment transactions through various digital wallet applications that have received official authorization from Bank Indonesia. This system allows integration across different payment platforms, thereby providing convenience for both consumers and merchants in conducting digital transactions.

Along with technological developments and the need for faster transactions, QRIS innovation continues to evolve. Bank Indonesia officially launched and implemented it on March 14, 2025, as the latest development of the QRIS system (Bank Indonesia Communication Department, 2025). This innovation utilizes Near Field Communication (NFC) technology, allowing consumers to make transactions simply by placing their mobile phones close to a compatible payment machine. The presence of this feature complements the QRIS ecosystem, which previously focused on QR code scanning mechanisms, while expanding the alternatives for more practical and efficient digital payment methods (Cindy et al., 2025).

Fundamental question that arises is whether QRIS Tap is truly more effective than previous QRIS methods. How does its implementation affect transaction time efficiency and overall payment system performance? In addition, it is necessary to analyze the advantages and potential disadvantages of implementing this technology, both in terms of infrastructure, data security, and public readiness to adopt it. Therefore, this article aims to analyze the concept, mechanism, advantages, and challenges in the implementation of QRIS Tap in the context of Indonesia's payment system, as well as its impact on transaction efficiency and the optimization of digital services more broadly.

2. METHOD

The research method used is a qualitative method with a literature review approach. The research approach was conducted by collecting various references from books, scientific journals, and previous studies to complement and strengthen the discussion in the article. The literature review serves to obtain a relevant theoretical basis to support the process of solving the problems being studied. The theories obtained are an important initial step for researchers to understand the research problem more deeply and systematically in accordance with the scientific framework (Efendi et al., 2025).

The research has various data sources, particularly scientific journals that discuss payment systems in Indonesia and the direction of payment system development in the future. The data obtained is then analyzed using a thematic analysis approach to identify themes and relationships between the data found. Thematic analysis is carried out by grouping data based on themes relevant to the research objectives. The results of the analysis are then presented in the form of descriptive and interpretive narratives reinforced with quotations from various sources used.

3. RESULT AND DISCUSSION

3.1 The concept of the QRIS TAP mechanism in payment systems

The development of digital payment systems in Indonesia shows an increasingly integrated, adaptive, and high-tech transformation. QRIS TAP is an evolution of the Quick Response Code Indonesian Standard (QRIS), which was previously based on visual code scanning. Conventional QRIS represents the national QR code standardization to achieve interoperability between payment system service providers, whereas QRIS TAP expands this concept through the use of Near Field Communication (NFC) technology, which allows transactions to be carried out simply by bringing the device close to or tapping it on the payment terminal. This innovation not only simplifies the transaction process, but also represents a paradigm shift in payment systems from scan-based interaction to proximity-based real-time payment (Andriani et al., 2019).

QRIS TAP functions as a non-cash instrument that ensures interoperability between Payment System Service Providers (PJSP), transaction cost efficiency, and security based on encryption and real-time authorization. QRIS TAP has an operational mechanism that takes place in several digitally integrated stages. The process begins when the user accesses the payment application and selects the QRIS TAP method, then performs authentication via PIN or biometrics as the first layer of security. After that, the user's device is placed close to the merchant terminal equipped with an NFC reader.

At this stage, encrypted data is exchanged at very close range, usually less than four centimeters, to prevent interception by third parties. The data sent includes the merchant's identity, transaction amount, and encrypted security token. This information is then processed by the switching system for real-time authorization by verifying the balance and validity of the account. If the transaction is approved, the system

automatically performs the settlement process through the national payment infrastructure under the supervision of Bank Indonesia (Zain & Hastjarjo, 2025).

QRIS TAP reduces the potential for transaction failures due to scanning errors and increases user convenience. The encryption and tokenization system used strengthens security by minimizing the risk of skimming or data manipulation. QRIS TAP not only improves user experience but also improves the quality of digital transaction governance (Pramesti & Setiawan, 2025).

3.2 The effectiveness of QRIS TAP on transaction speed

QRIS TAP exhibits characteristics that significantly increase transaction speed compared to visual scanning-based QRIS methods and cash payments. Various studies on the transformation of Indonesia's payment system within the framework of the 2025 Indonesian Payment System Blueprint emphasize that the integration of Near Field Communication (NFC) technology is a strategic step to support high-frequency retail transactions (Andriani et al., 2019). Research by (Pangestika et al., 2025) on the use of QRIS shows that transaction time efficiency is a major determinant in increasing the adoption of digital payments. The study found that users consider QRIS to be faster than cash transactions because it reduces the process of giving change and manual calculations. This finding provides a basis for the argument that the development of QRIS TAP, which eliminates the visual scanning process, will further accelerate transaction times.

Research by (Syahputra et al., 2025) on tap-based cashless payment systems in public transportation found that contactless technology speeds up passenger boarding and alighting because transaction validation takes only seconds. The study confirms that a difference of 1–2 seconds per transaction can have a significant impact on service capacity during peak hours. This is relevant to QRIS TAP, which is designed for the high-frequency transportation and retail sectors. Based on previous studies, the effectiveness of QRIS TAP in terms of transaction speed is supported by the fact that digital payment systems are faster than cash, contactless tap mechanisms are faster than visual scanning, and real-time national switching integration speeds up the authorization and settlement process. Thus, QRIS TAP has a strong conceptual and empirical foundation as a payment instrument that improves transaction time efficiency in the national payment system.

