

The Development of Quick Response Code Indonesian Standard (QRIS) Transactions and Their Implications for Banking Third-Party Funds in North Sumatra Province, 2019–2025

Farida Ariani, Rusiadi, Lia Nazliana Nasution, Santhos Frananda, Elizabeth Kurniasih

Abstract

The rapid expansion of digital payment systems has become one of the main drivers of financial sector transformation and digital economic development in Indonesia. The implementation of the Quick Response Code Indonesian Standard (QRIS) by Bank Indonesia represents a strategic initiative to create an interoperable, efficient, and inclusive national payment system. This study aims to analyze the development of the QRIS ecosystem and examine its implications for banking Third-Party Funds (TPF) in North Sumatra Province during the period 2019–2025. A quantitative descriptive research design was employed using secondary data obtained from Bank Indonesia, the Financial Services Authority (OJK), and Statistics Indonesia (BPS). The analysis utilized descriptive statistics, trend analysis, Annual Growth Rate (AGR), Compound Annual Growth Rate (CAGR), and policy analysis to evaluate the development of QRIS transactions and banking deposits. The findings indicate that the QRIS ecosystem expanded significantly throughout the observation period. QRIS transaction values increased from IDR 0.095 trillion in 2019 to IDR 40.36 trillion in 2025, while the number of merchants and users also experienced substantial growth, reflecting rapid adoption of digital payment technology. During the same period, banking Third-Party Funds increased steadily from IDR 235.30 trillion to IDR 338.40 trillion, indicating sustained banking intermediation amid digital transformation. CAGR analysis shows that QRIS transactions recorded an average annual growth of approximately 154.0%, substantially higher than the 6.25% CAGR of Third-Party Funds. Although the descriptive analysis does not establish a causal relationship, the parallel upward trends suggest that the expansion of the QRIS ecosystem has occurred alongside continued growth in banking deposits. These findings support Digital Finance Theory and Financial Intermediation Theory, highlighting that digital payment innovation can complement banking activities by increasing transaction intensity and strengthening financial inclusion. This study contributes to the literature on digital payment systems by providing regional empirical evidence from North Sumatra and offers practical insights for Bank Indonesia, OJK, commercial banks, and regional governments in strengthening digital payment infrastructure, promoting financial inclusion, and supporting sustainable digital economic development.

Keywords: QRIS; Digital Payment; Third-Party Funds; Banking Intermediation; Digital Finance; Financial Inclusion; North Sumatra

Farida Ariani¹

¹Magister of Economy, Universitas Pembangunan Panca Budi, Indonesia
e-mail: faridaariani@mahasiswa.pancabudi.ac.id

Rusiadi², Lia Nazliana Nasution³, Santhos Frananda⁴, Elizabeth Kurniasih⁵

^{2,3,4,5}Magister of Economy, Universitas Pembangunan Panca Budi, Indonesia
e-mail: rusiadi@dosen.pancabudi.ac.id², lianazliana@dosen.pancabudi.ac.id³,
santhosfrananda@mahasiswa.pancabudi.ac.id⁴, elizabethkurniasih@gmail.com⁵

3rd International Conference Epicentrum of Economic Global Framework (ICEEGLOF)

Theme: Cross-Sector and Cross-Disciplinary Strategies for Achieving the SDGS

<https://proceeding.pancabudi.ac.id/index.php/ICEEGLOF>

Introduction

The rapid advancement of information and communication technology has accelerated the digital transformation of financial services worldwide. Digital payment systems have become one of the key drivers of economic modernization by improving transaction efficiency, reducing cash dependency, and strengthening financial inclusion. In Indonesia, the digital economy has experienced remarkable growth over the past decade, supported by increasing internet penetration, smartphone adoption, and government initiatives to promote a cashless society.

As part of this transformation, Bank Indonesia introduced the **Quick Response Code Indonesian Standard (QRIS)** in January 2020 as a unified national QR code payment standard. QRIS integrates various electronic payment service providers into a single interoperable platform, enabling consumers and merchants to conduct digital transactions more efficiently. The implementation of QRIS forms an integral component of the **Indonesia Payment System Blueprint (BSPI) 2025** and its continuation through **BSPI 2030**, which aim to establish a secure, efficient, inclusive, and innovative payment ecosystem that supports sustainable economic growth.

The rapid development of digital payment systems has transformed modern financial ecosystems by reducing transaction costs, increasing payment efficiency, and expanding access to financial services. Recent empirical evidence indicates that cashless payment adoption contributes significantly to financial inclusion by enabling digital transaction records that improve access to financial products and services, particularly for previously underserved populations (Ouyang, 2026).

