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MSMEs Sales Products Marketing Performance Increasement Based on The Use of QRIS

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Abstract: One important financial technology instrument that improves marketing performance is the Quick Response Code Indonesian Standard (QRIS), particularly for Micro, Small and Medium Enterprises (MSMEs). This digital payment technique not only facilitates transactions, but it also aids in bigger marketing efforts, potentially leading to increased customer engagement and company success. The case in Semarang city involving 160 MSMEs by the district. Data analysis technique using Structural Equation Modelling (SEM) with proceed by AMOS 22 version. The results of the research shows that all of the hypothesis including: digital literacy level toward QRIS perceived usefulness, digital literacy level toward QRIS ease of use, QRIS ease of use toward QRIS usefulness, QRIS usefulness toward sales products marketing performance, QRIS ease of use toward sales products marketing performance and digital literacy level toward sales products marketing performance are positively and significant.
Keywords: Quick Response Code Indonesian Standard (QRIS); Digital Literacy Level; QRIS Perceived Usefulness; QRIS Ease Of Use; Sales Products Marketing Performance.

Abstrak: Salah satu instrumen teknologi keuangan yang mempengaruhi kinerja pemasaran adalah Quick Response Code Indonesian Standard (QRIS), khususnya untuk usaha Mikro, Kecil dan Menengah (UMKM). Teknik pembayaran digital ini tidak hanya memfasilitasi transaksi, namun juga sebagai alat untuk mendorong usaha pemasaran yang lebih besar yang berpotensi untuk meningkatkan keterlibatan pelanggan dan kesuksesan usaha. Obyek penelitian di kota Semarang melibatkan 160 UMKM per kabupaten. Teknik analisis data menggunakan Structural Equation Modelling (SEM) diproses dengan AMOS versi 22. Hasil penelitian menunjukkan seluruh hipotesis yang meliputi: tingkat literasi digital terhadap kemanfaatan QRIS yang dipersepsikan, tingkat literasi digital terhadap kemudahan penggunaan QRIS yang dipersepsikan, kemudahan penggunaan QRIS yang dipersepsikan terhadap kemanfaatan QRIS yang dipersepsikan, kemanfaatan QRIS yang dipersepsikan terhadap kinerja pemasaran produk-produk penjualan, kemudahan penggunaan QRIS yang dipersepsikan terhadap kinerja pemasaran produk-produk penjualan dan tingkat literasi digital terhadap kinerja pemasaran produk-produk penjualan berpengaruh secara positif dan signifikan.
Kata kunci: Quick Response Code Indonesian Standard (QRIS); Tingkat Literasi Digital; Kemanfaatan QRIS Yang Dipersepsikan; Kemudahan Penggunaan QRIS Yang Dipersepsikan; Kinerja Pemasaran Produk-Produk Penjualan.

INTRODUCTION

Approximately 97 percent of Indonesia's workforce is employed by micro, small and medium-sized enterprises (MSMEs), which are expanding quickly. In 2022, Over 64

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million MSMEs will exist in the country, accounting for 61 per cent of GDP and 16.650 percent of export earnings (Badan Pusat Statistik, 2024). Corporate competitiveness is further complicated by the growing number of MSMEs. MSMEs must be able to innovate, enhance product quality, and create compelling marketing strategies in order to increase market share in the face of difficult business conditions. They should view this as an opportunity for future survival and corporate success (Yani et al., 2023).

One strategy to boost marketing performance for MSMEs in the fiercely competitive business world is the use of technology in banking, especially digital transaction services, which is still expanding quickly in the digitalization era (Rujitoningtyas et al., 2018). The urge to improve long-term connections with clients and facilitate their transactions is what drives this. (Tirtawijaya & Wagiman, 2023). In the face of the growing digital trend, QRIS (Quick Response Code Indonesia Standard) is not just a new technology but also a way to provide seamless transactions for customers. As they make transaction procedures more efficient and safe, it becomes pertinent (Silaen et al., 2021). Because aspects like transaction pricing, speed, and simplicity of access are usually top concerns, customer discontent with digital transaction procedures persists despite their growing use (Fauzela, 2023).

