



JLPH: Journal of Law, Politic and Humanities

E-ISSN: 2962-2816
P-ISSN: 2747-1985<https://dinastires.org/JLPH> [✉ dinasti.info@gmail.com](mailto:dinasti.info@gmail.com) [☎ +62 811 7404 455](tel:+628117404455)DOI: <https://doi.org/10.38035/jlph.v5i3>
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QRIS as a Single Payment Gateway as a Solution for Payment Efficiency and Legal Protection for e-commerce Consumers Through a Comparison With China

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Abstract: The increasing interest in shopping through e-commerce is accompanied by consumers' desire for easy, fast, and efficient payment methods, leading to a decline in cash usage as transactions can be conducted without spatial or temporal limitations through various payment gateways. In response to this phenomenon, Indonesia introduced a national payment gateway called QRIS. However, QRIS still faces several weaknesses, particularly in terms of effectiveness and consumer protection, which necessitate improvements. A single payment gateway is considered an effective solution to address these issues. This study used the statute approach and the comparative approach. It examined laws and regulations related to payment systems and consumer protection in e-commerce implemented in Indonesia, with China serving as a comparative study. The study results indicate that certain features of QRIS are not yet adaptive to current cutting-edge technologies, highlighting the need for more specific regulatory provisions in several Indonesian laws, particularly the importance of independent regulations governing e-commerce to create inclusivity in digital transactions.

Keyword: Consumer Protection, E-Commerce, Single Payment Gateway

INTRODUCTION

In this era of openness, technology dominates almost every sector of human life. It is undeniable that technology has become commonplace and is utilized to process and analyze data, as well as to observe and produce substantial, fast, real, and targeted information (Siregar, 2020). The development of technology has introduced new phases in societal communities, including in the business world. Today, business actors leverage the convenience of technology to grow their businesses, not only on a domestic scale but also internationally through e-commerce (Aprianto, 2021).

The growing interest in shopping through e-commerce is also accompanied by consumers' demand for easy, fast, and efficient payment methods (Aulia, 2020). This trend has driven many digital wallet service providers to introduce various digital payment methods. Consequently, the use of cash has decreased, making transactions more practical as they can

be conducted anytime and anywhere without worrying about carrying cash or not having any cash on hand (Tarantang et al., 2019). Some examples of digital wallets commonly used by Indonesians include OVO, Dana, ShopeePay, i-Saku, LinkAja, and GoPay. Each of these digital wallets has its own specific functions and advantages (Samodra, 2023). One example is ShopeePay, which offers a flagship service called "Shopee PayLater." This feature allows customers to make payments on credit with relatively low interest rates and installment options of up to 12 times when shopping through the Shopee app (Asmaasyi, 2022).

Various digital payment systems can be simplified and unified under a single name, namely a payment gateway (Hidajat & Salini, 2023). A payment gateway offers a wide range of complex services, extending beyond just payment processing. It is equipped with a transaction management system that allows sellers to process payments from customers effortlessly. This enables sellers to receive payments, manage money transfers, and even monitor transaction records (Hapsari, 2021). Moreover, payment gateways are equipped with various security features, including encryption, tokenization, and fraud prevention solutions, enabled by the PCI DSS (Payment Card Industry Data Security Standard) system (Shishkov, 2024).

To address the challenges of digital payment needs and to realize a national payment gateway, Indonesia, through Bank Indonesia, has introduced a nationwide digital payment system in the form of a QR code called the Quick Response Code Indonesian Standard (QRIS). This initiative is governed by the Bank Indonesia Board of Governors Regulation Number 21/18/PADG/2019 concerning the Implementation of the National Quick Response Code Standard (QRIS) (Mughtar, 2024). The presence of the QRIS payment model has brought benefits to both consumers and merchants. Consumers using QRIS transactions gain various advantages, such as faster service, enhanced security, and cashless transactions. On the other hand, merchants who have integrated QRIS into their products benefit from business growth, potential sales increases, reduced cash management costs, the elimination of the need for change, the ability to separate business and personal income, and the creation of a credit profile, which facilitates access to financing in the future (Bank Indonesia, 2019).

