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# Cooperation in Digital Innovation Under the Master Plan on Asean Community (MPAC) in Muslim Asean Countries

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**ABSTRACT**

This study examines the present conditions and obstacles faced by digital innovation in Indonesia and Malaysia, explicitly focusing on Muslim ASEAN countries. Additionally, it seeks to identify potential areas for collaboration and cooperation within the framework of the Master Plan on ASEAN Connectivity (MPAC) in Digital Innovation, such as the Quick Response Indonesian Standard (QRIS) in Indonesia and Malaysia. Besides, this qualitative study employed a literature review. In addition, the collaboration between Indonesia and Malaysia on the Master Plan on ASEAN Connectivity (MPAC) in Digital Innovation, particularly in Quick Response Indonesia Standard (QRIS), can significantly improve economic integration and social growth in Muslim ASEAN nations. The result of this study is that Through the implementation of QRIS. This digital payment system makes use of QR codes to carry out transactions across international boundaries, reducing the costs of transactions. According to the author, this study is a first attempt to build a factual and theoretical basis for the researcher's analysis of the cooperation on the Master Plan on ASEAN Connectivity (MPAC) in digital innovation in Muslim countries in the ASEAN region, including Indonesia and Malaysia.

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## Introduction

The result of the observation conducted by (Association of Southeast Asian Nations, 2016) indicated that by developing a seamless, thoroughly linked, and integrated ASEAN that will enhance competitiveness, inclusivity, and a more profound feeling of community is the goal of the ASEAN Connectivity 2025 initiative, which aims to realize this vision. In addition, the *Master Plan on ASEAN Connectivity (MPAC) 2025* will concentrate on five crucial areas to realize this goal. These areas are as follows: sustainable infrastructure, digital innovation, seamless logistics, regulatory excellence, and people mobility. The Master Plan on ASEAN Community (MPAC) in Muslim ASEAN nations, particularly Indonesia and Malaysia, emphasizes collaboration in digital innovation. The digital economy in the ASEAN area is expanding quickly, and it has the potential to create more than one trillion dollars in the United States by 2025(Wibowo, 2023).

However, the digital technologies in ASEAN have the potential to reach a value of up to US$625 billion by 2030 (Association of Southeast Asian Nations, 2016), which would account for 8 percent of ASEAN's GDP in that year. This value may be attributed to improved efficiency, the introduction of new goods and services, and other factors. To seize this opportunity, it is necessary to create regulatory frameworks that govern the provision of new digital services, such as data management and digital financial services. Additionally, it is essential to facilitate the exchange of best practices regarding open data and to provide micro, small, and medium enterprises (MSMEs) with the necessary skills and resources to utilize these new technologies. In fact, MSMEs are one of the sectors that contribute to the country's economy. (Rosadhillah & Hasib, 2022) Because MSMEs face the problem of low productivity levels that can affect business competitiveness both locally, regionally and internationally. (Poernamasari, 2023)

In addition, connectivity in ASEAN refers to the various forms of connection that support the integration of the ASEAN Community. This includes physical connectivity, transportation, information and communication technology, and energy infrastructure. It has institutional connectivity, such as liberalizing trade, investment, and services. Additionally, people-to-people linkages, such as education, culture, and tourism, are essential for fostering connectivity. These different forms of connectivity are necessary for achieving the economic, political security, and socio-cultural goals of the ASEAN Community. According to (Thoyibah & Sugiharti, 2022), The advancement of technology in the last decade has seen significant and rapid transformations. Information and Communication Technology (ICT) has revolutionized how individuals work, conduct business, and communicate globally.

On the other hand, digital technology oversees and optimizes integrated products' lifespan while improving company processes' effectiveness, dependability, and sustainability. Combining intelligent manufacturing processes and supply chains may be used to optimize complete end-to-end workflows and provide competitive benefits for businesses. Artificial intelligence, the Internet of Things, machine learning, blockchain, big data, and other digital technologies have fostered company adaptability and robustness and driven social and behavioral changes (Berawi et al., 2020).

Technological development significantly influences the economy, which affects production, distribution, and consumption. Technological progress has enabled the community to conveniently access and use goods or services via online platforms. In light of the prevalence of technology in society's consumption process, manufacturers are compelled to use technology to produce and distribute products or services. Similarly, there has been a transition from cash-based to non-cash transactions, driven mainly by the widespread use of cell phones and the Internet in daily activities. The rapid digital world is having a big influence on marketing strategies or promotional media used by entrepreneurs or merchants. Furthermore, the utilization of digital platforms allows for swift and direct interaction with customers, fostering a deeper

understanding of their preferences and concerns. This insight can lead to tailored marketing strategies, enchancing communication, and nurturing stronger customer relationships. (Hannifah & Susanti, 2023)

Large-scale infrastructure development initiatives are presently witnessing a global political renaissance. Beyond creating physical connections across distances, increasing commercial links, and facilitating service delivery, such systems also play a crucial role in creating political entities. For the Association of Southeast Asian Nations (ASEAN), infrastructure development is vital for improving regional connectivity(Fünfgeld, 2019). However, The significance of digital technology is growing due to intense market rivalry. Multiple research has shown a robust association between company expansion and the utilization of digital technology to generate inventive business frameworks. Technological advancements give rise to novel goods, procedures, and services that provide more value for organizations (Berawi et al., 2020).

According to another report (OECD, 2016), the primary obstacle is the limited availability of affordable digital infrastructures. Specifically, it is essential to have the ability to use information and communication technologies (ICTs), such as mobile broadband, in both rural and distant locations. Additionally, having access to data, which is becoming a fundamental component of data-driven innovation (DDI), is of utmost importance. The absence of suitable open standards and concerns about being locked into certain vendors, typically caused by proprietary solutions, provide further obstacles to adopting technology, especially for small and medium-sized enterprises (SMEs).

The proliferation of digital security threats and the inadequate enforcement of privacy and intellectual property rights have led to a lack of confidence in the digital economy. This lack of trust might hinder the widespread adoption and use of ICTs. The advent of digital technology has fundamentally transformed the processes and results of entrepreneurship, enabling the complete use of external resources, enhancing the relationship between entrepreneurial businesses and stakeholders, and creating a more significant number of chances (Zhai et al., 2023).