A key factor in the growth of Indonesian e-commerce has been the QRIS Payment System. QRIS payments are frequently accepted by online marketplaces and e-commerce platforms, which facilitates online transactions for consumers. This has led to the growth of the digital economy and given small businesses the opportunity to access a larger consumer base. QRIS has also contributed to the advancement of financial literacy. The ease of using QRIS payments and users' growing accustomation to digital transactions. This simplified experience benefits both customers and businesses, maximizing overall effectiveness and contributing to a notable yearly increase of up to 194.06 per cent in April 2024, with 48.900 million users and 31.860 million merchants. August 2024 saw a 217.33 per cent surge in QRIS transactions, with 52.550 million users and 33.770 million merchants (Perbanas, 2024).

Although Bank Indonesia published QRIS on August 17, 2019, it wasn't put into operation until January 1, 2020. QRIS, is a QR Code payment standard that was created by the Indonesian Payment System Association and Bank Indonesia, to keep up with the development of digital, non-cash payments, merchants use QRIS (Ovo, Gopay, LinkAja, Dana, Paytren, CIMB GoMobile, PermataX, MoBRI, Bank Bali, and, among others). Alternative cashless payment methods could boost sales. Reduce the costs of cash and small money management while increasing sales traffic. For instance, since sales proceeds are saved in the bank directly and are always accessible, no adjustment is needed. Additionally, this lessens the possibility of money being stolen or lost. Additionally, it lowers the risk of loss from receiving payments with counterfeit currency, records transactions automatically and shows them in the transaction history, builds bank credit profiles, increases opportunities for working capital, and makes it simpler to pay bills, levies, and non-cash purchases without leaving the store. It also makes it easier to participate in government programs like BI, Ministries, and Local Governments (Soegoto et al., 2024).

However, there are significant research gaps that need to be filled at the intersection of technology adoption and marketing performance. The Technology Adoption Model (TAM), which is widely used to study how users embrace technology, has shown shortcomings in a number of situations, most notably marketing environments. Recent

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research have shown that perceived utility remains a strong predictor of technology adoption, although little is known about the factors influencing this view (Marikyan & Papagiannidis, 2024; Nurqamarani et al., 2021). This disparity suggests that more variable-rich models are needed to increase forecast accuracy. Numerous TAM deployments across industries, including healthcare and small-medium businesses (SMEs), have yielded conflicting results about the importance of perceived usefulness and ease of use. For instance, depending on the specific technology or user group being studied, these constructs can have very different consequences even though they are significant in many circumstances (Alfarizi, 2022; Nurqamarani et al., 2021). This disparity calls for more specific approaches that consider the unique characteristics of different industries.

Many conventional MSMEs believe that people still carry cash and conduct face-to-face payment transactions. That is not entirely wrong. However, the changing times accompanied by technological advancements have transformed conventional societal behavior into a digital society. The phenomenon in this research actually refers to the use of QRIS, which can serve as an alternative payment method that is expected to increase MSMEs income due to the perceived ease and benefits, in line with the TAM concept. Based on the model, it can be said that the newest things of this research including: first, it reconceptualizes digital literacy as a capability-based antecedent within the TAM framework, shifting the focus from perception-driven adoption models to competence-driven performance models. Second, unlike prior TAM research that primarily examines behavioral intention, this study directly links cognitive technology perceptions to tangible sales performance outcomes, Third, the study provides empirical evidence from a digital payment ecosystem context, where digital literacy plays a critical role in value creation.

Without connecting these findings to more general marketing outcomes like customer engagement, sales success, and brand loyalty, the majority of the previously published work concentrates on user approval (Basoeki & Agus, 2023; Musa et al., 2024). Understanding this connection could be beneficial for marketers who wish to make effective use of technology. Existing models usually ignore external elements that may impact technology adoption, such as social effects, business culture, and market dynamics. Studies suggest that adding these components could improve the ability of TAMs and related models to explain occurrences (Alfarizi, 2022; Manfreda & Mijač, 2024). The rapid advancement of digital technology, including big data and artificial intelligence, necessitates ongoing research into customer acceptability and how it impacts marketing efficacy. Current paradigms may not adequately address the complexity posed by these new technologies, suggesting a critical area for further study (Marikyan & Papagiannidis, 2024; Musa et al., 2024).