The rapid expansion of digital payment systems in Indonesia has not only transformed payment behavior but also contributed to broader economic development. Digital payment adoption supports transaction efficiency, encourages financial inclusion, and creates opportunities for poverty reduction by expanding access to formal financial services and strengthening the digital economy (Nasution & Rangkuty, 2022).

Recent evidence suggests that the rapid expansion of cashless payment systems has fundamentally transformed financial ecosystems by improving transaction efficiency, expanding financial inclusion, and enabling broader access to financial services through digital platforms. Digital payment systems also generate valuable transactional information that supports the development of banking services and digital financial intermediation (Ouyang, 2026).

The adoption of QRIS has increased significantly since its implementation. Beyond improving transaction efficiency, QRIS has expanded digital financial access for micro, small, and medium enterprises (MSMEs), strengthened payment interoperability, and encouraged greater utilization of banking services. Consequently, digital payment systems are expected to contribute not only to transaction efficiency but also to the strengthening of banking intermediation through increased use of deposit accounts.

Banking institutions continue to play a strategic role in Indonesia's financial system through their intermediation function, primarily by mobilizing public savings in the form of **Third-Party Funds (TPF)**. TPF, consisting of demand deposits, savings, and time deposits, represents the principal funding source for commercial banks and serves as an important indicator of banking liquidity and financial stability. The continuous growth of digital payment transactions may indirectly influence the accumulation of TPF by increasing the intensity of banking transactions and encouraging customers to maintain active deposit accounts.

North Sumatra is one of Indonesia's major economic provinces, characterized by rapid growth in trade, services, tourism, and MSMEs. These characteristics make the province an appropriate case for examining the development of QRIS and its implications for banking performance. During the period 2019–2025, QRIS transaction values in North Sumatra increased dramatically from **IDR 0.095 trillion** to **IDR 40.36 trillion**, while Third-Party Funds grew steadily from **IDR 235.30 trillion** to **IDR 338.40 trillion**. These developments indicate that digital payment

expansion and banking fund mobilization have progressed simultaneously, although their growth rates differ substantially.

In Indonesia, the implementation of the Quick Response Code Indonesian Standard (QRIS) represents an important milestone in the national digital payment agenda. Similar to international evidence on cashless payment ecosystems, QRIS not only facilitates payment efficiency but also supports the development of broader digital financial services through increased transaction intensity and interoperability (Ouyang, 2026).

Previous studies have generally focused on the determinants of digital payment adoption, consumer behavior, financial technology, and financial inclusion. Other studies have examined banking liquidity and deposit mobilization separately. However, empirical studies specifically investigating the development of QRIS and its implications for Third-Party Funds at the provincial level remain limited. Moreover, evidence from North Sumatra is still scarce despite the province's strategic economic importance.

This study addresses this research gap by providing empirical evidence on the development of QRIS transactions and their implications for Third-Party Funds in North Sumatra during the 2019–2025 period. Unlike studies that attempt to establish causal relationships using large time-series datasets, this research adopts a descriptive quantitative approach supported by trend analysis, annual growth analysis, Compound Annual Growth Rate (CAGR), and policy analysis. This methodological approach is considered appropriate given the availability of annual data and allows the study to provide reliable descriptive evidence without overstating causal inference.

The findings are expected to contribute to the literature on digital finance, payment systems, and banking intermediation while providing practical implications for Bank Indonesia, the Financial Services Authority (OJK), commercial banks, and regional governments in designing policies that support digital payment ecosystems and sustainable banking development.

The objective of this study is to analyze the development of QRIS transaction values and examine their implications for the growth of Third-Party Funds in the banking sector of North Sumatra Province during the period 2019–2025.

Literature Review

2.1 Digital Payment System and QRIS

The rapid advancement of digital technology has fundamentally transformed payment systems worldwide. Digital payment systems enable financial transactions to be conducted electronically, reducing transaction costs, improving efficiency, and enhancing financial inclusion. According to Bank Indonesia, the implementation of the **Quick Response Code Indonesian Standard (QRIS)** represents one of the most significant milestones in Indonesia's payment system modernization. QRIS standardizes QR code payments across all payment service providers, allowing interoperability between banks and non-bank financial institutions while supporting the development of a less-cash society.

The implementation of QRIS is part of the Indonesia Payment System Blueprint (BSPI) 2025 and BSPI 2030, which aim to strengthen the national digital payment ecosystem through innovation, interoperability, consumer protection, and financial inclusion. The increasing adoption of QRIS has facilitated broader participation of micro, small, and medium enterprises (MSMEs) in the digital economy while improving transaction efficiency and transparency.