Although QRIS has significant potential and remains the only national digital payment system and digital wallet managed by the state, its implementation still has shortcomings, particularly in e-commerce (Herryani, 2023). Many e-commerce platforms are still not integrated with QRIS, requiring users to take additional steps, such as uploading payment proofs, which reduces efficiency and convenience (Herryani, 2023). Another reason is that, when using e-commerce, consumers may sometimes prefer a single digital wallet as their primary choice, citing reasons such as bank account security and efficiency. The variety of digital wallets in Indonesia is often considered inefficient, as consumers typically need to have more than one digital wallet to transact across different e-commerce platforms. Therefore, consumers believe there is a need for efforts to integrate payment options into a single digital wallet to improve efficiency (Kajian Kemitraan BSKLN Kemenlu RI, 2021). This consumer attitude also aligns with legal concerns, particularly the fear of data breaches caused by the negligence of QRIS partners, where users' personal data could potentially be exploited and sold to third parties.

To address these issues, QRIS can implement a single payment gateway system integrated into e-commerce transactions to create efficiency. The presence of a single payment gateway not only simplifies transactions for consumers but also facilitates the government, through the designated financial authority, in regulating and monitoring digital transactions while providing legal protection for consumers to support market expansion. To understand how QRIS can optimize the implementation of a single payment gateway, it is important to examine examples of its practice, such as in China, which leads to integrated and systematic payment system innovations through Alipay, along with the laws and regulations regulating it

(Li et al., 2019).

To support the realization of seamless and integrated payments as well as optimization opportunities for QRIS, it must be backed by a regulating legal framework.²¹ The operations of commercial banks in the development of digital payment services are governed by the Financial Services Authority Regulation Number 21 of 2023 on Digital Services (hereinafter referred to as POJK 21/2023).²² The legal framework for electronic money is regulated under Bank Indonesia Regulation Number 20/6/PBI/2018 on Electronic Money (hereinafter referred to as PBI 20/2018).²³ The regulation of individual data security is governed by the Law of the Republic of Indonesia Number 27 of 2022 on Personal Data Protection Law (hereinafter referred to as the PDP Law).²⁴ To ensure legal certainty in banking services related to the implementation of payment systems, particularly in providing comfort, security, and safety when accessing or using goods and/or services, provisions are set out in Law Number 8 of 1999 on Consumer Protection (hereinafter referred to as the Consumer Protection Law or UUPK).²⁵ Lastly, the implementation of electronic systems involving the government, individuals, and the general public is regulated under Law Number 19 of 2016 on Electronic Information and Transactions (hereinafter referred to as the ITE Law).²⁶ This raises the question of whether the law has fully supported a harmonious digital transaction environment or not.

Through this background, the author seeks to further explore the potential and efforts that can be undertaken to optimize the operation of QRIS, particularly its use in e-commerce, to achieve efficiency, legal certainty, and consumer protection in the implementation of a Single Payment Gateway. This analysis is presented in a paper titled "*QRIS as a Single Payment Gateway as a Solution for Payment Efficiency and Legal Protection for e-Commerce Consumers Through a Comparison with China.*"

METHOD

The research method is essentially a guideline or foundation used to conduct a study with the aim of finding solutions to a particular problem under discussion through the development of knowledge and scientific approaches (Efendi, 2008). The research method used in this study was normative juridical. Normative juridical research was conducted based on primary legal sources by examining theories, concepts, legal doctrines, legal principles, as well as laws and regulations related to the research (Muhaimin, 2020). The normative juridical method aims to generate arguments, theories, or new approaches as instructions for solving the problems currently being faced (Marzuki, 2005).