This result is consistent with a previous study conducted by (Seah et al., 2021) that the use of technology has the potential to greatly benefit the nation, particularly by fostering economic development. In addition, a noticeable transition occurs in transactions, from traditional Internet purchases to transactions conducted specifically via digital platforms. This transition promotes the community's need for expedient and reliable financial transactions. There is little doubt that cell phones have become more integrated into people's everyday routines. Consequently, payment methods have become accessible via cell phones (Puspitasari & Salehudin, 2022).

As of the beginning of 2023, Indonesia has achieved an internet penetration rate of 77.0 percent, which means that 77.0 percent of the entire population has access to the internet. The Kepios investigation reveals a 5.2 percent growth in internet users in Indonesia, amounting to an increase of 10 million individuals between 2022 and 2023. From a statistical standpoint, the data indicates that at the beginning of 2023, 63.51 million individuals in Indonesia were not using the Internet. This implies that around 23.0 percent of the population remained disconnected from the online world at the start of the year(Simon Kemp, 2023a).

On the other hand, in January 2023, the number of internet users in Malaysia reached 33.03 million. As of the beginning of 2023, Malaysia has achieved an internet penetration rate of 96.8 percent, which means that almost all of the country's population has access to the internet. According to Kepio's study, the number of internet users in Malaysia grew by 362 thousand individuals, representing a 1.1 percent rise from 2022 to 2023. From a perspective standpoint, the data indicates that at the beginning of 2023, around 1.09

million individuals in Malaysia were not utilizing the internet, accounting for approximately 3.2 percent of the population still not connected online (Simon Kemp, 2023b).

Digitalization and the fast advancement of communication and informatics technologies have significantly transformed several facets of society, including the economic domain, particularly the payment system. An exemplary instance of digitization is the creation of a Quick Response Code ("QR Code") to facilitate financial transactions. A QR Code is a digital code used to store or link information. QR Codes provide more details on a subject, including their application in payment systems and services(Natapradja, Rafi, 2022). Because Malaysia and Indonesia have taken a significant step in integrating their digital transaction systems, Indonesia can now utilize the widely used Quick Response Indonesia Standard (QRIS) to make payments in Malaysia(Ghifari, Deni, et al., 2023).

In addition, QR codes are a type of two-dimensional barcode composed of three black squares arranged in a square grid around the barcode's bottom left, top left, and top right corners. Additionally, QR Codes are accompanied by a module composed of pixels and can store alphanumeric data, characters, and symbols. These QR Codes facilitate contactless payment transactions through scanning technology(Bank Indonesia, n.d.).The primary objective of this system is to streamline and link QR-code-based transactions conducted by different payment service providers (PSPs) throughout the nation. The objective is to foster a cashless society and provide merchants and consumers with a more secure and efficient payment system. The implementation of the QRIS system by all non-cash payment service providers has been mandated by Bank Indonesia to standardize and promote interoperability in QR code payments (Harsono et al., 2019)

The integration of payment systems is crucial due to the frequent visits between neighboring countries. Over the last two years, Malaysia has consistently ranked as one of the top two places of origin for tourists visiting Indonesia. In 2022, Malaysia constituted 19 percent of foreign passengers, with around 1.03 million visits. In the preceding year, Malaysia ranked second, with approximately 480,700 trips, trailing behind Timor-Leste. Furthermore, Malaysia is considered one of the leading medical tourism destinations in the area, along with Singapore and India. According to the Malaysian government, in 2019, over 1.2 million medical tourists visited the nation, with Indonesia being one of the top five countries of origin (Ghifari, Deni et al., 2023).

The ASEAN nations are now working on a variety of agreements and frameworks to improve their collaboration in the field of digital innovation. One example is the ASEAN Digital Economy Framework Agreement (DEFA), which aims to facilitate the integration of ASEAN by tackling issues such as digital identification, talent mobility, information and communication technology (ICT) infrastructure, and digital payment solutions(Taushia & Taushia, 2024). In conclusion, Muslim ASEAN nations such as Indonesia and Malaysia need to collaborate in digital innovation under the auspices of the MPAC to ultimately realize the digital potential of the region. This involves emphasizing digital literacy, encouraging workforces proficient in digital technology, and putting various programs and frameworks in place to assist in expanding e-commerce and digital economy activities.

In addition, The primary advantages for the end user are more freedom in pursuing alternate sources of cash and payment instruments for conducting transactions with merchants. QRIS is a more practical option for merchants since it simply requires a single standardized QR code to collect payments from diverse sources of cash and payment instruments. QRIS facilitates interconnection and interoperability across the sector, reducing fragmentation and improving operational efficiency (Bank Indonesia, n.d.).

## Literature Review

In recent decades, there has been a significant literature gap on the Master Plan on ASEAN Connectivity (MPAC) in the context of Digital Innovation, particularly about initiatives such as the Quick Response Indonesian Standard (QRIS) in Indonesia and Malaysia. By 2025, the digital economy is projected to produce more than $1 trillion US Dollars, accounting for around 25% of Southeast Asia's total gross domestic product, and ASEAN has emerged as the world's fastest-growing internet market due to the tremendous acceleration of e-commerce, e-banking, and e-education (Wibowo, 2023). Furthermore, a direct correlation exists between the digital economy and the level of openness, which positively impacts the GDP development of ASEAN nations. In this era, every organization must incorporate digital technology into their operations, regardless of the sector in which they operate. The failure to do so will cause the businesses working in each industry to lag behind their rivals, who have embraced the most recent technological advancements(Seah et al., 2021). In the 21st Century, Information Technology (IT) is a vital conduit that links the global community. However, contemporary Malaysians still need an overall understanding of information technology. This was attributed to those experiencing hardship or choosing not to use digital technologies(Aguilera, 2015).