Several empirical studies have shown that digital payment adoption positively contributes to economic activity by increasing transaction convenience, reducing operational costs, and expanding access to financial services. Nevertheless, evidence regarding its implications for banking fund mobilization remains limited, particularly at the regional level in Indonesia.

According to Ouyang (2026), cashless payment systems are no longer merely payment instruments but have evolved into integrated digital ecosystems that generate transaction data

capable of supporting broader financial services. The study demonstrates that digital payment adoption significantly increases financial inclusion by expanding access to consumer credit and strengthening digital financial ecosystems.

Digital payment ecosystems have evolved beyond their traditional role as payment instruments. Ouyang (2026) argues that digital payment platforms generate valuable transaction information that enables financial institutions to improve credit assessment, enhance financial inclusion, and expand digital financial services. This indicates that payment data have become an important strategic asset within modern financial ecosystems.

Nasution and Rangkuty (2022) explain that digital payment systems function not only as transaction instruments but also as catalysts for inclusive economic development. The increasing adoption of digital payment technologies contributes to financial inclusion, improves economic efficiency, and supports poverty alleviation through broader participation in the formal financial sector.

Although QRIS differs institutionally from the Alipay ecosystem examined by Ouyang (2026), both systems illustrate how interoperable digital payment infrastructures can accelerate digital transactions, strengthen financial ecosystems, and encourage wider participation in formal financial services.

2.2 Financial Intermediation Theory

Financial Intermediation Theory explains the role of banks as intermediaries that channel funds from surplus units to deficit units. According to Diamond (1984) and Diamond and Dybvig (1983), banks perform liquidity transformation by collecting public deposits and allocating them into productive investments.

Third-Party Funds (TPF), consisting of demand deposits, savings, and time deposits, constitute the primary funding source for commercial banks. Sustainable growth in TPF is therefore essential for maintaining banking liquidity, supporting credit expansion, and strengthening financial stability.

The expansion of digital payment systems may reinforce banking intermediation because QRIS transactions are settled through banking accounts. Increased transaction intensity may encourage individuals and businesses to maintain active accounts, potentially supporting the accumulation of low-cost deposits (Current Account and Savings Account/CASA).

2.3 Digital Finance Theory

Digital Finance Theory emphasizes that technological innovation enhances the accessibility, efficiency, and inclusiveness of financial services. The integration of digital payment platforms with banking services enables users to perform transactions more conveniently while encouraging greater utilization of formal financial institutions.

In the Indonesian context, QRIS functions not only as a payment instrument but also as an entry point for broader digital financial services. The growing number of QRIS users reflects increasing public confidence in digital financial infrastructure and contributes to strengthening the digital financial ecosystem.

2.4 Previous Studies

Previous studies have primarily examined digital payment adoption from the perspectives of consumer behavior, technology acceptance, financial inclusion, and fintech development. Research generally concludes that digital payment systems improve transaction efficiency, expand financial inclusion, and support economic growth.

Other studies have investigated determinants of Third-Party Funds, emphasizing macroeconomic variables such as interest rates, inflation, income growth, and banking performance. However, relatively few studies have explored the relationship between QRIS development and banking fund mobilization, especially using regional data from Indonesia.

This indicates that empirical evidence concerning the implications of QRIS expansion for banking liquidity remains limited and deserves further investigation.

2.5 Research Gap

Most previous studies focus on either digital payment adoption or banking performance separately. Limited attention has been given to examining how the rapid expansion of QRIS may coincide with the development of Third-Party Funds at the regional level.

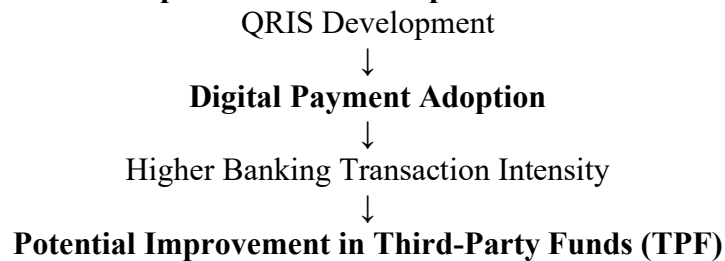
Furthermore, previous Indonesian studies predominantly employ national datasets or customer surveys, whereas regional analyses remain scarce. North Sumatra represents an important economic region with rapidly increasing QRIS transactions but limited empirical evidence regarding their relationship with banking deposits.

Accordingly, this study fills the research gap by documenting the development of QRIS transactions and examining their implications for Third-Party Funds in North Sumatra during the period 2019–2025 using official annual data from Bank Indonesia, OJK, and Statistics Indonesia.