The research approaches used in this study were the statutory approach (statute approach) and the comparative approach (comparative approach). The statutory approach (statute approach) was conducted by analyzing laws and regulations related to the implementation of digital payment systems and the application of a single payment gateway to establish an efficient e-commerce payment system with legal protection and to address legal gaps. This legal approach (statute approach) involves examining the alignment or consistency between the national constitution and laws, or among different laws (Marzuki, 2005). The comparative approach (comparative approach) was used to compare the laws of one country with those of another or the laws from one time period with those of a different time period. It also serves as a method for examining the origins of specific legal provisions addressing similar issues across countries (Marzuki, 2005).

The type of data collection used in this study was qualitative, with data analysis techniques using descriptive-analytical methods and specifications. Data collection was conducted through the library research method. The qualitative method aims to elaborate on conditions with similar characteristics, grouping them to form a theory through phenomena whose data have already been identified in the field (Syahrir, 2021). Subsequently, the library research method utilized standard written library sources such as books, journal articles, and

legislation to obtain research data (Zed, 2008). Furthermore, the descriptive-analytical technique examined current issues intending to describe phenomena as they should have been at the time the research was conducted (Fadjarajani et. al., 2020).

Data collection in this study was supported by primary, secondary, and tertiary sources. Primary sources were obtained from Indonesia's national laws and China's national laws. Secondary sources were gathered from books, scientific articles, and journals discussing digital payments and the single payment gateway system. Lastly, tertiary sources were obtained from the *Kamus Besar Bahasa Indonesia* (KBBI), and resources accessed through internet websites.

RESULTS AND DISCUSSION

Implementation of the Single Payment Gateway System in Digital Payment Systems and Legal Framework in China

Systematically, a Single Payment Gateway facilitates payment transactions through a single platform that integrates various payment methods, such as credit cards, bank transfers, and digital wallets. The use of a Single Payment Gateway enables users to perform and complete transactions quickly and securely without the need to switch between different payment systems. This system connects all involved parties within a unified framework to provide a single gateway, increasing the efficiency, transparency, and visibility of transaction processes. In this context, all digital wallet users can conduct their activities through a single platform (Sausi & Mtebe, 2021).

Talking about a single payment gateway in the context of e-commerce payment systems means discussing the successful implementation in the comparative country, namely China. Driven by rapid economic growth and technological readiness for internet-based payment systems, mobile payments as an innovative payment method have quietly sparked a payment revolution in China over the past few years (Li et. al., 2019). With the significant positive trend of mobile payments, the Chinese market has fostered the growth of numerous mobile payment giants, one of which will be discussed in this study: Alipay.

Alipay is an independent payment method that has implemented a single payment gateway system in its operations (Li et. al., 2019). Currently, its network covers over 90% of the domestic market in China, outperforming similar competitors. Generally, Alipay operates like other digital wallets utilizing QR code technology, where users simply scan the QR code displayed by merchants using their mobile devices to complete transactions, without the need to present credit or debit cards or cash to the merchants (Xu et al., 2024).

At first glance, Alipay may seem familiar, but beyond that, it has introduced innovative ideas that not all digital wallets possess (Xu et al., 2024). Some of these include Alipay's cross-border service, known as Alipay Plus (Alipay+), which leverages artificial intelligence (AI) technology to provide solutions for risk management. This enables it to effectively handle common issues such as account theft, card fraud, and marketing scams (WooCommerce, 2024). Furthermore, Alipay is capable of integrating various cross-border digital wallets, allowing consumers who use Alipay to continue transacting internationally, even in countries that use different digital wallets (Fatima, 2024). Alipay is also able to function as a digital card because it is connected to debit and credit cards issued by most domestic and international banks, with a security level that uses biometric information (Li et. al., 2019). Lastly, in e-commerce, Alipay offers an effective payment solution because it has integrated many e-commerce platforms in China, allowing users to conveniently choose according to their preferences without needing to create payment accounts on each e-commerce platform (Tian et al., 2023).

