



Implementation Study of Quick Response Code Indonesia Standard (QRIS) in Papua Province

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Abstract

Bank Indonesia operates as a central bank in Indonesia. Bank Indonesia acts as a regulator and has authority over the whole Indonesian payment system. One of the newest innovations in the payment system is the Quick Response code Indonesia Standard (QRIS). Furthermore, this study aims to evaluate the implementation of payment systems through digital transactions using the Quick Response code Indonesia Standard (QRIS) in Papua Province. This study began with identifying the major issues that occurred from QRIS implementation in Papua Province. There are four major problems with QRIS implementation. After finding several significant issues from implementing QRIS in Papua Province, we try to construct a solution based on the management's strategic approach. By using SWOT analysis and the 7p method, it is expected that we can propose a comprehensive solution based on the current situation and conditions. We proposed several strategies from SWOT analysis and a 7p marketing mix that focused on increasing financial literacy and financial inclusion, improving digital penetration, and building an essential environment and infrastructure. The strategies can be executed by Bank Indonesia itself and work together with third parties or other stakeholders to improve the number of QRIS merchants. Bank Indonesia - Papua Representative, can effectively implement the strategies by taking advantage of QRIS opportunities as a digital product and optimizing current situations (COVID-19) and upcoming events (PON XX). The strategies can also be carried out to raise awareness and acquire new merchants by leveraging third-party marketing and acquisition resources, particularly PJSP.

Keywords: Bank Indonesia; Payment System; Financial inclusion; QRIS.

Abstrak

Bank Indonesia beroperasi sebagai bank sentral di Indonesia. Bank Indonesia bertindak sebagai regulator dan berwenang atas seluruh sistem pembayaran Indonesia. Salah satu inovasi terbaru dalam sistem pembayaran adalah Quick Response code Indonesia Standard (QRIS). Selanjutnya, penelitian ini bertujuan untuk mengevaluasi implementasi sistem pembayaran melalui transaksi digital menggunakan Quick Response code Indonesia Standard (QRIS) di Provinsi Papua. Kajian ini dimulai dengan mengidentifikasi isu-isu utama yang terjadi dari implementasi QRIS di Provinsi Papua. Ada empat masalah utama dalam implementasi QRIS. Setelah menemukan beberapa permasalahan utama dari implementasi QRIS di Provinsi Papua, kami mencoba mengkonstruksi solusi berdasarkan pendekatan strategis manajemen. Dengan menggunakan analisis SWOT dan metode pemasaran 7p, diharapkan dapat mengusulkan solusi yang komprehensif berdasarkan situasi dan kondisi saat ini. Dari analisis SWOT dan bauran pemasaran 7p, kami mengusulkan beberapa strategi yang pada dasarnya berfokus pada peningkatan literasi keuangan dan inklusi keuangan, peningkatan penetrasi digital, dan pembangunan lingkungan dan infrastruktur dasar. Strategi tersebut dapat dilakukan oleh Bank Indonesia sendiri dan juga bekerja sama dengan pihak ketiga atau pemangku kepentingan lainnya dalam hal peningkatan jumlah merchant QRIS. Strategi tersebut dapat diterapkan secara efektif oleh Bank Indonesia – Perwakilan Papua sendiri dengan memanfaatkan peluang QRIS sebagai produk digital, serta mengoptimalkan situasi saat ini (COVID-19) dan peristiwa yang akan datang (PON XX). Untuk meningkatkan awareness dan memperoleh merchant baru, strategi juga dapat dilakukan dengan memanfaatkan sumber daya pemasaran dan akuisisi pihak ketiga, khususnya PJSP.

Article info

Received (28/07/2021)

Revised (18/10/2021)

Accepted (30/11/2022)

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DOI: 10.25124/jmi.v22i3.4025

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Kata kunci— Bank Indonesia; Sistem Pembayaran; Inklusi Keuangan; QRIS.

I. INTRODUCTION

Bank Indonesia operates as a central bank of Indonesia. The organization is categorized as an independent state institution, free from interference by the government and third parties (Simorangkir, 2014). As a central bank, Bank Indonesia has a different function and status from conventional or commercial banks. As the country's central bank, Bank Indonesia's sole aim is to attain and maintain the Rupiah's value stability. In achieving the goal, Bank Indonesia has three pillars to accommodate its obligation. One of the pillars that will be the core of this study is to regulate and maintain the smooth running of the payment system. In other words, Bank Indonesia acts as a regulator and has authority over the whole Indonesian payment system. The development of the payment system in the digital era has changed the way people conduct transactions. For instance, in the 21st century, mobile payments are increasingly adopted by many organizations and businesses as a new way of doing business. According to Karsen *et al.* (2019), Smartphone-based mobile payment systems are becoming critical socioeconomic development accelerators, helping improve regional and national economic growth.

Mobile payment systems exist to perform financial transactions and play a vital part in electronic and mobile commerce worldwide. Furthermore, as a payment system authority in Indonesia, Bank Indonesia needs to rethink and adjust to these phenomena. One of the newest innovations in the payment system is the Quick Response code Indonesia Standard (QRIS). QRIS is the unification of various kinds of QR from various Payment System Service Providers (PJSP) using QR Codes. The implementation of QRIS can be defined as a policy response from Bank Indonesia that concerns improving financial literacy and financial inclusion, which is already stated in Indonesia's Financial Inclusive Strategy (Perpres No. 114 Tahun 2020). The issue has a relationship with the disruption of technology in the financial sector. Therefore, Bank Indonesia issued Initiative Payment System Blueprint 2025 to navigate the industry's role regarding payment systems in the digital era.

The Covid-19 pandemic has led to uncertainty condition from every sector and aspect daily. It is undeniable that there is a conflicting impact of the health crisis on the economic crisis. Papua Provinces are also affected by this health and economic crisis. There are imbalances between several indicators that lead to the contraction of Papua's economic condition. The spread of the COVID-19 virus prompted the Papuan Provincial government to limit economic activity known as Expanded. It Tightened Social Restrictions (PSBB) to prevent the spread. This policy lasted throughout the second and third quarters of 2020. It impacted the performance of the non-mining Papuan economy so that it could not grow according to its capacity. Papua economy in the third quarter of 2020 contracted by -2.61% (YoY), reversed from the growth in the second quarter of 2020 of 4.14% (YoY).

The development of science and technology has brought implications to all business sectors. Private sectors are forced to adapt to the volatile environment of the business, such as the current economic and health crisis. The pandemic situations also force the regulator to implement several measures to tackle the in-equilibrium that occurs in the current economic situation. Over the last two years, digital transactions in Papua Province consistently increased, shown by the growing number of QRIS merchants (Bank Indonesia, 2021).

This study tries to elaborate on the implementation of digital transactions through the Quick Response code Indonesia Standard (QRIS), which became one of the "game changers" actions from the Bank of Indonesia to overcome the problem. In 2021, there is a program to accumulate QRIS merchants up to 56,000 business units in Papua Province. The implementation of QRIS in Papua Province can be improved since there is still room for growth based on MSMEs data. In 2019, the total number of QRIS merchants were 4,290 business units and in 2020, were 26,689 business units. According to the Central Bureau of Statistics - BPS (2016), the total number of MSMEs business units in Papua Province is 148,647; hence there is still room for improvement in QRIS implementation. Other opportunities are Covid-19 issues which relatively increase day today. Massive implementation of QRIS will be needed to break the infection chain during this pandemic. Furthermore, the massive implementation of QRIS to support a significant event in Papua Province, Pekan Olahraga Nasional (PON) XX Papua, will be held in 2021.

This study used secondary (yearly, quarterly, and monthly) data from various publication data sources. The databases are from Bank Indonesia, BPS, and Indonesia's Financial Services Authority (OJK).

Furthermore, this research also contained qualitative (primary) data obtained through direct interviews and several forum group discussions with Bank Indonesia Papua Provinces. Time-series data analysis was used to answer the research questions. Time series data that is used in this study form daily data from several resources.

II. LITERATURE REVIEW

A. *Financial Inclusion*

There is no standard meaning for the terminology financial inclusion. Various researchers have their definitions for financial inclusion. According to Leyshon and Thrift (1995), financial inclusion is a notion that developed after the idea of financial exclusion. Financial exclusion is a process that prevents people and social groups from getting access to formal financial systems. According to Sarma (2012), financial inclusion is a process that guarantees all economic players have simple access to, a availability of, and benefits from the formal financial system. According to Bank Indonesia (2014), financial inclusion encompasses all initiatives to remove price and non-price obstacles to public access to financial services. This inclusive finance is a national strategy to encourage economic growth through income distribution, poverty alleviation, and financial system stability.