THEORETICAL REVIEW

Technology as Competitive Advantage. According to the Resource-Based Theory (RBT), a company's distinct assets and competencies are essential to gaining and maintaining a competitive advantage. According to this hypothesis, resources are not all created equal; only those that are rare, precious, hard to copy, and non-replaceable may provide long-term competitive advantages. In order to improve these resources, technology must be incorporated into this framework. Key components of resource-based theory are valuable resources as resources must exploit opportunities or neutralize threats

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in the environment. For example, a company with cutting-edge technology can create value by streamlining processes, cutting expenses, or improving product quality (Wille, 2025). The second is rarity as resources that are scarce among competitors provide a competitive edge. For example, proprietary technology or unique software solutions can differentiate a firm in the marketplace (Cennamo, 2021). Then the next key components of resource-based theory are imperfect imitability as resources that cannot be easily replicated by competitors contribute to sustained advantage. This includes complex technologies that require significant investment and expertise to develop (Lubis, 2022). Non-Substitutability is also the key components of resource-based theory as resources must not have readily available substitutes that can fulfilled the same function. Innovative technologies that create unique products or services fall into this category (Lubis, 2022).

Technology serves as a pivotal resource within the RBT framework such as an enhancement of capabilities: advanced technologies improve operational efficiencies and enable firms to innovate more effectively. Businesses that use advanced data analytics, for instance, can better analyze customer behavior and adjust their products accordingly. Technology also helps a creation of unique products as firms leveraging proprietary technology can develop products that are distinct from those of competitors. This differentiation is critical in markets where consumers seek unique value propositions (Kirchberger et al., 2020). Technology can facilitate lower production costs through automation and optimized supply chains. Companies like amazon exemplify this by using technology to streamline logistics and reduce operational costs, allowing them to offer competitive pricing (Barney et al., 2021). Businesses that use cutting-edge technologies are better equipped to react quickly to shifts in the market and customer needs. In the fast-paced corporate world of today, where customer preferences can change drastically, this agility is crucial (Barney & Hesterly, 2012).

The resource-based theory underscores the importance of leveraging unique internal resources, including technology, to achieve a competitive advantage. Businesses can put themselves in a competitive position by concentrating on resources that are rare, valuable, hard to copy, and non-replaceable. As technology evolves, its role in creating competitive strategies will most likely become even more evident, making it critical for enterprises to invest in technological capabilities as part of their strategic planning efforts.

Technology Acceptance Model. Fred Davis created the Technology Acceptance Model (TAM) in 1986 as a framework to comprehend how people adopt and utilize technology. It emphasizes on how prospective users view the technology's utility and usability, as these factors are crucial in determining whether or not they will embrace it (Davis, 1989).

TAM build under four key components (Min et al., 2019), first is The degree to which a user thinks that utilizing a specific technology would improve their performance or assist them in reaching their objectives is known as the Perceived Usefulness (PU). The likelihood of a user adopting a technology increases with its perceived utility. The degree to which a consumer thinks that utilizing a technology would be effortless is known as Perceived Ease of Use (PEOU). A technology is more likely to be adopted if it is thought to be user-friendly. The user's intention to interact with the technology is known as the Behavioral Intention (BI), and it is impacted by both perceived utility and perceived ease of use. The chance of actual usage increases with the strength of the intention. The last one, Actual System Use; this represents whether or not users actually utilize the technology after forming their intentions based on PU and PEOU.

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TAM has been frequently used to forecast how people would react to new technologies in a variety of domains, such as business, healthcare, and education. However, because TAM is predicated on the premise of rational conduct, it has several limits even if it offers insightful information about technological acceptance. TAM assumes that users evaluate technologies rationally based on perceived ease and usefulness, which may not always reflect real-world decision-making processes. The TAM has a lack of design guidance as the model does not provide specific recommendations on how to design technologies that are perceived as useful or easy to use. TAM may overlook external contextual factors such as organizational culture or social influences that can impact technology acceptance (Manfreda & Mijač, 2024).