After reviewing the overview of Alipay, it can be understood that China shows how to harmonize technology and regulation in a way that benefits society. Understanding the implementation of the single payment gateway in Alipay naturally raises questions about how the Chinese government supports a secure and integrated payment system, particularly in e-

commerce, through the regulations and legislation governing it. Juridically, several significant laws must be understood and analyzed in detail, as they play a crucial role in fostering the harmonization of the digital transaction ecosystem. Some of these include the legal requirements for digital payments, which are regulated under the *Administrative Measures for the Payment Services of Non-Financial Institutions (2010)* (hereinafter referred to as the Non-Financial Institutions Payment Services Law); accountability and personal data protection, which are governed by the *Personal Information Protection Law of the People's Republic of China (2021)* (hereinafter referred to as the Personal Information Protection Law or PIPL); the operational mechanisms of e-commerce in China, which are regulated under the *E-Commerce Law of the People's Republic of China (2019)* (hereinafter referred to as the E-Commerce Law); and legal certainty and consumer protection in e-commerce transactions, which are stipulated in the *China Law on Protection of the Rights and Interests of Consumers (2014)* (hereinafter referred to as the Consumer Protection Law of China).

Entering the discussion of the first regulation, it is important to note that the legality and implementation of integrated digital wallets in China must receive approval from the PBoC (People's Bank of China). As outlined in Article 3 of the *Administrative Measures for the Payment Services of Non-Financial Institutions*, it states that to provide payment services, non-financial institutions must obtain a payment business license under these regulations. This enables them to become financing institutions, and no non-financial institution or individual is allowed to engage directly or indirectly in payment businesses unless approved and monitored by the PBoC. Subsequently, payment institutions must prioritize the principles of security, efficiency, honesty, and fair competition, while ensuring they do not harm the interests of the state, public interests, or the legitimate rights and interests of consumers, as outlined in Article 5. Furthermore, through its own regulations, the People's Bank of China (PBoC) emphasizes in Article 20 of Announcement No. 43 (2015) - *Administrative Measures for the Online Payment Business of Non-Banking Payment Institutions*, that payment institutions are required to be knowledgeable about user information protection, establish effective measures to safeguard user information, and implement risk monitoring mechanisms. It can be understood that the PBoC holds a significant role in supervisory functions to ensure a law-based transaction environment.

In facing the dynamic nature of the global landscape, it is undeniable that there are potential crimes, such as personal data breaches, within the realm of digital payments and e-commerce in China (Yuxiao, 2016). It becomes an intriguing discussion to explore how they address these challenges. China has developed a legal and regulatory framework covering areas such as Internet network operation security, data security, personal information protection, and e-commerce, as well as cyber violations and cybercrimes. The laws in China have made relatively significant progress in protecting personal information rights, one of which is the PIPL (Yuxiao, 2016). The PIPL Law envisions regulating the processes of personal data transfer and storage while also complementing several of China's previous cyber regulations, including the Data Security Law, Cybersecurity Law, e-Commerce Law, and the Civil Code (Simangunsong & Amelia, 2024).

The general provisions of the PIPL Law state that no organization or individual may violate the rights and personal interests of individuals, as personal information is protected by law. No one is allowed to unlawfully collect, use, process, or transmit another person's personal information, nor engage in personal information processing activities that threaten national security or public interests. If a data breach happens, mitigation measures are outlined in Article 57 of the PIPL Law. In cases where personal information has been or is at risk of being leaked, falsified, or lost, the personal information processor must promptly take corrective actions and notify both the department responsible for personal information protection and the affected individuals. Within the same article, notification to the affected individuals is not required if

the personal information processor has taken measures to effectively prevent harm resulting from the breach. However, if instructed by the personal information protection department, which is convinced that harm may happen, the personal information processor must notify the affected individuals.