According to Sanjaya (2016), inclusive finance provides financial system services for disadvantaged populations (particularly the poor). Several organizations are attempting to define financial inclusion. According to The Consultative Group to Assist the Poor (CGAP-GPFI), financial inclusion is a state in which all individuals of working age have adequate access to credit, savings, payment systems, and insurance from all financial service providers. Services that are convenient and responsible, at a reasonable cost to the community, and sustainable for the provider also include inadequate access. It is intended that, in the end, the community will be able to benefit from official rather than informal financial services. In addition, the Financial Action Task Force (FATF) explains that financial inclusion involves providing access to a range of safe, convenient, and affordable financial services for other vulnerable and disadvantaged groups, including low-income, rural and undocumented people, who have been served or excluded from the formal financial sector. The Reserve Bank of India (RBI) also tries to explain the definition of financial inclusion. According to the RBI, financial inclusion ensures access to appropriate financial products and services needed by all sections of society in general and vulnerable groups such as weaker and low-income groups in particular, at affordable costs fairly and transparently by current institutional players.

According to Bank Indonesia (2013), financial inclusion in Indonesia is implemented in two ways: comprehensively by compiling a national strategy, as in Indonesia, Nigeria, and Tanzania, or through various separate programs, such as financial education, as the US government did after the 2008 financial crisis. In general, the approach through a national strategy includes 3 (three) aspects: the provision of appropriate service facilities, suitable products, responsible finance through financial education, and consumer protection. The implementation of financial inclusion is generally gradual, starting with clear targets such as through recipients of government social program assistance or migrant workers (TKI) before slowly being used by the general public.

B. *Indonesia Payment System*

The payment system refers to the rules, organizations, and procedures utilized to transmit money to satisfy commitments arising from economic activity. Money as a medium of exchange or mediator in goods, services, and finance transactions was developed simultaneously as a payment system. Authorization, clearing and settlement are the three phases of the payment system's processing. According to three main factors, the payment system continues to change in sync with the history of money: technical innovation and corporate models, public traditions, and government laws. The barter method of commerce dominated payment devices at first. Issues developed only when two willing traders could not agree on a value of the exchange or when the double coincidence of desires was not fulfilled.

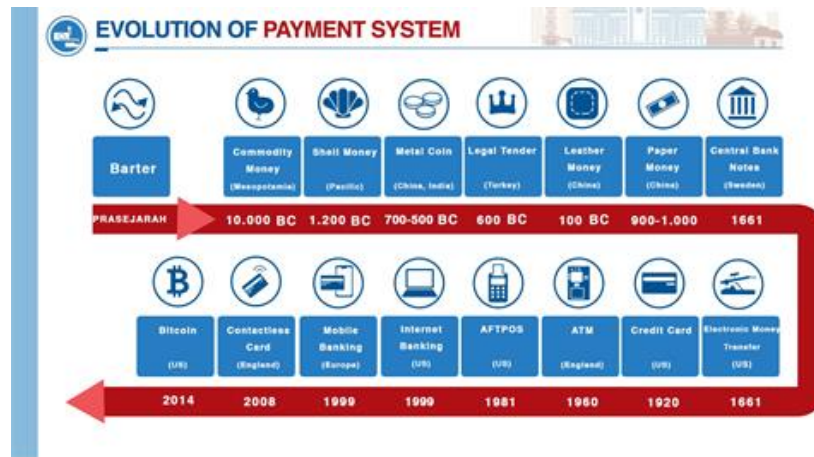


Fig 1. Evolution of Payment System in Indonesia (Bank Indonesia, 2020)

The Evolution Payment System began around 1200 BC, and primitive money in shells began to appear. The origins of ancient paper money may be traced back to white deerskin money, dyed in various colors circa 100 BC. The most common form of payment nowadays is paper money. After Spain built a paper mill in 1150, Sweden was the first country in Europe to utilize paper money in 1661.

In Indonesia, payment instruments have rapidly evolved from cash-based to cashless, including paper-based instruments, cheques, and funds transfer through clearing/settlement. Paperless instruments like electronic funds transfers and card-based payment instruments (ATM/debit credit cards and prepaid cards). A wave of digitization has rushed across people's lives over the last decade, resulting in significant behavioral shifts. With the introduction of chip-based and server-based electronic money, payment instruments have become more diverse. Recently, virtual currency instruments have emerged as digital money issued by third parties rather than the central bank and earned through mining, purchasing, and incentives. Due to the lack of an official administrator or underlying assets, as well as a highly fluctuating trade value, holding a virtual currency is high risk and speculative, exposing the currency to the risk of bubbles and a abuse in terms of money laundering and terrorism financing, which can affect financial system stability and result in public losses. As a result, according to Bank Indonesia Regulation (PBI) No. PBI 18/40/PBI/2016 about Payment Transaction Processing and Bank Indonesia Regulation (PBI) No. PBI 19/12/PBI/2017 concerned Financial Technology, selling, purchasing, or virtual trading currency is prohibited.

C. Blueprint Payment System Indonesia 2025

Indonesia's Payment System Blueprint 2025 is on the agenda to respond to the digital age's issues (Bank Indonesia, 2019). The Vision of Indonesia Payment System 2025, which is realized through the Blueprint, represents the Blueprint's final state. Open Banking, Retail Payment Systems, Financial Markets, and Open Banking are the five efforts. Infrastructure, Data, and Regulatory, Licensing, and Supervisory Infrastructure, Data, and Regulatory, Licensing, and Supervisory Infrastructure. Developing Open Banking, Strengthening the Configuration of Retail Payment Systems, and Developing Open Banking are the five visions of IPS 2025.

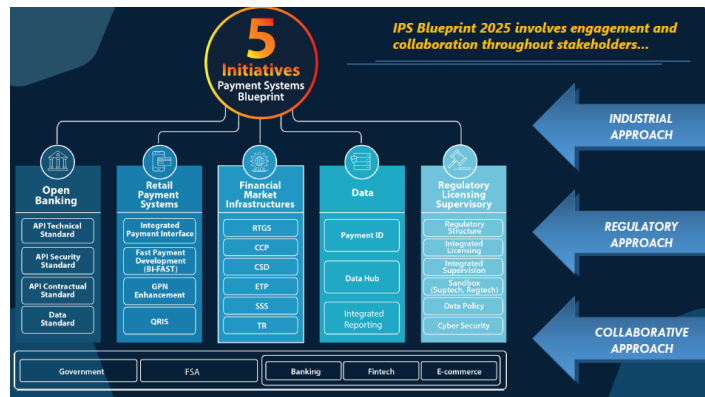


Fig 2. Five Initiatives Payment Systems Blueprint (Bank Indonesia, 2020)

The five initiatives have been further developed into Bank Indonesia's strategic programs, phased in from 2019 to 2025. The following are the five initiatives: The first initiative is to develop open banking. This project will be realized through the implementation of an open API standards framework. Initiative 2: Improving Retail Payment System Configuration This project will be realized through the construction of infrastructure that allows payment services to be available in real-time, in a seamless manner, 24 hours a day, seven days a week (24/7), and with high levels of end-to-end security and efficiency. The end goals of this stage are to provide everyone with simple, comfortable, mobile, and inexpensive payment options. This initiative's main deliverables BI-FAST, Integrated Payment Interface, GPN, and QRIS, are just a few of the projects in which the authors have been involved. Strengthening the Financial Market infrastructure is the third initiative. This plan will be realized by upgrading the financial market infrastructure architecture and improving the regulatory environment. Due to this endeavor, Indonesia's financial market infrastructure is intended to function according to best practices and support optimum policymaking. Modernization of BI-RTGS, BI-SSSS, and BI-ETP and improving the regulatory framework of CCP and TR, including infrastructure advancements, are critical objectives for this program. Initiative 4: Creating Data Infrastructure in the Public Sector. This project will be carried out by establishing a public data management infrastructure. This project is aimed to achieve data transparency, market discipline, and data openness. The creation of a Data Hub, an integrated reporting system, and a Payment ID are all key objectives in this program. Initiative 5: Improving Regulatory, Licensing, and Supervisory Frameworks. According to Bank Indonesia (2019), this project will be realized by improving payment systems' regulatory and supervisory environment and supporting an integrated licensing regime. This measure might slow the fast rate of digitization.