2.6 Conceptual Framework

This study assumes that the expansion of QRIS enhances the utilization of banking accounts for payment settlement, thereby supporting banking intermediation through increased transaction intensity. Although the study does not attempt to establish causal relationships due to data limitations, it evaluates whether the development of QRIS and Third-Party Funds demonstrates parallel trends over the study period.

The conceptual framework is presented as follows:



This framework provides the theoretical basis for interpreting the empirical findings and discussing policy implications regarding digital payment development and banking intermediation in Indonesia.

Research Methodology

The remarkable increase in QRIS transaction values observed in North Sumatra Province is consistent with international findings reported by Ouyang (2026), who demonstrates that the adoption of cashless payment systems contributes to stronger financial ecosystems by increasing transaction intensity and generating high-quality payment information.

3.1 Research Design

This study employed a quantitative descriptive research design to examine the development of Quick Response Code Indonesian Standard (QRIS) transactions and their implications for Third-Party Funds (TPF) in the banking sector of North Sumatra Province during the period 2019–2025. Rather than establishing causal relationships, the study focused on identifying development patterns, growth dynamics, and policy implications associated with the implementation of QRIS. The findings of this study are consistent with Ouyang (2026), who reported that the expansion of cashless payment ecosystems contributes to broader financial inclusion through increased digital transaction intensity and richer transaction information. Although the present study does not examine credit provision directly, the continuous growth of QRIS transaction values alongside banking Third-Party Funds indicates that digital payment expansion may coexist with the strengthening of banking intermediation rather than replacing conventional banking activities.

A descriptive quantitative approach was considered appropriate because the available data consist of annual observations covering seven years (2019–2025). Therefore, the analysis emphasizes trend interpretation and descriptive evidence supported by official statistical data.

3.2 Data Sources

This study utilized secondary data obtained from official government institutions. QRIS transaction data were collected from Bank Indonesia, Third-Party Fund (TPF) data were obtained from the Financial Services Authority (OJK), while inflation and Gross Regional Domestic Product (GRDP) growth data were obtained from Statistics Indonesia (BPS) of North Sumatra Province.

While Ouyang (2026) focuses primarily on financial inclusion and consumer credit, the present study extends this perspective by showing that the rapid expansion of digital payment transactions occurred simultaneously with sustained growth in banking Third-Party Funds. This suggests that digital payment development complements rather than substitutes the banking intermediation function

Using official secondary data ensures the reliability and credibility of the empirical evidence presented in this study.

3.3 Research Variables

The study focuses on two principal variables and several supporting macroeconomic indicators.

Variable	Measurement
QRIS Transaction Value	Trillion Rupiah
Third-Party Funds (TPF)	Trillion Rupiah
BI Rate	Percentage (%)
Inflation	Percentage (%)
GRDP Growth	Percentage (%)

QRIS transaction value represents the annual value of transactions conducted using the national QR payment standard. Third-Party Funds refer to public deposits collected by commercial banks, consisting of demand deposits, savings deposits, and time deposits.

The remaining macroeconomic indicators are included to provide contextual interpretation of banking performance and digital payment development.

3.4 Data Analysis Techniques

Data analysis was conducted through several stages.

Descriptive Statistics : Descriptive statistics were employed to summarize the characteristics of QRIS transaction values and Third-Party Funds during the observation period.

Trend Analysis : Trend analysis was conducted to identify the direction and magnitude of changes in

Annual Growth Analysis : Annual Growth Rate was calculated to evaluate yearly changes in QRIS transaction values and Third-Party Funds.

The annual growth rate is calculated as follows:

$$\text{Annual Growth (\%)} = \frac{(\text{Current Year} - \text{Previous Year})}{\text{Previous Year}} \times 100\%$$

Compound Annual Growth Rate (CAGR)

To evaluate long-term growth performance, Compound Annual Growth Rate (CAGR) was calculated using the following equation:

$$\text{CAGR} = (\text{Final Value} / \text{Initial Value})^{(1/n)} - 1$$

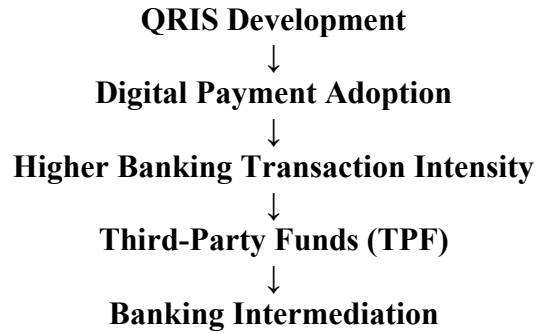
where n represents the number of years during the observation period.