What happens if there is intentional misconduct or violations of the provisions, and how can complaints be filed? According to Article 66, if personal information is used in violation of the provisions, or if personal information is used without fulfilling the obligations of personal information protection as outlined in this law, the department responsible for personal information protection must order the data processor to make corrections and issue a warning. If the data processor refuses, they may be subject to administrative penalties, including a fine exceeding 1 million yuan. Individuals who feel harmed and believe that their rights under the law have been violated through the misuse of personal data may file a lawsuit in the People's Court as outlined in Article 70.

In addition to domestic regulations, the PIPL Law also strictly monitors the cross-border transfer of data. The provisions on Cross-Border Provision of Personal Information, outlined in Articles 38 to 41, state that if a personal information processor needs to transfer personal data outside of China for business or other purposes, the processor must comply with specific requirements, including passing a security assessment conducted by the Cyberspace Administration of China (CAC). Furthermore, any foreign individual or organization involved in personal data processing that harms or endangers individuals or poses a threat to national security will face strict actions from the Cyberspace Administration of China (CAC), which may include restricting or prohibiting the provision of personal information to such foreign organizations or individuals. Finally, if a country or region intentionally imposes restrictions, prohibitions, or other discriminatory actions against China regarding personal information protection, China may take strong countermeasures against that country or region. China's approach to controlling personal data breaches, particularly in e-commerce transactions, involves a strong legal framework emphasizing consent, accountability, and proactive risk management. With periodic regulatory updates and a focus on compliance, businesses operating in China must adhere to these requirements to effectively mitigate the risks of data breaches (Simangunsong & Amelia, 2024).

Shifting to e-commerce laws and consumer protection, a relevant aspect of the commercial process is ensuring sustainable e-commerce development and providing legal certainty for stakeholders involved in e-commerce activities, which forms part of China's legal standards (You & Bu, 2020). According to Articles 17 and 76 of the E-commerce Law, to guarantee consumers' rights to information and choice, every e-commerce operator is required to display complete information about their goods and/or services. The legality of e-commerce, including registration, licensing, and taxation, must be publicly disclosed and regularly updated. If an e-commerce operator fails to fulfill these obligations, they may face administrative penalties in the form of fines ranging from 20,000 to 100,000 yuan. Additionally, this law requires every e-commerce operator to ensure that all marketing for products and services aligns with their actual characteristics, accessibility, and conditions of use. Any false, misleading, or fraudulent statements that could potentially cause harm are strictly prohibited. This serves as a concrete measure to eliminate misinformation and manipulative practices, which are persistent issues in the e-commerce market, as stipulated in Article 40.

China considers protecting consumer trust in e-commerce to be as important as preventing barriers to business operations (Huang, 2017). Consumers have an important role in the sustainability of businesses (Huang, 2017). Therefore, it is necessary to examine several key points from the perspective of China's Consumer Protection Law. Article 6 of the Consumer Protection Law of China states that every consumer, including e-commerce service

users, has the right to protection and is recognized as lawful in the eyes of the law. Furthermore, the state encourages and supports all organizations and individuals in conducting social oversight of behaviors that harm consumers' legal rights and interests.

Furthermore, Article 16 states that business owners, including e-commerce service providers and other supporting components, who collect and use consumers' personal information must adhere to the principles of legality, appropriateness, and necessity. They are required to explicitly state the purpose, method, and scope of information collection or usage and obtain the consumer's consent. Lastly, there is a provision that offers significant reassurance to consumers: they have the right to submit reports and complaints if there is an act deemed unlawful due to the failure of state institutions or their officials to fulfill their duties in protecting consumers' rights and interests, as outlined in Article 29. Through Consumer Protection Law of China, several key points can be highlighted: the state plays an active role in safeguarding consumers' legal interests, the government remains open to receiving complaints from the public, and there are stringent regulations for electronic transaction service providers.