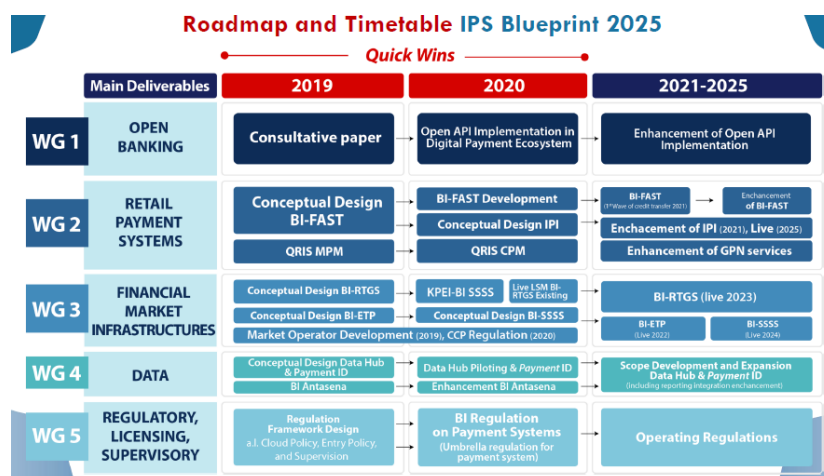


Fig. 3. IPS Blueprint Roadmap (Bank Indonesia, 2020)

D. Quick Response code Indonesia Standard (QRIS)

Technological innovation is developing quite rapidly in various aspects of the digital economy, including the payment sector. One of the innovations that developed and began to be widely used is the QRIS. Quick Response code Indonesia Standard (QRIS) is the unification of various kinds of QR from various Payment System Service Providers (PJSP) using QR Codes. QR Code is a series of codes containing data/information, all the identity of the merchant/user, nominal payment, and currency that can be read with specific tools in the context of payment transactions. The payment system industry developed QRIS with Bank Indonesia. The result is that the transaction process with the QR Code can be easier, faster, and safer. All Payment System Service Providers who will use QR Code Payments must implement QRIS.

National QR Code standards are needed to anticipate technological innovations and the development of payment channels using QR Codes that can cause new fragmentation in the payment system industry and expand payment acceptance nationally non-cash more efficiently. With one QR Code, providers of goods and services (merchants) do not need to have various QR Codes from various publishers.

QRIS is prepared using the international standard EMVCo. This standard is adopted to support better interconnection and open source and accommodate country-specific needs to facilitate interoperability between providers, between instruments, and between countries. This standard has also been used in various countries such as India, Thailand, Singapore, Malaysia, Thailand, South Korea, and others countries.



Fig. 4 . Components of QRIS (Bank Indonesia, 2020)

In the last two years, the number of merchants using QRIS has increased. The number of QRIS merchants in Papua Province is increasing. As of December 31, 2020, there are 26,689 merchants, and as of June 18, 2021, 29,681 merchants.

III. RESEARCH METHODOLOGY

This research used qualitative and strategic management tools analysis to answer the research questions. The author used sources from credible reports, empirical studies, and electronic sources for the qualitative analysis. For the strategic management approach, the author used several tools such as SWOT analysis and the 7Ps marketing mix for several purposes related to the aim of the study. The author also conducted descriptive statistical analysis to provide robust evidence.

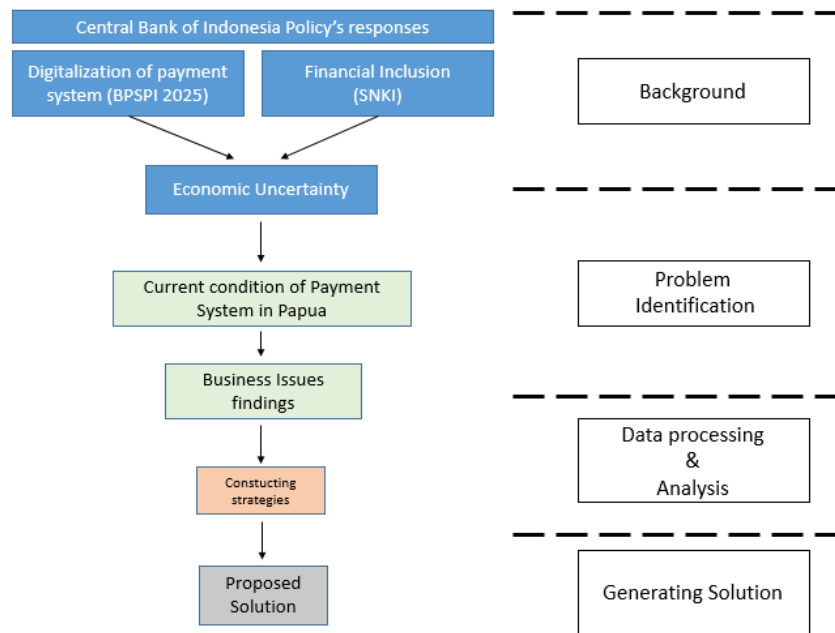


Fig. 5. Conceptual framework

Based on the literature review that has been done and equipped with data on regional economic conditions, the conceptual framework of this research is constructed, shown in Fig. 5. The background of this research is a policy response from Bank Indonesia that concerns improving financial literacy and financial inclusion, which is already stated in Indonesia's Financial Inclusive Strategy (Perpres No. 114 Tahun 2020). The issue has a relationship with the disruption of technology in the financial sector. Therefore, Bank Indonesia issued IPS 2025 to navigate the industry role regarding payment systems in the digital era. The current economic conditions in Papua Province should be observed to unveil the problem. Furthermore, the issue(s) that come up with this following conceptual framework.

IV. RESULTS AND DISCUSSION.

A. *Economic Condition*

The Covid-19 epidemic has created a state of uncertainty in every sector and area of daily life. The health issue has a conflicting impact on the economy. This health and economic catastrophe are also affecting Papua Province. Several indices are out of balance, resulting in the economic uncertainty of Papua Province. To restrict the spread of the COVID-19 virus, the Papua Province administration implemented a curtailing economic activity known as Expanded and Tightened Social Restrictions (PSBB). This policy lasted into the second and third quarters of 2020, affecting the performance of the non-mining Papua's economy, and preventing it from growing at its full potential. The economy of Papua fell by -2.61 percent year on year in the third quarter of 2020, reversing the growth of 4.14 percent in the second quarter (YoY).

However, in 2021, The Papua economy in the first quarter of 2021 grew by 14.28% (YoY), higher than the National, which experienced a contraction of -0.74% (YoY). This growth also increased in the fourth quarter of 2020, 6.92% (YoY). Papua's economic growth was mainly driven by improved performance in the mining and quarrying sector, in line with the increase in underground mining productivity. In contrast, the performance of the non-mining sector recorded a contraction of -3.76% (YoY) in the first quarter of 2021. In terms of expenditure, household consumption decreased by -4.72% (YoY). The decline in the non-mining sector was mainly caused by the spread of the COVID-19 virus, which harmed the economic activities of Papua province.

B. *Financial Literacy, Financial Inclusion, and Payment System Development in Papua Province*

The development of science and technology has brought implications to all business sectors. Financial services and banking sectors are also affected by this rapid growth of technology. The government as a regulator in Indonesia already has several concerns to mitigate the risk from this progress. Financial inclusion and financial literacy have already been one of Indonesia's government priorities to flourish in the financial sector. Based on an Indonesia Financial Services Authority survey, financial inclusion has steadily increased from 2016 to 2019 with 67,8% and 76,19%, respectively. The growth is also found in financial literacy surveys that indicate massive growth from 29,7% in 2016 and 38,03% in 2019.

It cannot be denied that several factors contribute to the difference between national and provincial data. The financial inclusion and financial literacy survey showed that Papua Province is still left behind compared to the national data. Indonesia Financial Services (OJK, 2019) states that in 2019 financial literacy and financial inclusion in Papua provinces are still far behind the average of national features with 29,13% and 60,89%, respectively. Some factors can lead to this condition.