By emphasizing the significance of perceived utility and usability in influencing behavioral intentions and actual usage, the Technology adoption Model provides a theoretical framework for comprehending user adoption of technology.

Digital Literacy Level and QRIS Usefulness. One important element affecting judgments about technology adoption is perceived usefulness. It continues to be a fundamental component of technological acceptance prediction models, consistently confirmed in contemporary TAM variants and other acceptance frameworks. Organizations can create more efficient systems that satisfy user needs and encourage broad adoption by comprehending and improving PU (Davis, 1989). The degree to which an individual thinks that utilizing a specific system or technology would improve their overall productivity or job performance is known as perceived usefulness. According to Davis (1989), PU is defined as "The degree to which a person believes that using a particular system would enhance his or her job performance."

Determinants of Perceived Usefulness are system quality and features such as a user-friendly interface and functional design can enhance perceptions of usefulness, then relevance to tasks that the technology has to be aligns well with the user's job requirements and finally social influence and training as peer opinions and comprehensive training can improve users' perceptions of usefulness (Fauziah et al., 2025). The perception of QRIS's utility, its speedy payment transaction completion, its capacity to boost our sales performance and productivity, and its provision of alternate payment options are the four indicators of QRIS's usefulness (Nurhapsari & Sholihah, 2022).

The ability to access, manage, assess, produce, and share information using digital tools, platforms, and technologies is known as digital literacy. (Deschênes, 2024). The capacity to acquire, organize, assess, create, and share information using digital tools and technology in an efficient and critical manner is known as digital literacy. It includes a variety of skills necessary for using the digital environment sensibly, safely, and effectively. Unlike traditional literacy, which focuses on reading and writing, digital literacy includes skills related to information technology, media use, and digital communication. It's the capacity to comprehend and apply data supplied by computers in a variety of formats and from a variety of sources (Gilster, 1997).

To assess a level of digital literacy with QRIS, several indicators can be considered such as: understand how to use QRIS to resolve technical issues. Then the ability to learn new technologies like QRIS easily. The third indicator of digital literacy is always keeping up with important new technologies like QRIS. Then the knowledge about a lot of different technologies like QRIS (Nazzal et al., 2021).

Research on the connection between digital literacy and perceived utility of technology is crucial, particularly as digital technologies are incorporated more and more

into professional and educational settings. Many studies focus on specific populations or contexts, such as students in developed countries. There is a need for research that examines how perceived usefulness and digital literacy interact across diverse socio-economic settings, particularly in developing economies where access to technology and educational resources may differ significantly (Junaidi et al., 2024).

The relationship between the two factors, digital literacy and perceived usefulness is positive, meaning that the larger the digital literacy, the higher the perceived usefulness (Khoso et al., 2025; Yao & Wang, 2024). Based on the above, we propose.

H1: Digital literacy level is positively influencing toward QRIS usefulness.

Digital Literacy Level and QRIS Ease of Use. The degree to which a person thinks utilizing a technology would be effortless is known as Perceived Ease of Use (PEOU). Users are more likely to view a technology as helpful if they find it easy to use, which in turn enhances their intention to utilize it (Ramayanti., 2024). The QRIS ease of use can vary based on individual traits, prior experience with technology, and specific contexts in which the technology is applied. Understanding these factors can help organizations design systems that enhance user experience and adoption rates (Tahar et al., 2020). While perceived ease of use and perceived usefulness are distinct constructs, they are interrelated. A user is more likely to view a system as helpful for their activities or performance if they find it easy to use, according to research that demonstrates PEOU can serve as a prelude to perceived usefulness (Davis, 1989).

Various indicators can be used to measure PEOU, which help in evaluating its impact on user acceptance such as easy to learn which assesses how quickly users can understand and start using the technology. A system that is intuitive and straightforward will have a higher perceived ease of use. The technology must be simple to use; this gauge how well consumers believe they can operate and navigate the system. If users find it easy to manipulate the technology, their perception of ease will increase. It also has to be clear and understandable as a clear design reduces confusion and enhances user confidence in using the technology. Easy to Apply become the final indicator as this indicator looks at how straightforward it is for users to implement the technology in their daily tasks. If applying the technology does not require extensive effort or training, it enhances perceived ease of use (Olivia & Marchyta, 2022).