Policy Analysis : In addition to statistical analysis, this study employed policy analysis to interpret the relationship between the development of QRIS transactions and banking fund mobilization in

the context of Bank Indonesia's digital payment policies, particularly the Indonesia Payment System Blueprint (BSPI) 2025 and BSPI 2030.

3.5 Research Framework

The analytical framework of this study assumes that the expansion of QRIS promotes greater utilization of banking services through digital payment transactions. Increased banking transaction intensity is expected to support the accumulation of Third-Party Funds while strengthening banking intermediation.



The framework serves as the basis for interpreting the descriptive findings and discussing policy implications without inferring direct causality.

3.6 Research Flow

The research procedure consisted of the following stages:

1. Data collection from Bank Indonesia, OJK, and BPS.
2. Data verification and compilation.
3. Descriptive statistical analysis.
4. Trend analysis.
5. Annual growth analysis.
6. CAGR analysis.
7. Policy interpretation.
8. Discussion based on financial intermediation and digital finance theories.
9. Formulation of conclusions and policy recommendations.

Results

4.1 Development of QRIS Transactions and Third-Party Funds in North Sumatra (2019–2025)

The implementation of the Quick Response Code Indonesian Standard (QRIS) has significantly transformed the digital payment ecosystem in Indonesia. In North Sumatra Province, QRIS adoption has accelerated substantially since its national implementation, reflecting increasing public acceptance of digital payment systems and the expansion of merchant participation.

Table 1. Development of QRIS Transaction Values and Third-Party Funds in North Sumatra (2019–2025)

Year	QRIS Transaction (IDR Trillion)	Third-Party Funds (IDR Trillion)
2019	0.095	235.30
2020	0.108	261.97
2021	0.551	262.64
2022	2.230	300.88
2023	5.470	312.87
2024	29.150	320.30

2025	40.360	338.40
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Source: Bank Indonesia and Financial Services Authority (processed by the author).

Table 1 demonstrates a remarkable increase in QRIS transaction values throughout the observation period. QRIS transactions expanded from IDR 0.095 trillion in 2019 to IDR 40.36 trillion in 2025. This substantial increase reflects the rapid digital transformation of payment systems in North Sumatra and the successful implementation of Bank Indonesia's national QRIS program.

Meanwhile, Third-Party Funds also exhibited a positive upward trend, increasing from IDR 235.30 trillion in 2019 to IDR 338.40 trillion in 2025. Compared with QRIS transactions, TPF growth was considerably more stable, indicating that banking fund mobilization is influenced not only by digital payment development but also by broader macroeconomic conditions, banking performance, and public confidence in financial institutions.

Overall, the simultaneous increase in QRIS transactions and TPF suggests that the expansion of digital payment infrastructure has occurred alongside continued growth in banking deposits. Although the available annual data do not permit causal inference, the observed pattern indicates that digital payment development and banking intermediation have evolved in the same direction during the study period.

4.1 Descriptive Statistics

Table 2. Presents the descriptive statistics of QRIS ecosystem development and Third-Party Funds (TPF) in North Sumatra during the period 2019–2025.

Variabel	N	Mean	Median	Minimum	Maksimum	Standar Deviasi
Merchant QRIS (unit)	7	807.592	944.000	40.000	1.660.000	592.379
Pengguna QRIS (orang)*	6	1.388.833	1.268.000	197.000	2.800.000	1.024.944
Nilai Transaksi QRIS (Rp Triliun)	7	11,138	2,230	0,095	40,360	16,255
Dana Pihak Ketiga (Rp Triliun)	7	290,337	300,880	235,300	338,400	39,398

The average number of QRIS merchants reached approximately **807,592 merchants**, increasing from only **40,000 merchants** in 2019 to **1.66 million merchants** in 2025. This substantial increase reflects the successful expansion of Indonesia's digital payment infrastructure across business sectors.

The average number of QRIS users during 2020–2025 was approximately **1.39 million users**, demonstrating rapid public adoption of digital payment technology. User growth accelerated particularly after 2022, indicating stronger acceptance of cashless payment systems among consumers.

QRIS transaction values averaged **IDR 11.138 trillion** during the observation period, with a maximum value of **IDR 40.360 trillion** in 2025. The relatively high standard deviation indicates substantial acceleration in transaction values following the nationwide implementation of QRIS.

Third-Party Funds averaged **IDR 290.337 trillion**, increasing steadily throughout the study period. Compared with QRIS transaction values, TPF exhibited lower variability, reflecting the relatively stable nature of banking deposit growth.

4.2.1 Trend Analysis of QRIS Transactions

To better understand the dynamics of digital payment development, the annual growth of QRIS transactions was calculated.