The payment system is essential to the circulation of economic activity. The Bank of Indonesia has full authority to maintain and operate Indonesian payment systems. Referring to the Bank of International Settlement (2020), the responsibility of central banks in ensuring the payment system's security and integrity is essential. They function as guardians of money and payment stability, which provides a strong basis. The pandemic's impact on global economic activity has highlighted the role of central banks in the payments system.

C. *QRIS Implementation in Papua Province*

In the last two years, the implementation of QRIS in Papua has consistently increased, as shown by the number of merchants. Until Q1 2021, the number of QRIS merchants reached 28,831 business units which categorized 42.06% for the micro-business unit, 46.55% for the small business unit, 8.26% for the medium business unit 3.05% big business unit, and the rest 0.09% for social organizations and donations. In Q1 2021, the number of QRIS merchants increased 2.5x or experienced ~250% (YoY) or ~5.77% (QoQ).

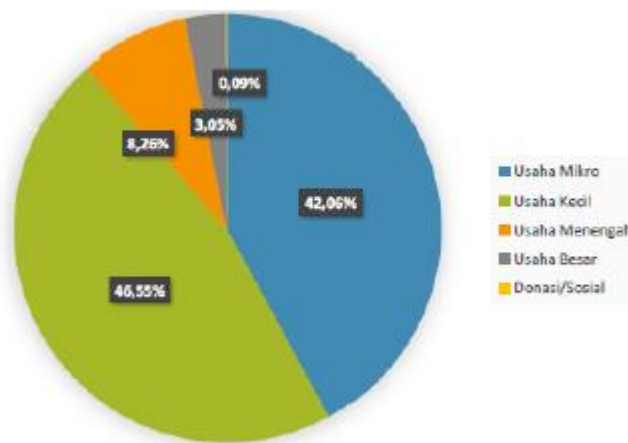


Fig. 6. QRIS merchants market share is categorized by each business unit in Papua Province (Bank Indonesia, 2021)

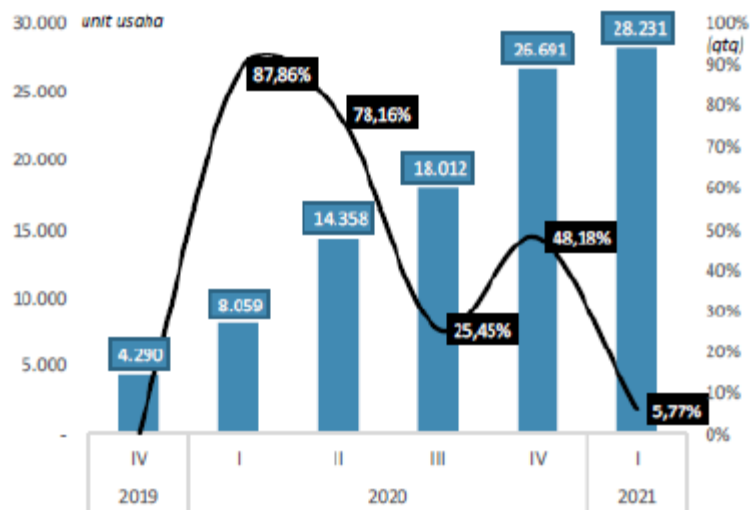


Fig.7. QRIS merchants growth (YoY and QoQ) in Papua Province. (Bank Indonesia, 2021)

In terms of spatial distribution, there are five regions with the highest number of QRIS merchants in Papua Province in Q1 2021, including Jayapura (with a total number of QRIS merchants of 14,808), Merauke (3,974), Nabire (3,421), Mimika (2,619), and Biak Numfor (860). Those five regions have covered 92.01% of total QRIS merchants in Papua Province.

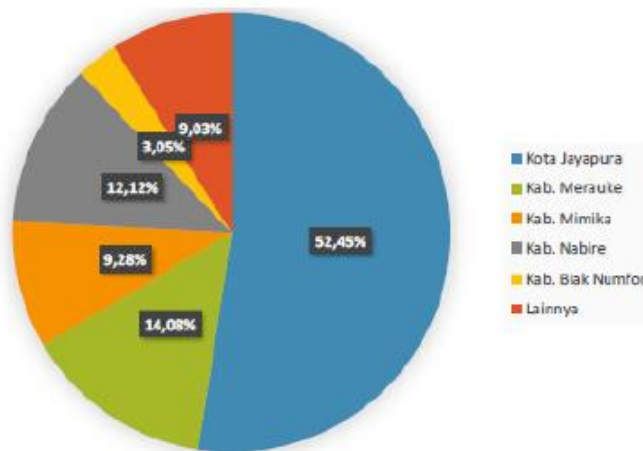


Fig. 8. QRIS merchants market share is categorized by regions in Papua Province (Bank Indonesia, 2021)

D. Challenges of QRIS Implementation in Papua Province

- Lack of financial literacy and financial inclusion in Papua Province

According to Indonesia Financial Services (OJK), the financial literacy rate in Indonesia was 38.03% (2020), while in Papua, it was 29.13% in 2019, which is relatively lower compared to other provinces in Indonesia (Fig. 9.). Financial inclusion in Papua also showed a relatively lower rate (60,89%) compared to other provinces. This event indicates that people in Papua Province did not have decent financial services compared to the national figure.

The bar chart (Fig 10.) depicts the number of bank accounts in several provinces, such as Sulawesi Papua and Maluku, in April 2021. Sulawesi Province shares the highest figures, with approximately two million people already connected with the banking system. Subsequently, in Papua Province, around 1,5 million people already have accounts in the banking system. Meanwhile, Maluku Province only shares one-third if compared to the Papua number. This event can illustrate that the penetration of the banking industry to engage with the people is still low. Furthermore, this tragedy can affect the low number of financial inclusion and financial literacy in Papua Province.

The chart (Fig 11.) shows the distribution of bank branches in SULAMPUA (Sulawesi, Maluku, and Papua Provinces). Sarma (2012) used the number of branches as a proxy of financial inclusion in terms of accessibility to connect people with financial services. It can be seen that if compared to the Sulawesi number, the number of bank branches in Papua is still much lower. Nevertheless, the number of bank branches in Papua Province doubled from the Maluku figure. The implementation of the Quick Response code Indonesia Standard (QRIS) in Papua Province has relationships with financial services such as banks and other payment system service providers. Private banks in Papua have the authority to issue and activate QRIS to the merchants. Therefore, we can assume that when access to the bank is more manageable, the implementation of QRIS will become rapidly increase.

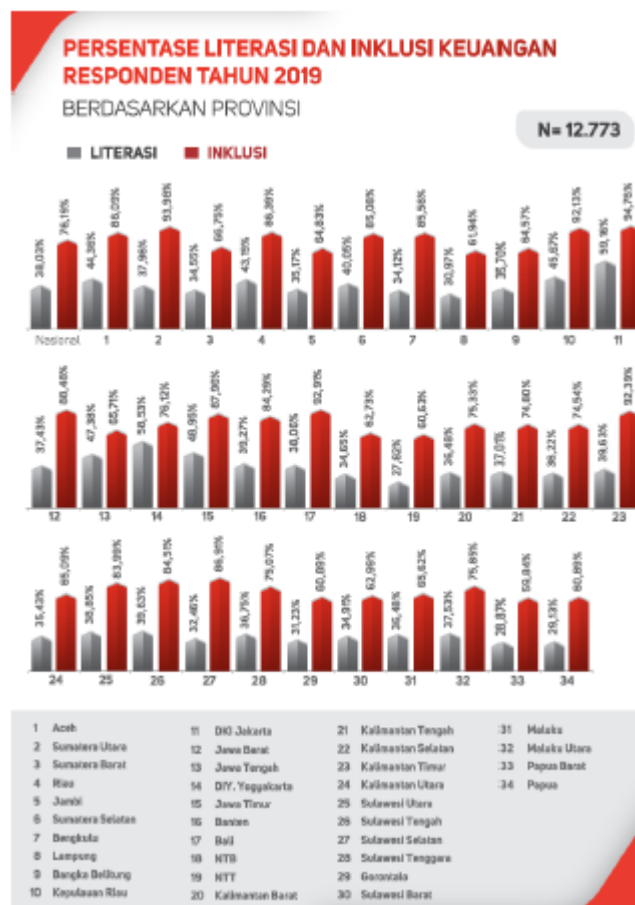


Fig. 9. National financial literacy and financial inclusion (Indonesia’s Financial Services Authority - OJK, 2020)