According to (Pratiwi, 2022), payments may be defined as transferring a certain amount of money from the person making the payment to the person receiving it. Digital payments refer to payments that are facilitated by technology. Digital payments include storing, processing, and receipt of money through digital information. The transfer process is initiated via electronic payment devices. Traditionally, payments have been made via cash, checks, or credit cards, but digital payments include specific software, cards, and electronic money. The primary constituents of the digital payment system are money transfer apps, infrastructure networks, and regulations that dictate the system's functionality. New cyber threat hazards are brought about by digital technology, and society has to be mindful of them. Additionally, Malaysia's unemployment rate might rise if the nation's economy embraced digitalization to its fullest extent(Loh et al., 2021).

The implementation of digital payment systems in the commercial sector is a foregone conclusion at the present moment. This study is an introductory literature review exploring the use of server-based e-commerce. The discussion will provide QRIS (Quick Response Code Indonesian Standard), the preparedness of MSMEs to adopt information technology, the use of QRIS on MSMEs, and the QRIS limits on MSMEs. In addition, the discussion will present QRIS(Nada et al., 2021). The findings are similar to those of previous studies in that the payment system industry and regulator in Indonesia have established a universal QR Code standard called the Quick Response Indonesian Standard (QRIS) that applies to all payment system operators. QRIS payments are designed to enhance transaction efficiency, speed, and security. This research examined the correlation between effort expectation, social influence, innovativeness, perceived usefulness, government backing, and behavioral intention to use QRIS in the future(Puspitasari & Salehudin, 2022).

In addition, MSME actors are responsible for implementing the QRIS payment system for server-based payment methods that use QR codes(Nada et al., 2021). Implementing financial connections would enhance Indonesia's and Malaysia's already strong commercial relationship while facilitating economic recovery after the epidemic. With the resumption of foreign travel, the tourist industry will be a pivotal sector that will significantly profit from this service. The substantial influx of travelers between the two nations averaged 5.6 million arrivals per year before the onset of the epidemic. Both countries are crucial channels for their citizens working overseas to get quicker, more affordable, and transparent international money transfers. Furthermore, this initiative aligns with the Cross-border Payments Roadmap, a top priority

of the Indonesian G20 Presidency. It aims to sustain the progress made by the previous two G20 Presidencies in addressing the issues related to cross-border payments(Bank Indonesia, Communication Department, 2022).

However, Bank Indonesia announced at a press conference in July 2022 its intention to execute and develop the ASEAN Cross Border Payment Initiative in four ASEAN countries: Thailand, Malaysia, Singapore, and the Philippines. The partnership between Indonesia, Malaysia, Singapore, Thailand, and the Philippines will establish them as the ASEAN regional payment connection frontrunners. The ASEAN Five, consisting of these five nations, has a well-established digital infrastructure, enabling seamless cross-border transactions without substantial obstacles(Natapradja, Rafi, 2022). This code is omnidirectional and may be scanned horizontally or vertically. Financial institutions and non-banks extensively issue this payment method based on its circulation. Merchants have integrated the employment of QR codes to allow a cloud server-based payment system that does not need cash. This system can be accessible without internet connectivity(Nada et al., 2021).

Additionally, the COVID-19 pandemic has led to the development of new practices in transactional activities. One of these practices is the use of digital currency as a means of preventing the spread of COVID-19 via the use of cash. By implementing the Indonesia Payment System Blueprint (BSPI) 2025, Bank Indonesia has sped up the process of digitizing the payment system. To facilitate the processing of transactions using QR codes in a simpler, quicker, and more efficient manner, the Quick Response Code Indonesia Standard (QRIS) was established by the payment system industry in collaboration with Bank Indonesia (BI). The Bank of Indonesia has been conducting a significant effort to promote QRIS as the sole standard used in Indonesia, both nationally and in different areas, primarily for micro, small, and medium-sized enterprises (MSMEs), traditional markets, and academic institutions, ever since it was launched in August of 2019(Nanang Wahyudin et al., 2022).

In previous research(Wibowo, 2023), although several factors have contributed to Southeast Asia's success, the region's flourishing digital economy stands out among the others. The market for internet services in ASEAN is increasing at the fastest pace of any market in the world. Significant policy frameworks and procedures have been formed by the Association of Southeast Asian Nations (ASEAN) to overcome these impediments. These include the e-ASEAN Framework Agreement, the Masterplan on ASEAN Connectivity 2025, and the AEC Blueprint 2025. Based on the explanation above, the researcher will focus on the Masterplan on ASEAN Connectivity 2025 in Muslim ASEAN Countries: Indonesia and Malaysia.

The digital era has ushered in unparalleled prospects for economic expansion, social progress, and cross-cultural interaction. Nevertheless, these advancements have only benefitted some communities. A substantial digital gap in several Muslim nations impedes advancing socio-economic development, education, healthcare, and entrepreneurship. The ASEAN region has formulated the Master Plan on ASEAN Connectivity (MPAC) on Digital Innovation to tackle this problem. The objective of this strategy is to encourage the participation of all individuals in digital activities, improve their knowledge and skills in using digital technologies, and enable the exchange of digital goods and services amongst the member nations of the Association of Southeast Asian Nations (ASEAN). This study focuses on the partnership between Indonesia and Malaysia in implementing MPAC, specifically in empowering Muslim communities via digital innovation in Quick Response Indonesian Standard (QRIS).

## Methodology

This study specifically examines the impact of the application. Of the application within the framework of the Master Plan on ASEAN Connectivity (MPAC) in Digital Innovation, such as Quick Response Indonesian Standard (QRIS) in Indonesia and Malaysia, a qualitative approach with a literature method was chosen for this study, the researcher will determine the research topic for this study based on the background used as the researcher's thoughts. The researcher's thoughts will determine the formulation of the problem regarding the application of digital innovation, such as the Quick Response Indonesian Standard (QRIS) in Malaysia and Indonesia.

Theories are required to support this study to be able to respond to the phrasing of the issue. Researchers made initial observations on digital innovation as part of the data collection process. These observations were taken to gather information on Digital Innovation, such as the Quick Response Indonesian Standard (QRIS) in Malaysia and Indonesia. A collection of articles indexed by Scopus, Emerald Insight, Science Direct, and Google Scholar, as well as reports, books, and other sources, was utilized to collect the data used in this study.