Based on the discussion presented, it can be concluded that China continues to transform and update its laws to remain relevant by addressing the needs of society, especially in the era of market openness through digital systems (Voa Indonesia, 2024). Achieving a large-scale single payment gateway is not a barrier, as there is already a strong legal foundation that serves as the cornerstone for successful transactions. The involvement of the state, accountability of the parties, and transparency are key to the effective implementation of any regulation. In line with the theory of the welfare state, the regulations that should be applied are those that provide maximum protection guarantees, as well as efforts to harmonize all layers of society universally as evidence of social services (Dedi, 2021). The state, as the holder and designer of regulations, is not only responsible for creating public order but also plays an active role in ensuring the well-being of its citizens (Sarifuddin & Erar, 2023).

Comparison of Digital Payment System Laws in China and Indonesia and the Potential Implementation of a Single Payment Gateway on QRIS

A legal comparison is conducted to enhance understanding of legal facts that occur outside of what happens within the country. In this case, there is an effort to improve the law, knowledge, and perspectives on the law that have not yet reached their full potential, moving toward a better direction (Lukito, 2022). In general, both China and Indonesia are part of the Civil Law system (Continental Europe) (Immanuel et al., 2024). As highlighted in the previous discussion, both Indonesia and China have laws that regulate digital payment operation licenses, personal data protection, and consumer protection, but with different approaches and provisions. Every similarity has its differences, and as discussed earlier, there are differences in the laws, particularly those regulating e-commerce. Therefore, it is important to also examine the other similarities and differences in the following discussion.

To begin with the first point, the legal requirements for digital payments in Indonesia are regulated in several regulations and laws, including POJK 21/2023 and PBI 20/2018. Any party performing the role of a service provider must first obtain permission from Bank Indonesia (BI) by meeting the general requirements and feasibility aspects as outlined in Article 4 of the PBI on Electronic Money. Furthermore, in Article 5, the application for permission as a payment system service provider is submitted based on categorization, which includes front-end, acquirer, payment gateway providers, electronic wallets, and fund transfers; and the back-end service providers, which consist of permits as principals, switching providers, clearing, and settlement. The party applying for permission as a service provider must be a bank or a non-bank institution in the form of a limited liability company, as outlined in Article 6. Digital services provided by commercial banks are regulated under POJK 21/2023, which states that

banks offering digital services must have the necessary information technology infrastructure and management practices to support the effective delivery of digital services. They must also pay attention to their relationship with customers, particularly in the identification and verification processes, as outlined in Articles 3 to Article 5.

Through the point on the legal requirements for digital payments, it can be seen that both China and Indonesia share similarities in emphasizing the role of the central bank as the official authority for digital payment licensing, with China through the PBoC and Indonesia through BI. The difference lies in the categorization of payment system service providers, where Indonesia provides a more detailed explanation of what constitutes a payment system service provider compared to China. On the other hand, China has more specific regulations regarding user protection and risk management compared to Indonesia.

Moving on to the next point, regarding personal data protection, Indonesia regulates it under the Personal Data Protection Law (UU PDP). The general provisions of the PDP Law explain that all efforts aimed at protecting personal data in the processing of personal data to ensure the constitutional rights of the data subject constitute the meaning of personal data protection. Each individual has the right to obtain information about the clarity of identity, the legal basis for processing, the purpose of requesting and using personal data, and the accountability of the party using the personal data. It is more or less similar when looking at the general provisions on the definition of personal data protection, where both Indonesia and China regulate and explicitly protect the rights of personal data owners in the respective laws.

From the perspective of cross-border transaction security, the Personal Data Protection Law (UU PDP) raises potential questions regarding data protection when transferred to another country, as it does not specifically prohibit the transfer of personal data abroad, nor does it establish the requirements that must be met for such data transfers to be carried out legally and legitimately. This can be seen in Article 60 letter (e), which only discusses cooperation with foreign personal data protection institutions for the purpose of resolving suspected violations of cross-border personal data protection. In contrast to China, which imposes sanctions and retaliatory actions through its Cyberspace Administration, Indonesia's law does not include specific provisions regarding the restriction of personal data transfer based on Articles 55 and 56 of the PDP Law. Both Articles 55 and 56 only provide general guidance on whether personal data transfers are allowed within or outside Indonesia. Unlike China, which requires compliance with licensing and specific conditions set by the Cyberspace Administration of China. In fact, provisions such as agreements between individuals, personal data owners, and the effective and strict protection of personal data can be regulated based on their urgency. Furthermore, neither international agreements nor agreements between personal data controllers are included in the PDP Law (Simangunsong & Amelia, 2024).