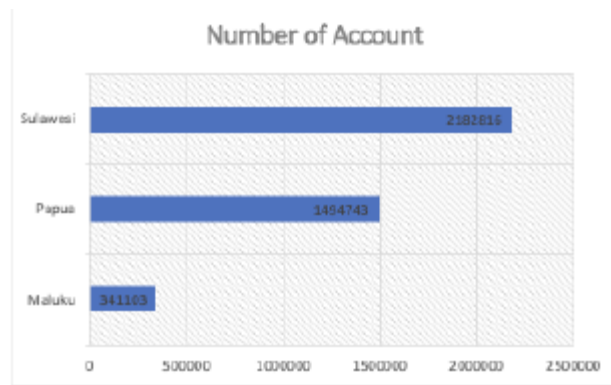


Fig. 10. Number of saving's account as of April 2021 (Indonesia's Deposit Insurance Corporation - LPS, 2021 - Processed)

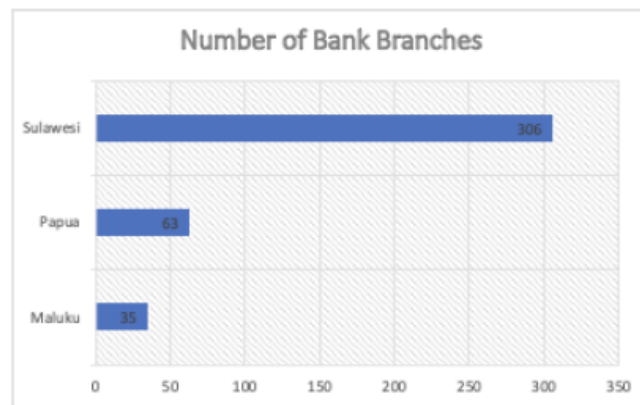


Fig. 11. Number of Bank branches as of April 2021 (Indonesia's Deposit Insurance Corporation - LPS, 2021 - Processed)

Several studies declare that financial inclusion has promising implications for the economic sector. Furthermore, Dawood *et al.* (2019) revealed that financial inclusion could reduce the possibility of Indonesian people falling into absolute poverty. In addition, financial inclusion can offset the lack of assets, the limited number of non-farm employment opportunities in rural areas, and the low level of education of the head of the household. Erlando *et al.* (2020) explore the relationship between financial inclusion and economic growth and poverty in 12 provinces in Eastern Indonesia. They found that when financial inclusion increases, it can encourage a decrease in the poverty level as indicated by the financial sector, which can provide/distribute capital to the community to reduce poverty. Then, it was found that financial inclusion negatively correlates with inequality. Financial inclusion can make income distribution more even. Finally, they found a positive relationship between financial inclusion and economic growth in eastern Indonesia. However, when access to financial services becomes more open, the unemployment rate increases due to a shift in the financial industry from labor-intensive to capital-intensive. Hopefully, financial inclusion can succeed in implementing the QRIS program and overcoming the income gaps and several issues in Papua Province.

- Infrastructure Gap in Papua Province

One of the things that shows the digital society era in Indonesia is the rapid development of ICT infrastructure, especially telecommunication. Therefore, the next challenge regarding the implementation of QRIS in Papua is infrastructure issues related to technology development that support transactions, including household electricity, internet facilities, cellular phone, and signal network. The uneven development of East Indonesia compared to West Indonesia is an issue that has to be concerned. The most critical thing is internet access which has shown in Fig 12. Papua is the province with the lowest internet penetration in Indonesia. Internet usage is closely related to the ease of access to the internet, influenced by various factors, from infrastructure to society's ability.



Fig. 12. Percentage of Household with Internet Access by Provinces. (BPS, 2020)

According to BPS (2020) on East Indonesia PLN electricity penetration rate, it found out that Papua province has the lowest penetration rate among East Indonesia Provinces (Fig 13.). Other than that, they support internet facilities (Fig 14.) showed that Papua province still had the smallest amount of internet facilities that worked yet a relatively high number of already broken facilities. These data prove development and maintenance of the most basic technology infrastructure for implementing QRIS in Papua is still not optimal.

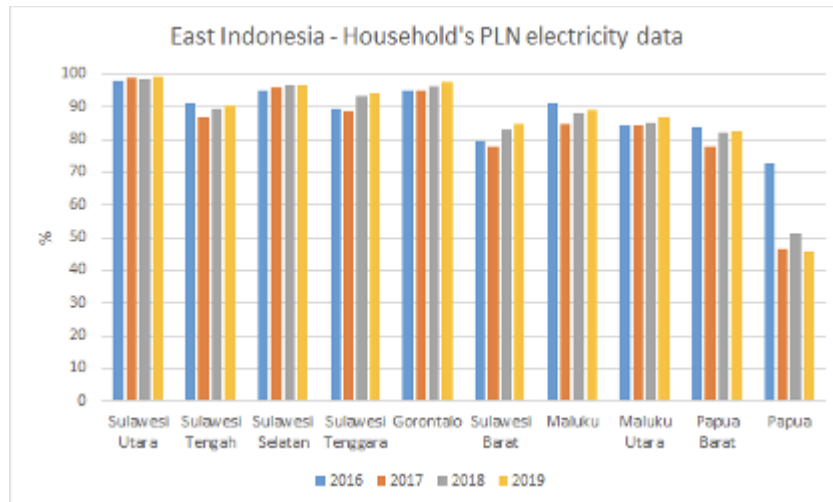


Fig. 13. East Indonesia - Household's PLN Electricity (BPS, 2020 - Processed)

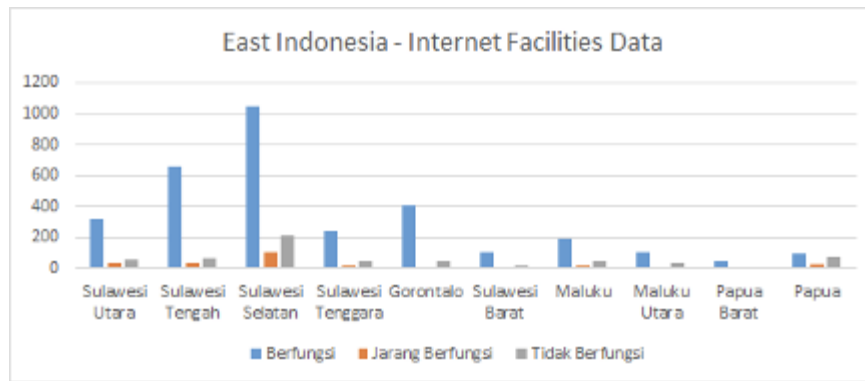


Fig. 14. East Indonesia - Internet Facilities Data (BPS, 2020 - Processed)

Another exciting piece of data to look up is cellular phones in Papua Province. According to BPS (2020), among East Indonesia provinces, the cellular phone ownership rate in Papua is still the lowest (Figure 18.), which has become a challenge as cellular phones are critical tools of QRIS. However, historically in the last four years, the number of cellular owners has been consistently growing, which also can be an opportunity for improving the implementation of QRIS. In terms of mastering cellular phones, according to BPS (2020), the historical pattern in East Indonesia is continuously growing each year, including Papua Province, even though it is still the lowest rate among them. Therefore, based on the data below, technology penetration and literacy conditions of Papua Province became a challenge in improving the implementation of QRIS.