Table 3. Annual Growth of QRIS Transactions

Year	QRIS (IDR Trillion)	Growth (%)
2019	0.095	-
2020	0.108	13.68
2021	0.551	410.19
2022	2.230	304.72
2023	5.470	145.29
2024	29.150	432.91
2025	40.360	38.46

The trend analysis reveals three distinct phases in the development of QRIS.

The first phase (2019–2020) represents the **initial adoption period**, during which QRIS was gradually introduced to merchants and consumers. Transaction values remained relatively low as users adapted to the new payment system.

The second phase (2021–2023) can be described as the **acceleration period**. During these years, QRIS experienced rapid expansion supported by increasing merchant participation, government digitalization initiatives, and changing consumer payment behavior following the COVID-19 pandemic.

The third phase (2024–2025) represents the **expansion period**, characterized by a substantial increase in transaction values. This period indicates that QRIS had become one of the dominant digital payment instruments in North Sumatra.

The extraordinary growth observed during this period is consistent with Indonesia's broader digital transformation agenda and demonstrates the effectiveness of Bank Indonesia's payment system policies in promoting a cashless economy.

4.2.2 Annual Growth Analysis

Table 4. Annual Growth Rate

Tahun	Merchant (%)	Pengguna (%)	QRIS (%)	DPK (%)
2020	481,61	–	13,68	11,34
2021	109,11	128,43	410,19	0,26
2022	94,04	85,78	304,72	14,56
2023	8,05	103,35	145,29	3,98
2024	24,51	38,24	432,91	2,37
2025	30,71	19,15	38,46	5,65

The annual growth analysis demonstrates that QRIS ecosystem development accelerated substantially during the observation period.

Merchant growth was exceptionally high during the early implementation stage, particularly in 2020, reflecting the rapid expansion of QRIS infrastructure. User growth also increased considerably, indicating broader public acceptance of digital payment systems.

QRIS transaction values experienced the highest annual growth among all variables, suggesting that transaction intensity expanded rapidly following the increase in merchant participation and user adoption.

Meanwhile, Third-Party Funds grew more moderately but consistently. This pattern indicates that banking deposits are influenced by broader macroeconomic conditions while continuing to benefit from increasing utilization of banking services associated with digital payment development.

4.3. Trend Analysis of Third-Party Funds

The development of Third-Party Funds during the study period is presented in Table 3.

Table 5. Annual Growth of Third-Party Funds

Year	TPF (IDR Trillion)	Growth (%)
2019	235.30	-
2020	261.97	11.34
2021	262.64	0.26
2022	300.88	14.56
2023	312.87	3.98
2024	320.30	2.37
2025	338.40	5.65

Unlike QRIS transactions, Third-Party Funds demonstrated relatively stable growth throughout the observation period. Although the growth rate fluctuated across years, the general trend remained positive.

The relatively moderate growth of TPF indicates that banking fund mobilization depends on multiple determinants, including macroeconomic stability, household income, interest rate policies, banking competition, and public trust. Consequently, while QRIS may contribute to increased banking transaction intensity, the accumulation of deposits remains influenced by broader financial and economic conditions.

This finding highlights the complementary role of digital payment systems in supporting, rather than solely determining, banking liquidity.

Table 6. Compound Annual Growth Rate (CAGR)

Variabel	CAGR (%)	Interpretasi
Merchant QRIS	85,7	Sangat Tinggi
Pengguna QRIS (2020–2025)	70,0	Sangat Tinggi
Nilai Transaksi QRIS	154,0	Sangat Tinggi
Dana Pihak Ketiga	6,25	Stabil

The Compound Annual Growth Rate (CAGR) analysis indicates that QRIS transactions recorded the highest average annual growth at approximately **154.0%**, followed by QRIS merchants (**85.7%**) and QRIS users (**70.0%**). These findings highlight the rapid expansion of North Sumatra's digital payment ecosystem.

In contrast, Third-Party Funds recorded a CAGR of approximately **6.25%**, representing stable growth throughout the observation period. Although substantially lower than QRIS - related indicators, this consistent increase reflects the resilience of banking inter mediation during Indonesia's digital transformation.

The simultaneous growth of merchants, users, transaction values, and Third-Party Funds suggests that the expansion of QRIS has been accompanied by increasing utilization of banking services, although this study does not infer a direct causal relationship.

4.4 Compound Annual Growth Rate (CAGR) Analysis

To evaluate the long-term performance of QRIS transactions and Third-Party Funds (TPF), this study employed the Compound Annual Growth Rate (CAGR). CAGR provides a more representative measure of long-term growth because it reflects the average annual growth over the observation period while minimizing the effect of short-term fluctuations.