The final point is e-commerce and consumer protection. Indonesia currently does not have a specific law regulating e-commerce; therefore, this discussion will combine it with consumer protection, as the legal protection for consumers in e-commerce transactions has been adapted to the Consumer Protection Law (UUPK) and supporting laws such as the Information and Electronic Transactions Law (UU ITE) (Basri, 2020). In the provisions of Article 1 paragraph (1), consumer protection is defined as all efforts made to ensure legal certainty and provide protection to consumers, including guarantees of rights and expectations, so that business actors do not act arbitrarily in ways that continuously harm consumers' rights. The rights and obligations of consumers, as outlined in Articles 5 and 6, include the right to comfort, security, and safety; the freedom to choose products; access to information about goods and services; having their complaints heard; and receiving compensation, reimbursement, and/or a replacement. Furthermore, consumers are required to follow the product usage instructions and act in good faith during transactions. Still within the scope of consumer protection, as outlined in Articles 19 and Article 20, if a business actor, whether

knowingly or unknowingly, causes damage, contamination, and/or harm to consumers through the products they sell or produce, they are obligated to provide compensation in the form of monetary reimbursement, product exchange of equivalent value, or other forms as regulated by this law.

The existence of e-commerce may not be clearly defined in this law. However, it can be understood that e-commerce plays the role of a business actor that must always guarantee the rights of its users. Furthermore, in the Information and Electronic Transactions Law (UU ITE), both in the public and private spheres, the conduct of electronic transactions involving interaction and/or the transfer of information and/or electronic documents during the transaction must be carried out with good faith, as stated in Article 17. Furthermore, according to the provisions of Article 18, the electronic transaction service provider must provide accurate and detailed information to consumers regarding the producer of a product or service, available products, and contract clauses. This contract is essential to ensure the smoothness and accuracy of the electronic transaction process. Consumer approval of online purchases is done by "clicking" the terms and conditions, where, in practice, consumers show their commitment to their transactions within the electronic transaction agreement. The statement of consent to the terms and conditions of online buying and selling, often referred to as an electronic contract, typically appears before the consent is given. (Putri et al., 2021).

Through the points of consumer protection and e-commerce, it can be understood that both Indonesia and China treat consumers well by fulfilling their essential rights. Indonesia protects consumers' rights, including the right to comfort, security, freedom of choice, clear information, and compensation, while China's consumer protection regulations are similar to Indonesia's but with a more focused approach, covering rights such as security, receiving notifications, freedom of choice in products, and compensation for receiving unsuitable products. (Immanuel et al., 2024). The regulation of consumer rights can indeed be said to be similar in both countries, but the distinguishing factor lies in its implementation, which varies due to the sociological conditions, legal values, and social and cultural contexts of both countries (Immanuel et al., 2024). Additionally, on the one hand, the legislation in Indonesia requires special attention to establish standardized e-commerce regulations like those in China; thus, there is a clear distinction between consumer protection and e-commerce regulations. This would also facilitate the updating of laws that have not previously addressed these issues, ultimately driving the growth of Indonesia's digital economy (Tantri et al., 2024).