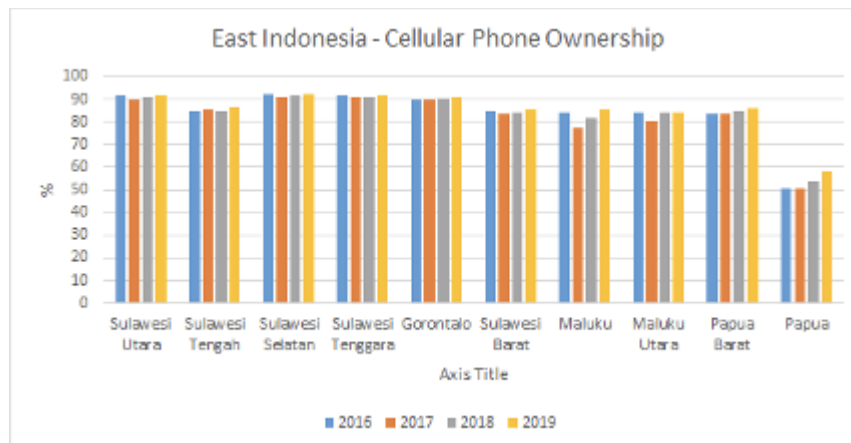


Fig. 15. East Indonesia - CellularPhone Ownership (BPS, 2020 - Processed)

Another critical technology-related infrastructure issue is network/signal penetration. According to BPS (2020), the penetration of solid networks in the East of Indonesia (specifically Maluku and Papua) is relatively low, even smaller than weak internet networks (Figure 20.). It can be seen more clearly in Figure 21. provides various types of networks in East Indonesia. Interestingly, the 4G network, as a requirement of QRIS implementation in the transaction process, is relatively low in Sulawesi Barat, Maluku Utara, Papua Barat, and Papua.

Moreover, in Papua, the "no signal" amount is way higher than in other types of networks. The data is related to the low rate of internet access in Papua compared to provinces in Indonesia. This fact could be a challenge for improving the implementation of QRIS.

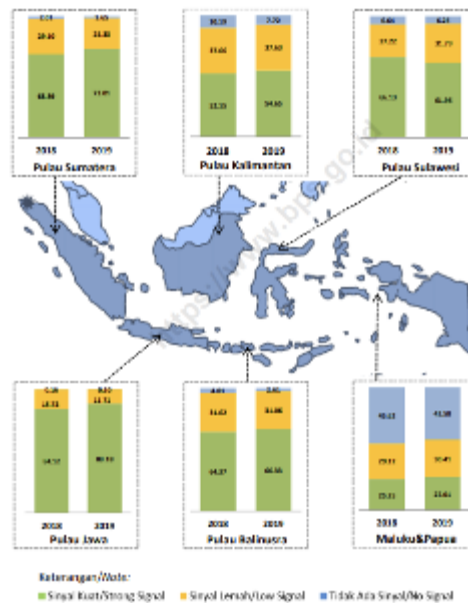


Fig. 16. Indonesia's Signal Strength Distribution (BPS, 2020)

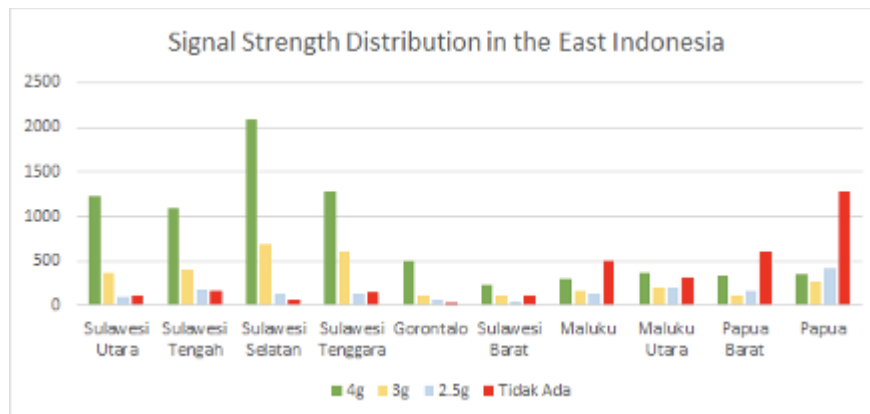


Fig. 17. East Indonesia - Signal Strength Distribution (BPS, 2020 - Processed)

- Technical Aspect from QRIS Implementation

In the implementation of QRIS, there are some fees charged by the operator (PT Telkom) for using QRIS according to the standards set by Bank Indonesia. This cost is called the MDR fee. MDR fees have four kinds of MDR rates for each transaction (Regular payment for a 0,7% fee, related to Education imposed fees of 0,6%, transactions at gas stations 0,4% fee, and 0% fee for social Assistance transactions). The implementation of MDR is not responded to well by the merchants, especially micro, small, and medium enterprises (MSME). The business owners feel that MDR fees are relatively high. It will be potentially affected by their limited cash flow.

Table 1. MDR Fees that occurred to QRIS Merchants (Bank Indonesia, 2021 - Processed)

Merchant Type	Category	% MDR
Regular	Micro Business (UMI)	0,0%
	Small Business (UKE), Medium Business (UME), and Big Business (UBE)	0,7%
Specific	Education	0,6%
	Refueling Station	0,4%
	Government to People (GTP), People to Government (P2G)	0,0%

Besides that, the funds that already transfer through QRIS will first be collected by the payment system service provider. The funds will be deposited in a bank account. There is a settlement fee (transfer fee for transferring funds to a merchant account (trader) 1x transfer in 1 day) borne by the merchants and a lag time of settlement. The amount of the settlement fee is about Rp 3000/settlement, and the fund will be automatically settled in around 2-5 working days. Regarding these issues, merchants complained about the length of time to get their funds from the transaction. The merchant should use the fund to rerun the business the next day which impacted their limited cash flow.

Another issue regarding the technical aspect is network problems. A payment channel using QRIS required an internet connection to complete the transaction. Therefore, the network problem will hinder several activities of customer-merchant transactions. Other than that, fraud will potentially occur both between the user and the merchant or between each merchant.

- Society Behaviour

Based on observation and direct interviews with Bank Indonesia Papua Province representatives, we concluded that social behavior is one of the major problems regarding implementing the Quick Response code Indonesia Standard (QRIS) in Papua Province. This argument is supported by the survey conducted by OJK in 2019, which states that the penetration of people in Papua Provinces that use financial services is still low. Moreover, the usage of mobile phones in Papua province is still below the national average figure. Somehow, this can happen because an infrastructure gap affects the development of technology usage in Papua, lagging behind the other provinces. Furthermore, the implementation of this program can be ineffective because of low awareness and readiness.

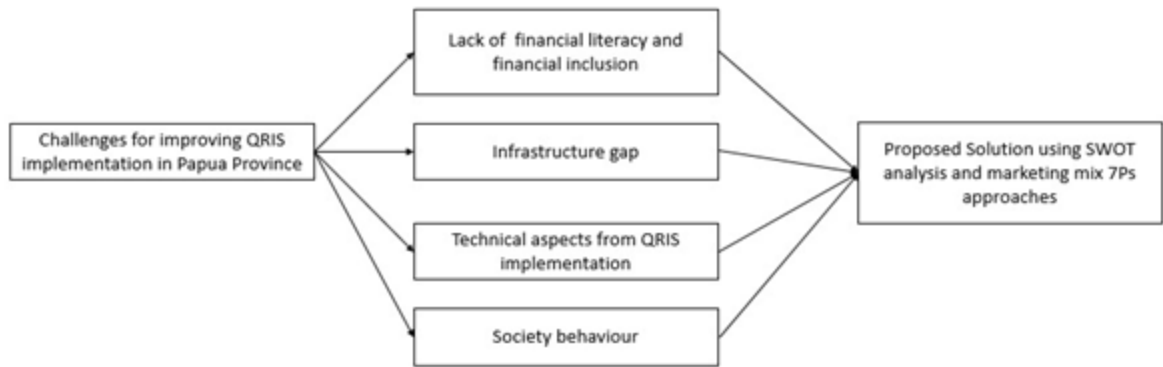


Fig. 18. Significant challenges for improving QRIS implementation in Papua Province

E. Proposed Solution

After finding several significant problems from implementing QRIS in Papua Province, we try to construct a solution based on the management's strategic approach. By using SWOT analysis and the 7Ps method, it is expected that we can propose a comprehensive solution based on the current situation and conditions. Internal and external analysis will be the core concern of the strategic analysis that we conduct. The solutions were constructed of analyzing secondary data and primary data through focus group discussions with Bank Indonesia to answer research problems.

- SWOT Analysis

SWOT analysis is a strategic planning tool that the Central Bank of Indonesia can use to do a situational analysis of the environment. Nevertheless, this framework is also used to evaluate a company's competitive position and develop strategic planning (Kenton, 2021). It is an important technique to evaluate the present Strengths (S), Weaknesses (W), Opportunities (O) & Threats (T) of Bank Indonesia in facing the current condition of the business environment.