Table 7. Compound Annual Growth Rate (CAGR) of QRIS Transactions and Third-Party Funds (2019–2025)

Variable	Initial Value (2019)	Final Value (2025)	CAGR (%)	Interpretation
QRIS Transactions	0.095	40.360	154.0	Very Rapid Growth
Third-Party Funds	235.30	338.40	6.25	Stable Growth

Source: Processed by the author.

The CAGR analysis indicates a striking contrast between the development of QRIS transactions and Third-Party Funds. QRIS recorded an average annual growth rate of approximately **154.0%**, reflecting the extraordinary expansion of Indonesia's digital payment ecosystem following the implementation of the national QRIS policy. Such rapid growth demonstrates increasing public acceptance of digital payment technology, wider merchant participation, and continuous innovation in payment infrastructure.

In contrast, Third-Party Funds experienced a more moderate CAGR of approximately **6.25%** per year. This stable growth indicates that although banking deposits continued to increase, their development was influenced by broader economic fundamentals, including household income, macroeconomic stability, banking competition, and monetary policy.

These findings suggest that while QRIS expanded exponentially during the study period, banking deposit growth followed a more sustainable trajectory. This pattern reflects the complementary role of digital payment innovation in strengthening financial inter mediation rather than replacing conventional banking functions.

4.5 Policy Analysis

The remarkable growth of QRIS transactions cannot be separated from the strategic policies implemented by Bank Indonesia. Since its nationwide launch in 2020, QRIS has become the cornerstone of Indonesia's digital payment transformation.

The results also support the strategic direction of Bank Indonesia in promoting QRIS as part of the Indonesia Payment System Blueprint 2030. Similar to the international evidence reported by Ouyang (2026), the development of interoperable digital payment systems has the potential to improve financial inclusion, enhance transaction efficiency, and strengthen digital economic ecosystems.

Table 8. Major Digital Payment Policies and Their Implications

Year	Major Policy	Implications
2019	National QRIS preparation	Initial infrastructure development
2020	Nationwide QRIS implementation	Initial increase in digital transactions
2021	Expansion of merchant on boarding	Accelerated QRIS adoption
2022	Digital payment ecosystem strengthening	Significant increase in transaction values
2023	Cross-border QRIS collaboration	Wider payment interoperability
2024	BSPI 2030 implementation roadmap	Expansion of digital payment ecosystem
2025	Continued digital payment integration	Sustained QRIS growth and ecosystem maturity

The implementation of QRIS has supported the development of Indonesia's digital economy by promoting transaction efficiency, interoperability, and financial inclusion. The increasing number of merchants accepting QRIS has enabled broader participation of MSMEs in the formal financial system while encouraging greater utilization of banking services.

From the banking perspective, QRIS transactions are settled through banking accounts. Consequently, increasing transaction intensity may strengthen the role of banks as financial

intermediaries by increasing account utilization and supporting low-cost funding (Current Account and Savings Account/CASA). Although this study does not establish a causal relationship, the observed parallel trends indicate that digital payment expansion has occurred alongside continued growth in banking deposits.

4.6 Discussion

The empirical findings of this study demonstrate that both QRIS transactions and Third-Party Funds exhibited positive growth during the period 2019–2025. However, the magnitude of growth differed considerably between the two variables. QRIS transactions expanded at a substantially faster pace than banking deposits, reflecting the rapid diffusion of digital payment technology across society.

The rapid increase in QRIS transactions observed in North Sumatra Province reflects broader developments in Indonesia's digital economy. This finding is consistent with Nasution and Rangkuty (2022), who argue that digital payment systems create positive economic spillovers through increased transaction efficiency, wider financial inclusion, and stronger economic participation.

These findings are consistent with **Digital Finance Theory**, which argues that technological innovation improves financial accessibility, transaction efficiency, and user participation in formal financial systems. The rapid expansion of QRIS illustrates how digital payment innovation can reshape consumer payment behavior and facilitate broader financial ecosystem development.

Furthermore, the findings support **Payment System Theory**, which emphasizes that efficient payment systems contribute to economic development by reducing transaction costs and improving financial connectivity. QRIS has simplified payment processes for consumers and businesses while strengthening interoperability among financial service providers.

The results are also aligned with **Financial Intermediation Theory**, which views banks as institutions responsible for mobilizing public funds and channeling them into productive investments. Although QRIS itself does not directly increase banking deposits, greater utilization of banking accounts for digital payment settlement may indirectly reinforce banking intermediation by encouraging customers to maintain active deposit accounts.

Nevertheless, it is important to recognize that Third-Party Funds are influenced by multiple macroeconomic and institutional factors beyond digital payment adoption. Variables such as income growth, interest rates, inflation, public confidence, and banking competition remain important determinants of deposit mobilization. Therefore, this study interprets the relationship between QRIS and Third-Party Funds as evidence of parallel development rather than direct causality.