Research indicates that higher levels of digital literacy directly enhance perceived ease of use. Strong digital literacy abilities enable people to navigate technology more easily, which lessens the cognitive burden involved in picking up new systems. This familiarity can increase the likelihood of adoption by creating a more favorable impression of how simple a technology is to use (Nikou et al., 2022). In addition to having an impact on PEOU, digital literacy mediates the relationship between a number of variables and technology use. For example, research indicates that consumers' attitudes regarding technology are positively impacted by digital literacy, and this in turn influences their inclination to utilize it. This suggests that improving digital literacy can enhance users' overall engagement with technology by making it seem easier to use (Xiong & Zhang, 2024).

Perceived ease of use and digital literacy have a positive association, meaning that the more the digital literacy, the greater the perceived ease of use (Khoso et al., 2025; Yao & Wang, 2024). Based on this relationship, we propose a hypothesis

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H2: Digital literacy level is positively influencing toward QRIS ease of use.

QRIS Ease of Use and QRIS Usefulness. A key component of comprehending technology adoption, especially when viewed through the Technology Acceptance Model (TAM), is the connection between perceived usefulness and ease of use. The degree to which a person thinks that utilizing a specific technology would be effortless is known as perceived ease of use. While perceived usefulness refers to the extent to which an individual feels that utilizing a specific system would improve their job performance, this perspective boosts users' confidence and self-efficacy toward technology adoption. It is closely linked to users' beliefs about the technology's ability to fulfill their needs effectively (He et al., 2018).

There is a reciprocal reinforcing link between perceived utility and perceived ease of use. Perceived usefulness is favorably influenced by perceived ease of use, according to previous research. Users are more inclined to think of a technology as helpful when they can easily use it (Aulia & Marsasi, 2024; Sheppard & Vibert, 2019). Conversely, when users believe a technology is useful, they may be more inclined to engage with it, thus improving their sense of its usability through experience and familiarity (Amalia & Fahrudi, 2021; Bancoro, 2024). A higher ease of use leads to greater satisfaction, which in turn can reinforce the perception of usefulness (Amalia & Fahrudi, 2021). For example, teachers who find technology easy to use and beneficial are more likely to successfully incorporate it into their lesson plans (Aulia & Marsasi, 2024).

The relationship is also explained through efficacy appraisal theories. Self-efficacy is influenced by perceived ease of use, but response efficacy is improved by perceived usefulness. People are more likely to recognize the value of technology if they believe they can utilize it effectively (self-efficacy) (He et al., 2018). QRIS usefulness and QRIS ease of use have a positive relationship, suggesting that the more QRIS usefulness there is, the easier it is to use (Fahrizal et al., 2023; Yao & Wang, 2024). Based on the relationship as mentioned above, we propose a hypothesis as follows:

H3: QRIS ease of use is positively influencing toward QRIS usefulness.

QRIS Usefulness and Sales products Marketing Performance. Because perceived usefulness has a direct impact on customer behavior, satisfaction, and eventually the efficacy of marketing techniques, there is a considerable correlation between perceived usefulness (PU) and marketing performance. Customers' inclinations to buy are greatly influenced by perceived utility. Customers are more inclined to make purchases when they think a product or service will improve their productivity or successfully satisfy their needs. Research suggests that consumers are driven to return to brands they find helpful because higher perceived usefulness positively corresponds with increased online repurchase intentions (Danurwindo et al., 2021).

Customer happiness, a crucial aspect of marketing performance, is strongly impacted by perceived utility. Customers that are happy with a brand are more inclined to recommend it to others and make more purchases. Research shows that when consumers perceive a product or service as useful, their satisfaction levels increase, leading to a higher likelihood of repurchase and brand loyalty (Keni, 2020).

The relationship between perceived usefulness and marketing performance is multifaceted, influencing purchase intentions, customer satisfaction, trust, and loyalty. By

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enhancing perceived usefulness through targeted marketing strategies, businesses can improve their overall marketing performance and foster stronger connections with their customers. The relationship between the two factors, QRIS usefulness and sales products marketing performance is positive, meaning that the higher QRIS usefulness, the higher the sales products marketing performance (Khoso et al., 2025; Yao & Wang, 2024). Based on the relationship as mentioned above, we propose a hypothesis as follows:

H4: QRIS usefulness is positively influencing toward sales products marketing performance.