## Results and Discussion

According to (the Association of Southeast Asian Nations, 2016), the ASEAN Connectivity 2025 aims to establish a fully interconnected and integrated ASEAN region to enhance competitiveness and inclusivity and foster a stronger sense of community. MPAC 2025 will prioritize five essential areas to accomplish this vision

a. Sustainable Infrastructure: This approach aims to manage available resources effectively to provide comprehensive assistance across the whole life cycle of infrastructure projects in ASEAN. This includes project preparation, enhancing infrastructure productivity, and developing capabilities. This plan also provides for the exchange of lessons on "intelligent urbanization" patterns among ASEAN Member States, which may effectively achieve both economic development and a high standard of living.
b. Digital Innovation: The digital technologies in ASEAN have the potential to reach a value of up to US$625 billion by 2030, which would account for 8 percent of ASEAN's GDP in that year. This value might be achieved via improved efficiency, new goods and services, and other factors. To seize this opportunity, it is necessary to create regulatory frameworks that govern the provision of new digital services, such as data management and digital financial services. Additionally, it is essential to facilitate the exchange of best practices regarding open data and to empower micro, small, and medium enterprises (MSMEs) with the necessary skills to utilize these new technologies.
c. Seamless logistics: Improving ASEAN Connectivity relies on efficient logistics. Nevertheless, the logistics efficiency has yet to see the anticipated progress outlined in MPAC 2010, as shown by the duration and expense of transportation in the area. An inherent difficulty lies in the need for more cooperation across government agencies and a mechanism for exchanging best practices. An opportunity exists to establish mechanisms that facilitate enhanced collaboration among logistics companies, academic institutions, and the ASEAN Member States. This would aid in identifying obstacles in crucial sectors of the region's supply chains, gathering and disseminating effective strategies to address these challenges throughout the region, and identifying critical policy areas that demand attention.
d. Regulatory excellence: It is necessary to include effective regulatory practice (GRP) in creating, accepting, and enforcing rules, regulations, and procedures in the area. This approach aims to assist in

executing essential policies crucial for the ASEAN Connectivity agenda. It emphasizes explicitly harmonizing standards, mutual recognition, and technical regulations while tackling non-tariff measures that distort trade.

e. People Mobility. Travel restrictions for ASEAN citizens inside the area have become mostly obsolete. Nevertheless, there are still prospects to enhance mobility inside the ASEAN region. Possible opportunities are streamlining the process of giving travel information to visitors and implementing more user-friendly methods for applying for visas. Furthermore, there is a chance to enhance the movement of talents throughout the region by building robust certification frameworks for important vocational vocations and promoting increased mobility of university students among the ASEAN countries(Association of Southeast Asian Nations, 2016).

According to the explanation, the researcher aims to concentrate on Digital Innovation in the Quick Response Indonesia Standard (QRIS) and its implementation in Malaysia. Besides, The government played a crucial role in promoting the adoption of QRIS. This is supported by the correlation between government support and the perceived utility of QRIS and the correlation between government support and the desire to use QRIS, either directly or indirectly (Puspitasari & Salehudin, 2022).

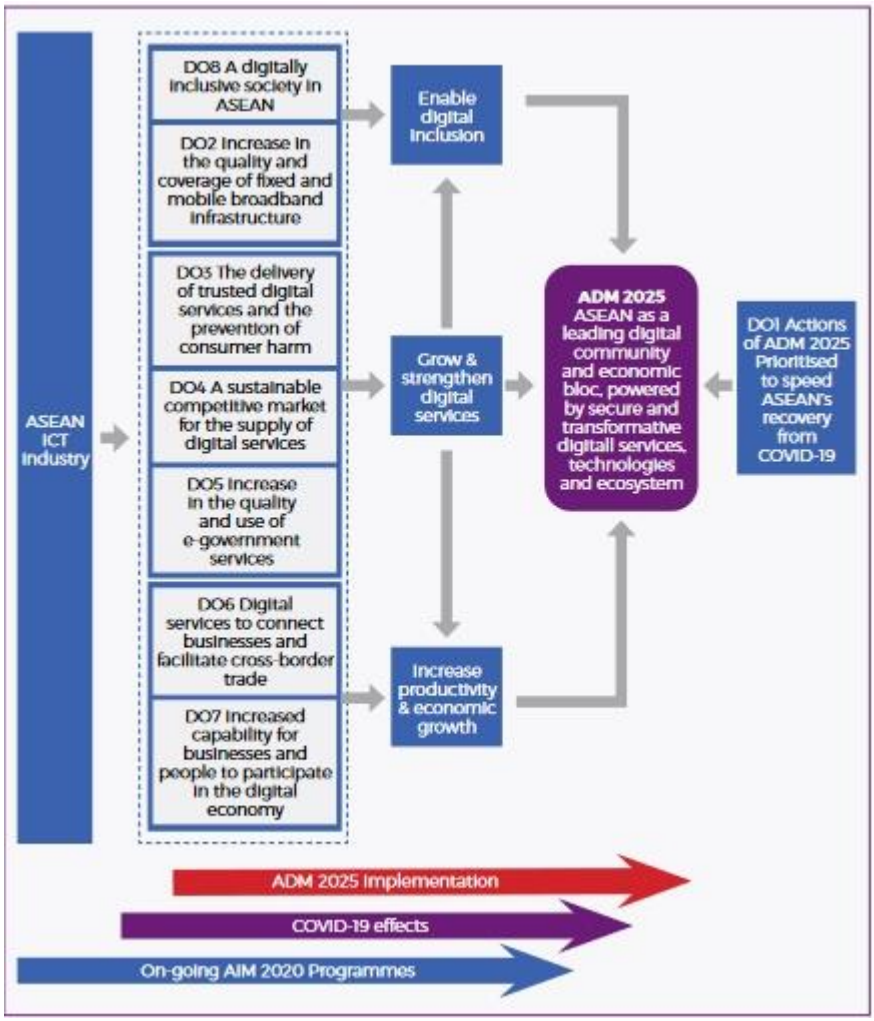


**Figure 1. ASEAN Digital Masterplan (ADM, 2025)**

Data Sources: (Malaysian Communications and Multimedia Commission, 2021)

Figure 1 illustrates that the strategic effort referred to as the ASEAN Digital Masterplan, also known as the ASEAN ICT Masterplan (AIM), seeks to facilitate the expansion and advancement of the digital economy in the Association of Southeast Asian Nations (ASEAN) area. According to (the Malaysian Communications and Multimedia Commission, 2021), The primary aims of this study are threefold: enabling digital inclusion, growing and strengthening digital services, and increasing productivity and economic growth. In addition, the Quick Response Payment System has significantly bolstered the commercial growth of small and medium-sized firms. This digital payment method promotes the expeditiousness of payment transactions, facilitates the documentation of company outcomes, and ensures the currency of business operations, enticing more client purchasing power via the array of conveniences offered (Pratiwi, 2022).