Table 2. SWOT Framework of QRIS as a Product

Analysis	STRENGTHS	WEAKNESSES
	S1. High Technology and completely innovative S2. Lead to Efficiency S3. Product from Policy Maker (there is a political will)	W1. Network dependent W2. Not well known W3. High MDR cost if compared to other products. W4. Lag time for the merchant to get cash from transactions
External Analysis	OPPORTUNITIES	THREATS
	O1. Many merchants that are not covered yet O2. Jayapura city is projected to be a smart city O3. PON 2020 Event O4. Covid-19 / Social distancing restriction O5. Integrated PJSP	T1. Low penetration of Internet in Papua Province T2. Low Financial Literacy and Inclusion T3. Low usage of online payment system in Papua Province

After conducting several forum group discussions with Bank Indonesia Papua to collect primary data, we analyze QRIS with SWOT analysis. According to the table above, QRIS has several strengths such as high technology, being categorized as an innovative product, lead efficiency, and QRIS being published by the authority which makes QRIS become the game-changer in its current conditions. However, the product also has weaknesses if we review it from the internal analysis. There are four significant weaknesses of QRIS. First, QRIS is a high-technology product. Thus, this may result in network dependency. Second, because this program is relatively new, some people in Papua did not recognize it well. Third, if compared to another payment system, QRIS merchant discount rate is relatively expensive. Lastly, the process of transferring funds in QRIS needs a lag of time. Furthermore, merchants that are categorized as MSMEs should give more attention to their cash flow.

We also conduct two measures to analyze QRIS products from the external environment, namely opportunities and threats. There are five significant opportunities in implementing QRIS in Papua Province. Based on current conditions, many merchants in Papua did not have access to QRIS—owing to the lack of financial inclusion and financial literacy in this province. Secondly, Jayapura is projected to become a smart city. Therefore, the implementation of QRIS should be integrated with local government projection. Thirdly, in 2021 Papua Province will hold one of Indonesia's most significant sports events, namely PON 2020. This event can be beneficial for implementing QRIS because there will be a lot of transaction activity generated from this event. Afterward, the current pandemic situation forced people to conduct social distancing. So QRIS can be the game changer in this situation by proposing modern transactions with contactless methods. Lastly, Payment System Service Providers (PJSP) in Papua Provinces are already well-established and regulated. Hence, the implementation of the QRIS program can be well-established.

Apart from that, we also try to elaborate on threats that emerge from QRIS. We notice that low internet penetration and infrastructure could be one of significant issues that Bank Indonesia should consider. Secondly, the data showed that financial inclusion and financial literacy in Papua Province are still low compared to other provinces. Last but not least, low usage of the online payment system in Papua Province might become an obstacle to QRIS implementation.

- TOWS Strategic Analysis Matrix

After conducting internal and external scanning from the current condition, we try to obtain strategies by implementing the TOWS strategic analysis matrix below.

Table 3. TOWS Strategic Analysis Matrix

Internal analysis		STRENGTHS	WEAKNESSES
		S1. High Technology and completely innovative S2. Lead to Efficiency S3. Product from Policy Maker (there is a political will)	W1. Network dependent W2. Not well known W3. High MDR cost if compared to other products. W4. Lag time for the merchant to get cash from transactions
External Analysis		SO Strategies	WO Strategies
OPPORTUNITIES	O1. Many merchants that are not covered yet O2. Jayapura city is projected to be a smart city O3. PON 2020 Event O4. Covid-19 / Social distancing restriction O5. Integrated PJSP	SO 1 - S1, S2, S3, O1, O2, O4 - Socialization to the customer and merchants how to use QRIS SO 2 - S1, S2, S3, O1, O5 - develop new strategies that PJSP can implement to activate new merchants. SO 3 - S1, S2, S3, O2, O3, O4 - Invite several stakeholders to succeed in government objectives	WO 1 - W2, O2, O3, O4 - Collaborate with relevant stakeholders to create a campaign about modernization in Papua Province WO 2 - W1, W2, W3, W4, O1, O4, O5 - Socialization to merchants and potential merchants about new business model using QRIS WO 3 - W2, O1, O5 - Maximize PJSP resources to approach and penetrate potential merchants
		ST Strategies	WT Strategies
THREATS	T1. Low penetration of Internet in Papua Province T2. Low Financial Literacy and Inclusion T3. Low usage of mobile payment system in Papua Province	ST 1 - S1, S3, T1 - Try to collaborate with local government to increase the usage of mobile phone ST 2 - S2, S3, T2, T3 - Give incentives to the merchants and customers for using QRIS	WT 1 - W1, W2, T2, T3 - Give concern to the local government to develop Papua infrastructure and massive socialization to all stakeholders WT 2 - W2, W3, W4, - T2, T3 - make an event with the merchant, invite an expert to examine about shifting business model through QRIS implementation

From the discussion above, the strategies constructed, in general, focused on increasing financial literacy and financial inclusion, improving digital penetration, and building essential environments and infrastructure. The strategies can be executed by Bank Indonesia itself and work together with third parties or other stakeholders to improve the number of QRIS merchants.

- Marketing Mix Strategy (7P Formula)

Another approach that can be used to generate the strategy is the 7P marketing mix strategy. Marketing Mix refers to a company's combination of actions or techniques for promoting its products or services. Marketing Mix 7P includes Product, Promotion, Price, Place, People, Process, and Physical Evidence. After conducting an interview with Bank Indonesia Papua Province, we classify the 7Ps marketing mix for QRIS as below:

- Product

QRIS is a product developed by Bank Indonesia as an authority. All applications provided by PJSP, both banking and non-banking, have to use QRIS for a cashless payment system. Therefore, there will be no rivalry for this QRIS product. In terms of application, since QRIS is a network-dependent product, several technical problems arise, such as network problems and lag time of transactions.

- Promotion

Current activity that is already done to promote QRIS to society is through social media, some offline events, and direct socialization. Promoting QRIS merchants is also done by encouraging third parties to invite MSMEs business owners to implement QRIS, especially for banking PJSP.

- Price

Price in the QRIS is the cost incurred in the QRIS transaction that should be paid by the customer's QRIS or MSMEs, which cost of MDR service feels relatively high to be borne by merchants.

- Place

QRIS is an online product. Therefore, there is no offline booth available to assist merchants or customers.

- People

Based on Bank Indonesia - Papua's observation, QRIS as a digital product that disrupts payment transactions has not been massively well-known yet, especially for society, especially business owners who are comfortable with conventional transaction.

- Process

QRIS is a digital product that depends on network availability to complete the transaction. Therefore, for safe and smooth transactions, it depends on network and signal strength. Other than that, there is also a lag time for merchants to get cash from transactions which allows them to prepare their cash flows.

- Physical Evidence

Currently, the number of merchants that are already acquired in Papua Province is about 26,000 merchants. On the other hand, there is still room for improvement where there is a total of 148,467 MSMEs in Papua. Therefore, there is a potential for the growth of QRIS merchants due to current conditions (COVID-19) and upcoming events (PON XX).

F. *Practical Implication for stakeholders*

From this comprehensive analysis, we already propose several measures to tackle the problem. In order to achieve the objectives, it is expected that a solution that is already arranged can have good implications for every stakeholder.

- **Bank Indonesia**

By implementing this solution, Bank Indonesia as the product owner of QRIS is expected to gain the target set by the institution with approximately 56.000 merchants in 2021. Other than that, apart from reaching the main goals, several implications come under this proposed solution. First, can create a digital payment ecosystem that is very good for current conditions. Because there is efficiency and effectiveness of non-cash payment services in the inclusive retail sector, especially the micro-segment, accelerating various programs related to inclusive and non-cash finance and encouraging collaboration in the payment ecosystem. Second, implementing the proposed strategy will increase financial inclusion in Papua Province, boosting local economic activity.

- **Payment System Service Providers**

The proposed strategy above affects the improvement of QRIS implementation and affects payment system services providers (PJSP). Banking PJSP potentially increases the number of saving account holders and third-party funds (DPK), which are beneficial for the banking business. Meanwhile, Non-banking PJSP can also be affected by the massive QRIS implementation in Papua because of the proposed strategy. One of the most important things is to improve the number of MSMEs partners, which can be beneficial in terms of their product awareness and customer retention rate. Furthermore, the improvement of QRIS implementation will also impact PJSP's business profits from MDR, and transaction fees.