After understanding the various forms and comparisons of payment system laws and the supporting laws from China and Indonesia, the question arises: what is the future of QRIS, can it take a step forward to implement a single payment gateway for e-commerce? The answer is certainly yes. Considering that the effort to improve the quality of the payment system is a fundamental role of the government. As mandated in Article 90 of Government Regulation No. 71 of 2019 concerning the Implementation of Electronic Systems and Transactions, states that in managing electronic systems and transactions, including providing facilities for the use of information technology and electronic transactions, as well as protecting public interests from any form of obstacles resulting from the misuse of information and electronic transactions, the government also participates.

QRIS is a QR code standard launched by Bank Indonesia aimed at helping the public with electronic transactions (Yadita et al., 2024). QRIS is still relatively new, and when compared to Alipay in China, QRIS in Indonesia clearly requires improvements from its current state. Issues such as legal challenges that pose threats to personal data, fraud, effectiveness, and the lack of specific regulations and penalties in laws, particularly in the Personal Data Protection Law (UU PDP) and the yet-to-be-formed E-commerce Law, are problems that must be addressed to achieve a single payment gateway system with QRIS (Yadita et al., 2024).

Here are some efforts that QRIS can undertake to optimize its operations and realize a single payment gateway in e-commerce, based on what has been done by Alipay. First, QRIS must update its technological infrastructure, including efforts to interconnect with e-commerce platforms. This means ensuring that local marketplaces and all major e-commerce platforms in Indonesia can operate with QRIS, allowing transactions between platforms through a single gateway. QRIS must also form partnerships with various payment service providers to expand its network and interoperability (Wahyudin, 2022). Then, in terms of achieving digital security, it is crucial to build user trust. Encryption and authentication technologies are two factors that can reduce the risk of fraud and improve user comfort. QRIS can conduct a study of Alipay in China regarding the use of AI to provide solutions as a proactive step in effectively addressing common cases.

The next effort QRIS should undertake is to add cross-border payment facilities. While QRIS is already available in several countries, it has not yet been implemented in e-commerce transactions. There is a need to add multi-currency payment capabilities to support international transactions, which would allow QRIS to serve consumers universally (Wahyudin, 2022). Lastly, from an external perspective, comprehensive socialization and active education for the public can be conducted to ensure legal protection for QRIS users, particularly when making cashless payments. Since digital transactions are a global occurrence that has become commonplace, empowering the wider community through socialization and education about the QRIS system and its risks becomes a priority. Public legal awareness regarding digital transactions will increase as people gain a deeper understanding of the QRIS system and its various risks (Yadita et al., 2024).

CONCLUSION

The realization of a connected and efficient payment system in the world of e-commerce is indeed essential today. In addition to the convenience it offers, security is also a key concern. Therefore, the Single Payment Gateway system is introduced, which facilitates payment transactions through a single platform, allowing users to complete transactions quickly and securely without having to switch between payment systems, as seen in Alipay, one of the leading digital wallets in China. To succeed in implementing a well-integrated payment system, there are several important laws to consider in China, such as the Law on Non-Financial Payment Institutions as a legal requirement for digital payment businesses, the PIPL Law as a form of accountability and personal data protection, the E-commerce Law as a standard for e-commerce operations, and the Consumer Protection Law of China. In addition, China prioritizes the updating of laws to remain relevant by addressing the needs of society, particularly in the era of market openness through digital systems. In line with the theory of the welfare state, the involvement of the state, accountability of the parties involved, and transparency are key factors in the effective implementation of regulations.

Both Indonesia and China have several differences and similarities in regulating payment systems and consumer protection, in line with the sociological conditions, legal values, social, and cultural contexts of both countries. Indonesia still has much work to do in creating inclusivity in digital transactions. Indonesia can learn a great deal from China to add specific regulations to the Personal Data Protection Law (UU PDP) and fill gaps to enhance the operation of QRIS through the independent implementation of the E-commerce Law. QRIS, at its relatively young age, can further improve its quality to become a single payment gateway by addressing existing issues, such as updating technological infrastructure, adopting new methods and features to ensure digital security, enhancing cross-border payment facilities, and conducting comprehensive socialization and active education for the public as an external step.

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