**Table 1. Internet Penetration in Southeast Asia in July 2022**

| *No* | *Country* | *Internet Penetration* |
|---|---|---|
| 1 | Brunei | 119.9% |
| 2 | Malaysia | 93.8% |
| 3 | Singapore | 92% |
| 4 | Philippines | 91% |
| 5 | Thailand | 88.3% |
| 6 | Vietnam | 86% |
| 7 | Cambodia | 81.1% |
| 8 | Indonesia | 76.5% |
| 9 | Loas | 57.5% |
| 10 | Myanmar | 51.9% |
| 11 | Timor-Leste | 37.9% |

Data Sources: Data Statista, 2022

Table 1 showed a 93.8% internet penetration rate in Malaysia, located in Southeast Asia, according to the provided data. When compared to the total population of Malaysia during that month, this indicates that 93.8% of the population had access to the Internet. On the other hand, The information provided indicates that in July of 2022, Indonesia had a rate of internet penetration that was 76.5%, which is lower than the percentage that Malaysia had reported. This indicates that 76.5% of the people in Indonesia had access to the Internet; however, in Malaysia, a more significant proportion of the population had access to the Internet. Based on the disparity in penetration rates between the two nations, it can be deduced that

Malaysia has broader internet use than Indonesia. In addition, the result of research by (Qinqin et al., 2023) is that enterprises must proficiently use digital technologies to manage expenses and optimize productivity. Integrating digital technologies and business models is necessary for traditional departments such as design, manufacture, circulation, and sales. Enterprises may optimize their operations and save expenses using digital technologies such as automation and AI.

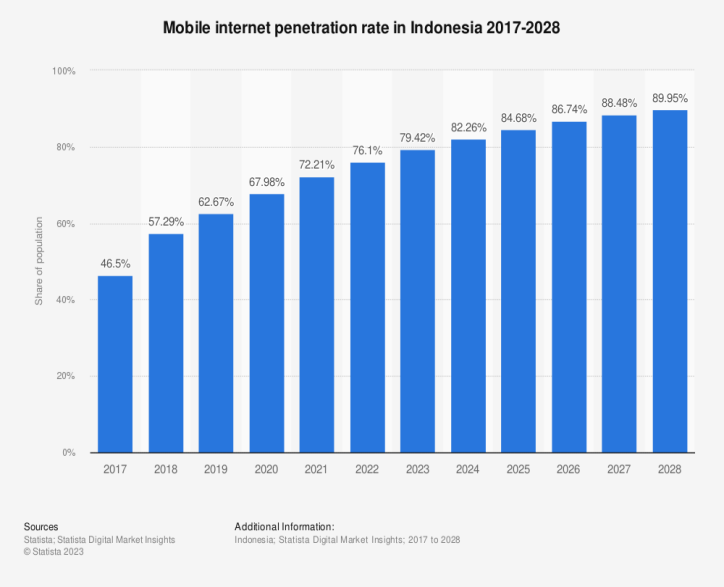


**Figure 2. Mobile Internet Penetration Rate in Indonesia 2017-2028**

Data Sources: Statista, Statista Digital Market Insight

Figure 2 shows that The forecasted growth in the proportion of the population having mobile internet connectivity in Indonesia from 2024 to 2028 was 10.5 percentage points. After eleven years of steady growth, experts predict mobile internet penetration will hit a new record high of 89.95% in 2028. It is worth mentioning that the percentage of the population with mobile internet access has been steadily rising over the last several years.

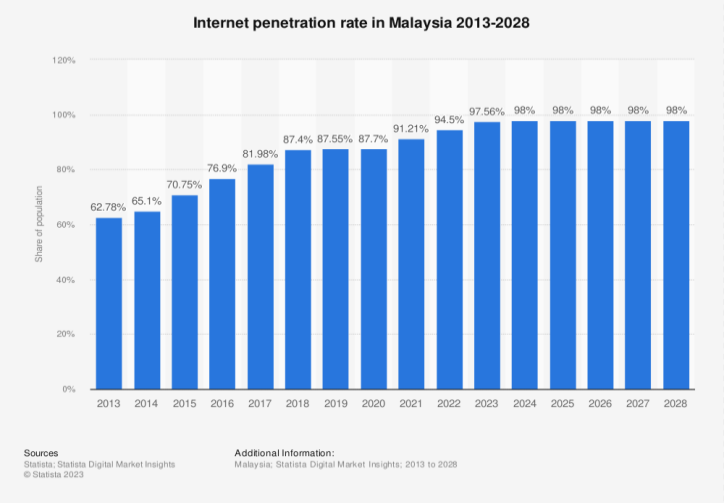


**Figure 3. Internet Penetration Rate in Malaysia 2013-2028**

Data Sources: Statista, Statista Digital Market Insight

Figure 3 shows that Malaysia's population share with internet access was forecast to continuously increase between 2024 and 2028 by a total of 0.4 percentage points. The Internet penetration is estimated to amount to 98 percent in 2028. Notably, the population share with internet access has continuously increased over the past years.