QRIS Ease of Use and Sales Products Marketing Performance. Because perceived ease of use (PEOU) affects how customers engage with goods and services, which in turn affects their happiness and purchase behavior, there is a considerable correlation between PEOU and marketing performance. According to research, user satisfaction and perceived ease of use are strongly positively correlated. Users are far more satisfied with a system or product when they find it easy to use. Because pleased consumers are more inclined to make repeat purchases and refer the product to others, this increased level of satisfaction can result in better marketing performance (Amalia & Fahrudi, 2021). The ease of use directly affects consumers' purchase intentions. People are more inclined to make a purchase if they find a product or service straightforward to use and comprehend. High perceived ease of use encourages confidence when making judgments about what to buy, which can result in better marketing results and more sales (Danurwindo et al., 2021; Keni, 2020).

By recognizing the significance of perceived ease of use, marketers may create more effective user experiences and communication plans. Highlighting the simplicity and accessibility of products can enhance customer engagement and lead to improved marketing performance outcomes (Nuseir & Elrefae, 2022). Understanding how marketing performance and perceived ease of use relate to one another is essential for comprehending consumer behavior in the modern digital marketplace. Businesses can increase consumer satisfaction, lower perceived risks, boost buy intentions, and ultimately improve marketing success by improving perceived ease of use through efficient design and communication techniques.

There is a positive correlation between QRIS ease of use and sales products marketing success; that is, the more user-friendly the QRIS, the better the sales products marketing results (Ikwanto & Indriani, 2024). Based on the relationship as mentioned above, we propose a hypothesis as follows:

H5: QRIS ease of use is positively influencing toward sales products marketing performance.

Digital Literacy Level and Sales Products Marketing Performance. Digital literacy and sales products marketing performance are increasingly interconnected in today's digital landscape. The ability to locate, assess, produce, and share information using digital technology is known as digital literacy. It includes a variety of abilities required to function in the digital environment, such as technological competence, information analysis, and online communication.

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Marketing performance refers to the process of measuring and analyzing the effectiveness of marketing efforts in achieving specific business goals. To evaluate how well marketing initiatives are working over time, it entails monitoring a variety of metrics and key performance indicators (KPIs). Sales growth, repurchase intent, or even positive word-of-mouth can be used to gauge marketing performance for SMEs (Charoensukmongkol & Suthatorn, 2021; Pranaditya et al., 2022).

Higher levels of digital literacy have been shown to improve marketing performance. The findings suggest that traders who can effectively utilize digital tools are better positioned to succeed in competitive markets (Patria et al., 2023). Digital literacy also influences entrepreneurial behavior, which in turn affects marketing performance. For example, traders who understand digital platforms can adapt their strategies based on customer feedback and market trends, leading to improved performance metrics (Edan Al Khazraje, 2024). This mediating effect highlights the importance of fostering both digital literacy and entrepreneurial skills for optimal marketing outcomes.

The relationship between the two factors, digital literacy and sales products marketing performance is positive, meaning that the higher digital literacy, the higher the sales products marketing performance (Ikwanto & Indriani, 2024). Based on the relationship as mentioned above, we propose a hypothesis as follows:

H6: Digital literacy level is positively influencing toward sales products marketing performance.