- **Local Government**

The implementation of the strategy above also has implications for the local government in Papua Provinces. For the local government, digitalization of the payment system will minimize the potential for fraud. Moreover, in the current pandemic situation, cashless transactions can prevent the spread of the Covid-19 virus. Massive usage of QRIS can be one of the ways to campaign modernization in Papua Province. Especially in 2021, a significant event called PON XX will boost the local economy by implementing QRIS for the mobile payment method.

- **Merchants and Customers**

QRIS is the newest breakthrough new business model for business actors, especially MSMEs. In the implementation of QRIS, there are benefits to Merchants and Customers. Implementing QRIS in each transaction makes it easy for the merchant to count the sales revenue because it is automatically collected in PJSP. It decreases the calculation error of the money collection and also minimizes the circulation of counterfeit money. It also decreases the cash management fee. The benefit for the customers is that transactions with QRIS can decrease the payment error for the target merchant because, in QRIS, there is the name of the target merchant before making payment. Customers also feel the more manageable a payment because QRIS can be paid with several payment methods.

G. *Implementation Plan and Recommendations*

- **Implementation of TOWS Strategy Matrix**

One of the approaches used in this research is aligning the TOWS strategy by determining internal and external factors. According to the current condition related to those factors, here are some implementations that could be a solution, including:

SO Strategies

- In terms of implementing QRIS to become more inclusive for merchants and customers, several events can be held to inform the features of QRIS either customers or merchants.

Bank Indonesia can implement online webinars or socialization through online platforms such as Zoom, Gmeet, or other video conference platforms. This event can collaborate with expert speakers to help MSMEs tackle business challenges in this pandemic situation. Thus, hopefully, merchants want to attend the event.

- To increase the number of merchants that implement the QRIS program through PJSP, Bank Indonesia as a product owner and policymaker can give incentives to the stakeholders (PJSP) and encourage them to inform the merchant about the competitive advantage of QRIS such as high technology, leading to efficiency, and being completely innovative. The incentive for PJSP could be a reward from Bank Indonesia to encourage them to contribute more to QRIS implementation.
- Firstly, to boost the local economy, it can be done by the local government to implement QRIS in several business units or any payment system that can be activated. It could help to reduce the spread of the COVID-19 virus. Meanwhile, Bank Indonesia, as an authority in the payment system, can invite FORKOPIMDA and other institutes such as OJK to succeed in the QRIS program. Besides, the PON XX event can be a game-changer in Papua mobile payment system. This condition also can be the new milestone for digital payment in Papua Province. In a nutshell, QRIS can be implemented to boost local government programs and optimize the current condition.

WO Strategies

- Boost modernization in Papua province can be executed by collaborating with relevant stakeholders to do targeted marketing campaigns of modernization in Papua Province, for example, campaigns and workshops on digital transformation of MSMEs business.
- Introduce digital disruption and transformation for business owners' strategy can be done by building supporting ecosystems and conducting workshops and coaching about new digital disruption business models that specifically implement QRIS, including planning equity, maintaining cash flow, maintaining stocks, and others.
- Promoting QRIS and acquiring new merchants through PJSP and other stakeholders can be done in several ways. For Banking PJSP, the strategy can be executed by encouraging business owners to use their financial services, including payment transactions using QRIS through its marketing resources for promotion. For Non-Banking PJSP and other stakeholders, the strategy can be carried out through their CSR resources especially targeting the development of MSMEs business, for example, several programs such as Otpay.id, GrabKios, Mitra Bukalapak, Mitra Tokopedia, etc.

ST Strategies

- The development of basic building infrastructure and environment can be implemented by making an MoU or agreement with the local authority to enlarge the IT system in Papua Province.
- To deal with financial literacy and low usage of mobile phone issues, the authors proposed solutions by giving education and incentive to the merchants and customers. However, high financial inclusion without a well-literate user will lead to other risk that is very jeopardy for the financial system. One of the digital wallet's successful programs, OVO (PT. Visionet), is "PARADE DISKON 60%". The company conducts a strategy to give more incentives to the merchants and customers. So, the customer will be triggered to use this digital wallet, and the merchants are also excited because there will be high demand for this promotion.

WT Strategies

- Boost society's awareness about QRIS can be done through some event or socialization targeting potential merchants and the public. This strategy can be initially supported by addressing all stakeholders, including the government and PJSP, to create a QRIS transaction ecosystem among business owners and society to increase a awareness of using QRIS for payment.
- Overcome disruption in business owners' business models can be done by giving education and coaching in terms of digital disruption in MSMEs business, such as creating events and coaching sessions that invite experts to share digital business model planning for business owners.

- **Implementation of 7Ps Strategy**

Another comprehensive approach that was used in this research is the marketing mix 7Ps. According to the current condition related to 7Ps elements, here are some implementations that could be a solution, including:

Table 4. Implementation of 7Ps Constructed Strategies

	Current Condition	Proposed Solution Implementation
Product	<ul style="list-style-type: none"> • No rivalry, because QRIS is the product from payment system authority • Several technical problems arise 	<ul style="list-style-type: none"> • Overcome technical problems. • Minimize the potential of fraud for every transaction • Taking advantage of political will by fining or giving punishment to PJSP who have not yet applied QRIS
Promotion	Social media, offline events, direct socialization	<ul style="list-style-type: none"> • Conduct massive digital campaign using Digital marketing platforms: Facebook Ads, Instagram Ads, TikTok • Collaborate with influencer
Price	MDR Price relatively high to the merchants	<ul style="list-style-type: none"> • Provide discounts and subsidies to the merchants • MDR free period extended especially for new merchants QRIS
Place	QRIS does not have an exact location (online)	Gojek and Grab have offline booths to assist merchants and customers. Thus, Bank Indonesia can collaborate with PJSP to have the same strategy. Furthermore, QRIS will be more inclusive for the merchants and customers.
People	The business owner does not entirely understand QRIS	Provide workshop and coaching to business owners and potential merchants about shifting business model with digital disruption, especially QRIS
Process	<ul style="list-style-type: none"> • Transactions run smoothly depends on the internet and network strength • Lag time for the merchant to get cash from the transaction 	<ul style="list-style-type: none"> • Collaborate with relevant stakeholders to build the essential environment of QRIS, primarily electrical and networks such as PLN, Telkomsel, and others. • Collaborate with stakeholders (PT. PTEN) to build products that are adaptive to micro and small business model
Physical Evidence	Already located in 26.000 merchants.	Improve the number of merchants QRIS by taking advantage of the situation in Papua (Covid-19, PON XX, and modernization) through a massive marketing campaign using digital and non-digital approaches and third parties marketing resources such as PJSP and others.

V. CONCLUSION AND RECOMENDATION

This research has several conclusions related to the scope and purpose of this study conducted, including:

1. The number of QRIS merchants in Papua has constantly climbed over the last two years, indicating that QRIS adoption is rising. Until Q1 2021, there were 28,831 QRIS merchants. In the first quarter of 2021, the number of QRIS merchants climbed 2.5 times, or by 250 percent (YoY) or 5.77 percent (QoQ). By looking at the MSMEs data, there is still room for improvement to acquire massive QRIS merchants. Also, several opportunities have to be optimized, including COVID-19 and upcoming events. Therefore, in 2021, Bank Indonesia is targeting ~55,000 accumulation of QRIS merchants in Papua Province.
2. Based on secondary data and direct interviews, regarding the attempt to improve the massive implementation of QRIS in Papua Province, several significant challenges arise and opportunities to be maximized, including lack of financial literacy and financial inclusion, infrastructure gap, technical aspect of implementing QRIS and social behavior in Papua Provinces.
3. Some strategies have been constructed to assist Bank Indonesia to improve the massive implementation of QRIS in Papua Province by using a strategic management approach including SWOT analysis, TOWS matrix, and marketing mix 7Ps to analyze QRIS potential as a digital product and conduct some realistic strategies to be implemented. The strategies focus on improving awareness and building retention among QRIS users, especially current and potential merchants, through financial literacy and financial inclusion, improving digital literacy and business model, and building an environment for QRIS.
4. Bank Indonesia - Papua Representative can effectively implement the strategies by taking advantage of QRIS opportunities as a digital product and optimizing current situations (COVID-19) and upcoming events (PON XX). The strategies can also be executed by maximizing third-parties marketing and acquisition resources, especially PJSP, to create awareness and acquire new merchants.

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