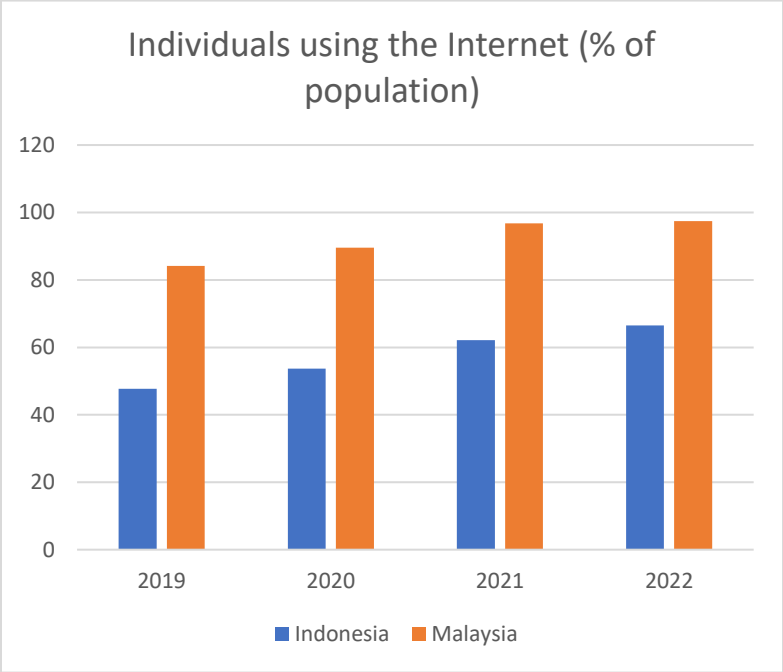


**Figure 4. Individuals Using the Internet (% of Population)**
Data Sources: World Bank, 2019 -2022

Figure 4 shows that The World Bank's data presents the yearly measurements from 2019 to 2022 of the proportion of the Indonesian population that utilizes the Internet. The Internet was used by around 47.7% of the Indonesian population in 2019. The percentage rose to 53.7% in 2020 and climbed to 62.1% in 2021. According to the latest statistics from 2022, around 66.5% of the Indonesian population now utilizes the Internet. The data indicates a substantial rise in internet use in Indonesia in recent years, reflecting an increase in the nation's digital literacy and access to technology.

On the other hand, The following data depicts the internet use percentage among the population in Malaysia, as reported by many sources. The internet use rate in Malaysia was expected to be 84.18% in 2019. The percentage rose to 89.55% in 2020 and is expected to climb to 96.75% in 2021 and 97.39% in 2022. The data indicates a substantial rise in internet adoption in Malaysia in recent years, demonstrating that an increasing number of individuals in the nation are acquiring internet connectivity and using it for diverse reasons, such as communication, education, entertainment, and business. According to (Li et al., 2023), online digital innovation is not without boundaries, and the various dimensions of distance have diverse effects. Distance does not necessarily result in costs and dangers when it comes to the internationalization of digital innovation. For example, extensive virtual distances facilitate global expansion.

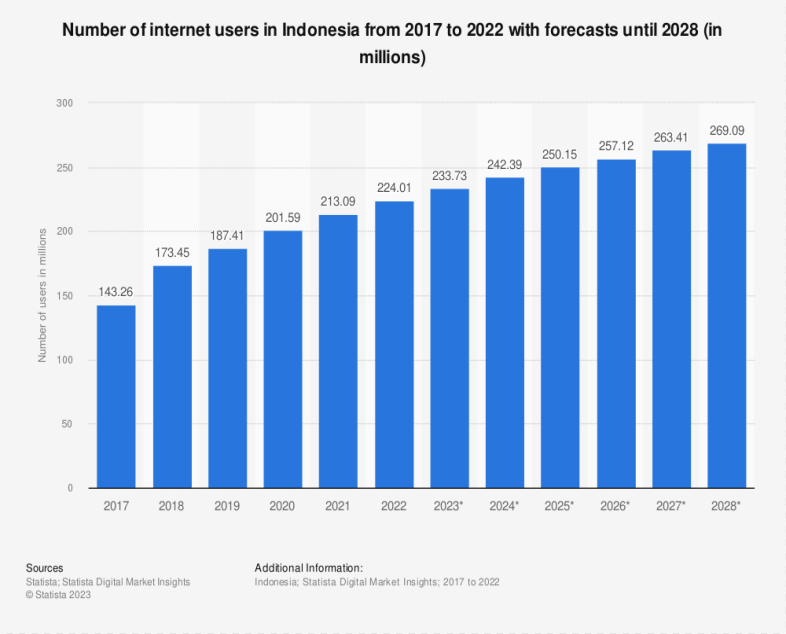


**Figure 5. Number of Internet Users in Indonesia 2017-2022 with Forecasts until 2028 (in Millions)**
Data Sources: Statista, Statista Digital Market Insight

Figure 5 shows that Indonesia has a staggering 204 million internet users, making it one of the largest online marketplaces globally. As of July 2021, the country's internet penetration rate was about 70%. Everyday internet activity, including mobile texting and social media use. WhatsApp was the dominant social network in Indonesia, with over 89 percent of the internet population using the site. Mobile internet utilization is growing to double-digits and presently exceeds 64 percent of the population. Indonesia was "partly free" in the Freedom on the Net index, ranking higher than less free internet marketplaces in Asia, including China, Thailand, and Malaysia, but lower than Japan, South Korea, and the Philippines. The rating is attributed to the censorship of political and social information and the imposition of limitations and infringements on user rights, mainly via the government's enactment of the Law on Information and Electronic Transactions (ITE Law). The ITE legislation imposes severe penalties on those found guilty of internet defamation charges, including imprisonment and substantial fines. This legislation has also been extended to include blog postings and Facebook comments, resulting in a phenomenon of self-censorship among online authors and internet users and a more strained online environment(Statista, Statista Digital Market Insight, 2022).