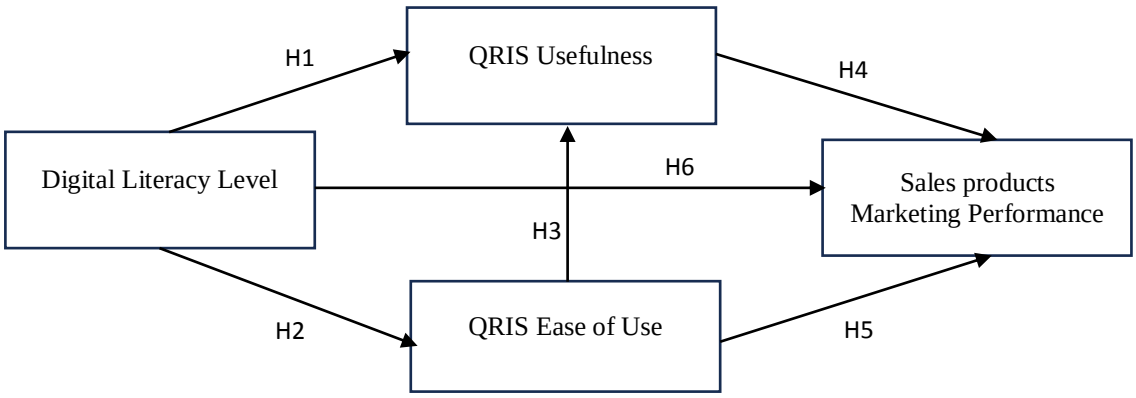

Figure 1. Conceptual Framework
Source: Developed for this Research, 2025

METHODS

This sort of research is "explanatory research", which is an event relationship that connects one determinant or probable cause with the frequency of events or an event or condition by evaluating other relevant features. (Bentouhami et al., 2021). This, in this instance, clarifies the relative positions of the variables under investigation as well as the relationships between them. Due to time, energy, and expense constraints, it is doubtful that the entire population will be examined in this study, which concentrates on retail MSMEs in Semarang City. Thus, a potentially representative sample of the population was

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selected to reflect the variables of QRIS Perceived Usefulness, QRIS Perceived Ease of Use, Digital Literacy Level, and Sales Products Marketing Performance. This study's data analysis methods employed the Structural Equation Modeling (SEM) approach. Multiplying the number of latent variables by five to ten times the number of indicators yields the simplest total sample based on SEM (Ferdinand, 2005).

This study used 16 indicators (see **Table 2**), resulting in a minimum sample size of 160 respondents. Respondents were MSMEs domiciled in Semarang City, operating for at least three years, and specifically retail MSMEs. A ten-point Likert-scale questionnaire was used to collect data. A score of one indicates "strongly disagree," while a score of ten indicates "strongly agree." The sample was distributed proportionally to MSMEs throughout Semarang City, as shown in **Table 1**.

Table 1. MSMEs Sample in Semarang City

No	District	Number of Samples
1	Banyumanik	10
2	Candisari	10
3	Gajahmungkur	10
4	Gayamsari	10
5	Genuk	10
6	Gunung Pati	10
7	Mijen	10
8	Ngaliyan	10
9	Pedurungan	10
10	Semarang Barat	10
11	Semarang Timur	10
12	Semarang Utara	10
13	Semarang Selatan	10
14	Semarang Tengah	10
15	Tembalang	10
16	Tugu	10
	Total Number of Samples	160

Source: Proceed Data, 2025

The importance of Common Method Bias (CMB) is also needed. CMB refers to the variance in responses that is attributable to the measurement method rather than to the constructs the measures are assumed to represent (Podsakoff et al., 2003). In simpler terms, it occurs when the way data is collected systematically influences the relationships observed among variables, rather than reflecting the true underlying associations. This bias can inflate or deflate observed correlations, leading to misleading conclusions about the relationships between variables. The primary reason CMB is important is its direct impact on the validity of research outcomes. Validity refers to the extent to which a measure accurately reflects what it is intended to measure and the extent to which research findings truly represent the phenomenon being studied. One of the aprroaches is using Harman's Single-Factor Test. This is a diagnostic test where all items from the self-report measures are loaded into an exploratory factor analysis (EFA). If a substantial amount of variance (more than 50 or 60 per cent) is accounted for by a single factor, or if a single general factor emerges from the unrotated factor solution, it suggests the presence of CMB. However, this test is often criticized for being overly sensitive and may indicate CMB when it's not a severe issue.