The findings contribute to the growing literature on digital finance by providing empirical evidence from North Sumatra, one of Indonesia's largest regional economies. They also provide practical insights for policymakers regarding the importance of strengthening digital payment ecosystems as part of broader financial sector development.

Conclusion and Policy Implications

The findings also reinforce the importance of strengthening Indonesia's digital payment ecosystem. Expanding QRIS adoption not only improves payment efficiency but also supports inclusive economic development and poverty reduction through greater access to formal financial services (Nasution & Rangkuty, 2022).

5.1 Conclusion

This study analyzed the development of Quick Response Code Indonesian Standard (QRIS) transactions and their implications for Third-Party Funds (TPF) in the banking sector of North Sumatra Province during the period 2019–2025 using official annual data obtained from Bank Indonesia, the Financial Services Authority (OJK), and Statistics Indonesia (BPS). The analysis

employed descriptive statistics, trend analysis, annual growth analysis, Compound Annual Growth Rate (CAGR), and policy analysis.

The findings indicate that QRIS transactions experienced extraordinary growth during the observation period, increasing from IDR 0.095 trillion in 2019 to IDR 40.36 trillion in 2025. This rapid increase reflects the successful implementation of Bank Indonesia's digital payment policy and the growing acceptance of QRIS by consumers and merchants in North Sumatra.

During the same period, Third-Party Funds also demonstrated a positive upward trend, increasing from IDR 235.30 trillion in 2019 to IDR 338.40 trillion in 2025. Although the growth rate of TPF was considerably lower than that of QRIS transactions, the consistent increase suggests that banking intermediation remained strong throughout the digital transformation process.

The comparative trend analysis indicates that QRIS development and Third-Party Funds moved in the same positive direction during the study period. However, given the limited number of annual observations, this study does not claim a direct causal relationship between QRIS expansion and TPF growth. Instead, the findings provide descriptive empirical evidence that the expansion of digital payment systems has occurred alongside sustained growth in banking deposits.

The observed expansion of the QRIS ecosystem is aligned with the strategic direction of the Indonesia Payment Systems Blueprint (IPSB) 2030, which emphasizes the development of resilient payment infrastructure, industry consolidation, responsible innovation, international connectivity, and the Digital Rupiah as key pillars supporting Indonesia's digital economy.

Overall, this study demonstrates that QRIS has become an important component of Indonesia's digital financial ecosystem and has contributed to strengthening banking transaction activities while supporting broader financial inclusion and regional economic digitalization.

5.2 Policy Implications

The findings of this study provide several policy implications.

First, Bank Indonesia should continue strengthening the QRIS ecosystem through wider merchant participation, improved payment interoperability, and enhanced digital payment infrastructure, particularly in regional economic centers such as North Sumatra.

Second, commercial banks should maximize QRIS utilization by integrating digital payment services with deposit products and customer relationship management strategies. Strengthening the linkage between QRIS transactions and low-cost funding (Current Account and Savings Account/CASA) may improve banking liquidity while supporting sustainable financial intermediation.

Third, local governments should encourage broader adoption of QRIS among Micro, Small, and Medium Enterprises (MSMEs), public service providers, and tourism businesses to accelerate regional digital economic transformation.

Finally, financial regulators should continue improving digital financial literacy and cyber security to maintain public trust in digital payment systems and ensure sustainable growth of Indonesia's digital economy.

5.3 Research Limitations

Several limitations should be acknowledged :

First, the study utilizes annual data covering only seven observations from 2019 to 2025. Consequently, the analysis emphasizes descriptive evidence and trend interpretation rather than econometric causality.

Second, the study focuses exclusively on North Sumatra Province. Therefore, the findings may not fully represent conditions in other provinces with different economic structures and levels of digital payment adoption.

Third, the study does not incorporate additional indicators such as the number of QRIS merchants, active QRIS users, banking digital transaction volumes, or CASA composition, which

may provide deeper insights into the relationship between digital payment development and banking fund mobilization.

5.4 Recommendations for Future Research

Future studies are encouraged to employ monthly or quarterly data to facilitate more advanced econometric analyses such as Vector Autoregression (VAR), Structural VAR (SVAR), or Autoregressive Distributed Lag (ARDL) models.

Expanding the analysis to panel data across Indonesian provinces would also enable more comprehensive evaluation of regional differences in digital payment adoption and banking performance.

Furthermore, future research should incorporate additional indicators related to digital banking, financial inclusion, merchant adoption, and consumer behavior to better understand the broader economic implications of digital payment transformation in Indonesia.

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