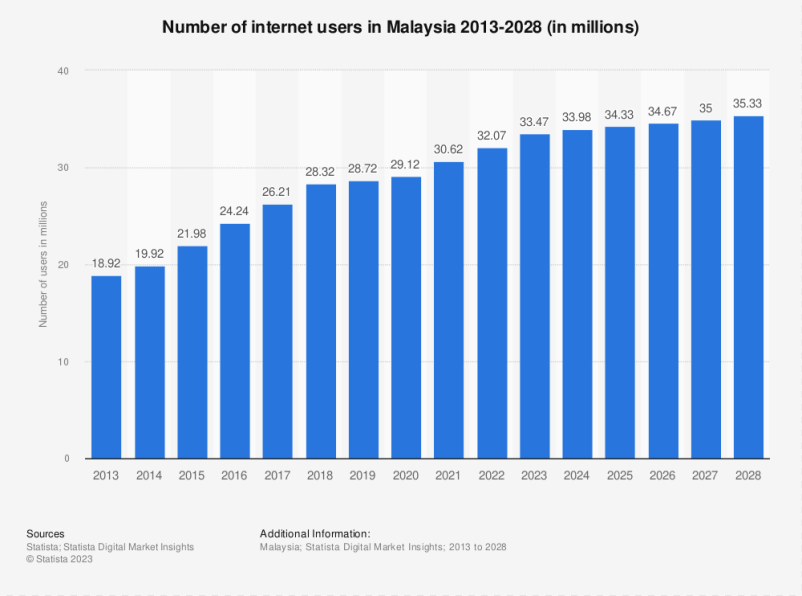


**Figure 6. Number of Internet Users in Malaysia 2013-2028 (in Millions)**
Data Sources: Statista, Statista Digital Market Insight

Between 2024 and 2028, the total number of internet users in Malaysia is projected to rise by 1.9 million people, representing a growth rate of 5.68 percent. Following fifteen straight years of growth, the expected number of users will reach 35.33 million, marking a new high in 2028. The number of internet users has been steadily rising in recent years. The image shows the approximate count of persons in the nation or area who use the internet.

According to the data source, it is essential to note that connection quality and use frequency are separate factors that are not included in this analysis. The data shown is a portion of Statista's Key Market Indicators (KMI). The KMI, or Key Macro Indicators, have a comprehensive set of primary and secondary metrics that provide insights into the macroeconomic, demographic, and technological landscape across over 150 nations and regions globally. The indicators are obtained from international and national statistics agencies, trade organizations, and the press. They are then analyzed to produce standardized data sets. For more information, please refer to the supplemental notes in the details section(Statista; Statista et al., 2023).

Hence, e-commerce is the most significant contributor to the digital economy. As a result, many different businesses are significantly dependent on the expansion of e-commerce, and smartphones are now an integral part of the everyday lives of people in society(Loh et al., 2021). The use of QR codes for payment has surged during the Covid-19 outbreak. In addition to their speed, simplicity, and ease of use, QR Codes provide enhanced safety since they eliminate the need for individuals to physically handle cash, payment terminals, or other equipment to complete a transaction, relying only on their own devices. The QR Code for payment in Indonesia is called the QR Code Indonesian Standard, or QRIS. QRIS serves as an access route to the Source of Funds and is a constituent of the Payment System. Additional instances of Access to the Source of Funds are Electronic Data Capture and Automated Teller Machines (Natapradja, Rafi, 2022).

In addition, Bank Indonesia, along with central banks from Thailand, Malaysia, Singapore, and the Philippines, are collaborating to enhance financial integration in the ASEAN region. They aim to utilise cross-border payment with QRIS, Open Application Payment Interface (API), and fast payment, all adjusted to Local Currency Settlement (LCS). This collaboration is called the "QRIS ASEAN Cross Border

Payments Initiative." In addition, ASEAN member nations are advocating for more use of domestic currencies in regional transactions and commerce.

The objective is to decrease dependence on the United Nations dollar by promoting collaboration in cross-border payments and settlements using local currencies. The QRIS extension enables users from both countries to use the QR code standard, overseen by BI, to make payments in either nation. This eliminates the need for currency conversion or carrying a credit card. The Malaysian equivalent engaged in integrating this payment system is known as DuitNow, a money transfer service offered by PayNet, a company located in Kuala Lumpur.

The integration implies that merchants in both nations can pay via either system (Ghifari, Deni et al., 2023). Hence, the Association of Southeast Asian Nations (ASEAN) nations must tackle the obstacles posed by digital transformation and digital trade by adhering to ASEAN agreements, enhancing the effectiveness of crucial digital facilitators for the adoption of digital technology, bolstering countries' readiness for digital transformation, and enhancing the quality of privacy and competition/antitrust laws to mitigate the expenses and risks associated with digital transformation and maximize its advantages(Ing & Markus, n.d.). The government can enhance the internet infrastructure in critical areas by implementing server-based payment methods, ensuring that transactions are not hindered. The government should facilitate socialization for MSME players, including programs focused on information technology development and fostering knowledge, to ensure they stay abreast of digital advancements(Nada et al., 2021).

The Governor of Bank Indonesia, Perry Warjiyo, emphasized that establishing cross-border QR payments between Indonesia and Malaysia is a concrete manifestation of enhancing collaboration within the Regional Payment Connectivity (RPC) framework. This initiative aims to facilitate faster, more cost-effective, transparent, and inclusive cross-border payments, particularly for micro, small, and medium enterprises. This interconnection aligns with the G20 initiative to develop a roadmap for enhancing cross-border payments. It is also a notable accomplishment of Indonesia's Chairmanship in ASEAN in 2023 and a significant milestone in implementing the Indonesian Payment System Blueprint (BSPI) 2025 (Communications Department, 2023). This partnership will offer users of international payment services a more excellent range of options while also playing a crucial role in improving efficiency, promoting digital economic and financial inclusivity in the region, and supporting overall economic stability by encouraging the use of local currencies for bilateral transactions within the Local Currency Transaction Framework.

One case in Indonesia shows that the Quick Response Indonesia Standard (QRIS) can assist in the growth of micro, small, and medium-sized enterprises (MSME) players. Several micro, small, and medium-sized enterprises (MSMEs) in the province of Banten have implemented the QRIS payment system for server-based payments. QRIS has an impact on the growth of MSMEs. On the other hand, several barriers could have improved its implementation, such as the need for more MSME participants' awareness of the QRIS work system and the absence of robust internet networks, which slowed the transaction operations (Pratiwi, 2022).

In Malaysia, the use of technology has the potential to greatly benefit the nation, particularly by fostering economic development. The process of digitalisation enables industries in Malaysia to either sustain or enhance their business operations. This is because, in the future, it is likely that artificial intelligence will replace humans in everyday tasks and be capable of generating superior goods and services. In addition, digitalisation has the potential to enhance productivity via automation. Furthermore, Malaysian companies' digitalization issues stem from a need for more information technology expertise and

the exorbitant financial expenditures associated with digitalization, exacerbated by Malaysia's economic situation (Seah et al., 2021).