3.3 Payment system efficiency through QRIS TAP implementation

The implementation of QRIS Tap, which is an extension of the Quick Response Code Indonesian Standard (QRIS) system based on Near Field Communication (NFC) technology, has shown a significant increase in the efficiency of digital payment systems in Indonesia. QRIS Tap allows users to complete transactions simply by placing their device close to the payment terminal without having to open the camera and visually scan the QR code, thereby theoretically speeding up the transaction process to around 0.3 seconds per transaction in public transportation implementations such as the Jakarta MRT and KRL. This is much faster than the conventional QR scan method, which requires several manual steps to achieve payment approval (Bank Indonesia Communication Department, 2025).

In the context of transaction efficiency, research conducted on QRIS in general shows that the use of the QRIS standard can increase payment processing speed, reduce transaction costs, and expand the reach of digital payments due to its interoperability between digital payment service providers. For example, a study by Ananda (2025) revealed that QRIS can accelerate transaction processes and expand financial inclusion, especially in the MSME segment, because it eliminates the need for multiple payment applications at once.

3.4 Challenges in Implementing QRIS Tap in Indonesia

The implementation of QRIS Tap in Indonesia faces a number of technical and non-technical challenges. One of the main issues is dependence on user device technology;

QRIS Tap can only function on smartphones that have an NFC module, so users with devices without NFC support still cannot access this method. This can indirectly widen the adoption gap in areas with lower smart device penetration or in low-income segments of society (Garage, 2025).

In addition, the literature on QRIS in general mentions other obstacles in digital payment systems, such as uneven IT infrastructure, low levels of digital financial literacy among the public, and potential security risks and digital fraud that need serious attention. In their research, Rachman et al. (2024) stated that challenges in implementing the QRIS payment system include a lack of support from policy makers at the local government level, as well as low public understanding of digital payment innovations.

In addition, social and behavioral challenges also need to be considered. The adoption of new payment methods is often influenced by the level of public understanding of technology, the level of trust in new systems, and preferences for traditional cash payment methods, which are still strong in some areas. These challenges affect not only QRIS Tap, but also the QRIS system in general as the initial stage of digital payment system transformation.

3.5 Implications of research for payment system policy

Reference to literature is done by writing the name and year of publication e.g. (Sutanto, 2022) or using APA Style citations according to Handoko (2020). (Sutanto, 2022) or using APA Style citations according to Handoko (2020). Literature citations must be in the Bibliography and the Bibliography must have citations in the manuscript. The bibliography is in last-name order. The Bibliography only contains literature that is cited in the manuscript.

The implementation of QRIS Tap has the potential to strengthen the effectiveness of the national digital payment system by increasing transaction speed, reducing operational friction, and optimizing user experience. In the context of QRIS, interoperability between payment service providers has also been proven to increase efficiency and financial inclusion, particularly in the UMKM sector (Ananda, 2025).

In terms of policy, these findings indicate that strengthening the QRIS TAP ecosystem needs to be done through three main approaches, namely strengthening infrastructure, security regulations, and digital literacy. First, in terms of infrastructure,

expanding NFC-based terminals and improving device compatibility are priorities so that adoption is not limited to urban areas. Studies on the adoption of digital payment technology show that infrastructure readiness has a significant effect on usage intentions (Rachman et al., 2024). Second, from a regulatory perspective, strengthening cybersecurity and personal data protection is crucial. Previous research confirms that security factors and risk perception significantly influence people's decisions to use digital payment systems (Oliveira et al., 2016). Therefore, policies governing encryption standards, two-factor authentication, and transaction monitoring need to be strengthened to maintain public trust in QRIS TAP. Third, from a social and educational perspective, improving digital financial literacy must be a priority agenda. The transformation towards a contactless payment system depends not only on technological readiness, but also on the readiness of society. The Technology Acceptance Model (TAM) developed by Davis (1989) confirms that technology acceptance is influenced by perceptions of benefits and ease of use, both of which can be improved through massive education and socialization. Furthermore, on a macro level, the implementation of QRIS Tap has the potential to support Bank Indonesia's vision in the 2025 Indonesian Payment System Blueprint (BSPI), which emphasizes the digitization of the national payment system. If optimized, QRIS Tap can accelerate economic turnover, reduce cash transaction costs, and increase the transparency and accountability of the payment system.

The policy implications of this study confirm that the effectiveness of QRIS Tap depends not only on technical aspects, but also on policy harmonization, infrastructure readiness, consumer protection, and improved digital literacy. Comprehensive policy integration will determine the success of QRIS Tap as a strategic innovation in Indonesia's payment system.

4. CONCLUSION

QRIS Tap is an important innovation in Indonesia’s digital payment system that improves transaction speed and efficiency compared to scan-based QRIS methods and cash payments. By utilizing Near Field Communication (NFC) technology, this system enables payment processes to be carried out more quickly, practically, and securely through a multi-layered authentication mechanism and real-time authorization. The implementation of QRIS Tap is also in line with the direction of economic digitalization policies outlined in the 2025 Indonesian Payment System Blueprint, which aims to expand financial inclusion and strengthen the digital payment ecosystem. However, the success of its implementation still depends on infrastructure readiness, support from data security regulations, and the improvement of public digital literacy. Therefore, synergy between the government, regulators, and the public is essential so that QRIS Tap can function optimally in improving the efficiency of the national payment system and accelerating the realization of an inclusive and sustainable cashless society.

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