However, ASEAN is now more interconnected than ever. An increasing number of consumers from Malaysia and Indonesia will experience advantages from enhanced, safe, user-friendly, and streamlined cross-border payments. This can stimulate economic activity, including the tourist industry in both nations. This payment interconnection would enhance market growth for some commercial entities and streamline settling payments in the local currency, resulting in a favorable financial outcome.

The QR payment interconnection between Indonesia and Malaysia enhances the expanding bilateral payment interconnection in ASEAN, hence fostering a more vibrant ASEAN and promoting regional development as a hub for growth. This partnership will enhance the robust economic ties between Indonesia and Malaysia. This will facilitate a more comprehensive and robust economic recovery after the epidemic. With the current rise in international travel, the implementation of payment interconnection is anticipated to provide enhanced ease for visitors and yield advantages for both nations' tourism and retail industries (Communications Department, 2023).

Indonesia, Singapore, Malaysia, Thailand, and the Philippines, five ASEAN nations, have agreed to collaborate on cross-border payments inside ASEAN utilizing QR codes or e-wallets. As part of this partnership, the five ASEAN nations have mutually decided to use QR Code, rapid payment, data, RTGS, and local currency transactions as a unified payment system throughout the region. In addition, the Central Banks of five ASEAN countries, specifically Bank Indonesia (BI), Bank Negara Malaysia (BNM), Bangko Sentral ng Pilipinas (BSP), Monetary Authority of Singapore (MAS), and Bank of Thailand (BOT), have reached an agreement to collaborate in achieving faster, more cost-effective, transparent, and inclusive cross-border payments within ASEAN countries(Kominfo, 2023).

According to this agreement, each central bank must use the local currency as the official means of payment among ASEAN nations. The currency will change depending on each respective country's exchange rate. In January 2023, Indonesia and Malaysia trialed a cross-border payment system that utilizes QR codes. Since May 8, 2023, this system has been designated an authorized means of conducting cross-border payments. Indonesia and Thailand have effectively established cross-border financial cooperation utilizing QR Codes, yielding tangible outcomes.

According to Bank Indonesia's data, Indonesian visitors made 14,555 transactions while purchasing in Thailand utilizing Thai QR Codes. The total value of these transactions amounted to IDR 8.54 billion. Thai visitors in Indonesia conducted 492 transactions using QRIS, amounting to IDR 114 million. Hence, Bank Indonesia persistently promotes the adoption of QRIS as an authorized payment method in other ASEAN nations, aiming to establish a uniform standard for digital transactions and facilitate the exchange of digital financial services, such as mobile banking and e-wallets, among central banks(Kominfo, 2023).

In addition, QRIS integrates many QR codes from Payment System Service Providers (PJSP) to provide more efficient and centralized transactions. Consumers are not required to own an account or use several payment apps. This facilitates digital transactions using QR Codes, enhancing efficiency, speed, and security. In addition, efficient and expeditious payment systems have the potential to enhance commercial transactions and promote tourism across the ASEAN area. For instance, when an Indonesian tourist conducts a transaction in Malaysia, they no longer need physical Ringgit currency since the QRIS payment system promptly converts their Rupiah balance into Ringgit based on the prevailing exchange rate at the time of the transaction. Through QRIS as a transnational ASEAN payment system, the member nations no longer rely on the US Dollar's valuation. In addition, the ASEAN nations' collaboration is

progressively becoming more unified and enduring, enhancing the ASEAN area's economic might worldwide.

## Conclusion

The implementation of QRIS should depend on more than just government permission; it should actively use that approval to provide a favorable user experience and foster confidence. While government assistance is advantageous for promoting adoption, prospective users are more inclined to become long-term users if they see the QRIS cashless payment system as reliable and valuable(Puspitasari & Salehudin, 2022). In addition, micro, small, and medium enterprises (MSMEs) play a crucial role in Indonesia and Malaysia's economies. They serve as a mechanism to bridge the economic gap among the general population, alleviate poverty, and generate foreign currency for the nation. To ensure the optimum functioning of MSMEs as a critical driver of the national economy, the government must provide ongoing assistance to these enterprises by enhancing their capacity.

In conclusion, the cooperation between Indonesia and Malaysia on the Master Plan on ASEAN Connectivity (MPAC) in Digital Innovation, specifically in Quick Response Indonesia Standard (QRIS), can significantly enhance economic integration and social development in Muslim ASEAN countries. This is the conclusion that can be drawn from the cooperation. The deployment of QRIS, a digital payment system that uses QR codes, will make it easier to conduct transactions across international borders, lower the prices of transactions, and encourage financial inclusion among the population that does not have bank accounts.

This will contribute to accomplishing the MPAC's aim of reducing the development gap between ASEAN member nations by encouraging economic growth, competitiveness, and social welfare. This will be conducted via the promotion of economic growth. Furthermore, since Indonesia and Malaysia are nations with a mainly Muslim population, implementing QRIS aligns with the values and cultural sensitivities they both have in common, making it an appealing choice for digital payment systems. The fruitful partnership that exists between these two nations when it comes to this particular domain has the potential to serve as an example for other Muslim ASEAN states to emulate.

## Limitations and Future Recommendations

Currently, the study is limited, and the examination concentrates on the Muslim nations that are members of the Association of Southeast Asian Nations (ASEAN), namely Indonesia and Malaysia. Further studies should also involve the creation of policy recommendations for the framework of the Master Plan on ASEAN Connectivity (MPAC) in Digital Innovation, which should be included in future research. When the researcher does more studies in the future, the researcher will suggest that the Quick Response Indonesian Standard (QRIS) be implemented in ASEAN nations in conjunction with the central banks of Thailand, Malaysia, Singapore, and the Philippines.

## Author’s Contribution

The author independently produced this final publication, which included writing, doing a literature review, and gathering data to generate a comprehensive analysis. In addition, the manuscript includes methodology, results, and discussion, concluding with limits and future recommendations.

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## Declaration of Competing Interest

The researcher asserts that the study was conducted without commercial or financial affiliations, which may be considered a possible conflict of interest.

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