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This research is also conducting endogeneity test. To address potential endogeneity concerns, this study employed the Gaussian Copula approach as recommended for SEM-based research with non-normally distributed predictors. The approach is based on copula theory, which separates the marginal distributions of variables from their joint dependence structure; specifically, the Gaussian copula transforms non-normally distributed regressors into standard normal variates using their cumulative distribution functions and the inverse normal transformation, allowing researchers to test whether the transformed (copula) term significantly explains variation in the dependent variable. If the copula term is statistically significant, endogeneity is present; if not, the model can be considered free from endogeneity bias. This method has become popular in management and marketing research because it provides a practical solution to endogeneity concerns in cross-sectional survey data where valid instruments are difficult to obtain (Park & Gupta, 2012). The copula terms in this research including: Digital Literacy, QRIS Usefulness and QRIS Ease of Use were incorporated into the structural regression model.

Table 2. Indicator Statement

Indicator	Item	Statement	Reference
Digital Literacy Level	DGL1	We are proficient at using QRIS to resolve our own technological issues.	Nazzal *et al.* (2021)
	DGL2	QRIS is one of the new technologies that we can quickly learn.	
	DGL3	We stay current with significant new technology, such as QRIS.	
	DGL4	We are aware of numerous technologies, such as QRIS.	
QRIS Usefulness	USF1	We believe that QRIS is beneficial to us.	Nurhapsari & Sholihah (2022)
	USF2	We can expedite payment transactions by utilizing QRIS.	
	USF3	Our productivity and sales performance can be enhanced by using QRIS.	
	USF4	Alternative payment methods can be obtained by using QRIS.	
QRIS Ease of Use	EAS1	We had no trouble learning how to use QRIS.	Olivia & Marchyta, (2022)
	EAS2	We believe that using QRIS is simple to manage.	
	EAS3	Using QRIS doesn't have to be a difficult procedure.	
	EAS4	We can easily acquire the necessary skills to implement QRIS.	
Sales Products Marketing Performance	MTP1	Using QRIS has to be successful in meeting sales target	Pranaditya (2022); Charoensukmongkol & Suthatorn (2021)
	MTP2	Using QRIS has to be successful in creating sales revenues	
	MTP3	Using QRIS has to be successful in expanding network of customers	
	MTP4	Using QRIS has to be successful in creating trust from customers	

Source: Developed for this Research, 2025

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RESULTS

Common Method Bias (see **Table 3**) testing shows for the Harman's Single Factor Test, a commonly employed diagnostic for CMB, indicated that a single factor extracted from an unrotated factor analysis accounted for 38.313 percent of the total variance. While this figure falls below the often-cited threshold of 50 per cent, suggesting that CMB may not be an overwhelming concern. It is clear that the presence of common method variance at this level does not pose a significant threat to the validity of the findings in this study. This aligns with the understanding that not all method variance is problematic common method variance, and that a percentage below 50 per cent generally allows for robust interpretations of the relationships between variables.

Table 3. Common Method Bias Testing

	Initial Eigenvalues (per cent)			Extraction Sums of Squared Loadings (per cent)		
Factor	**Total**	**Variance**	**Cumulative**	**Total**	**Variance**	**Cumulative**
1	6.675	41.717	41.717	6.130	38.313	38.313
2	2.665	16.656	58.373			
3	1.328	8.301	66.673			
4	1.114	6.961	73.634			
5	0.529	3.305	76.939			

Extraction Method: Principal Axis Factoring
Source: Proceed Data, 2025

The proceed of regression-based endogeneity test (see **Table 4**), by using Gaussian Copula approach was employed to assess potential endogeneity bias. The copula coefficients for Digital Literacy (β is 0.111, p is 0.861), QRIS Usefulness (β is -0.116, p is 0.803), and QRIS Ease of Use (β is -1.286, p is 0.107) were statistically insignificant. These findings indicate the absence of endogeneity concerns. Therefore, the structural relationships reported in this study are robust and unbiased.

Table 4. Endogeneity Testing

Copula Term	Coefficient	t_Statistic	P_Value
C_DL	0.111	0.176	0.861
C_USF	-0.116	-0.250	0.803
C_EAS	-1.286	-1.621	0.107

Source: Proceed Data, 2025

Mahanalobis distance, with a significance level of (p) 0.001 and a degree of freedom based on the total number of indicators, might be used to identify outliers in SEM analysis in the form of multivariate. With 16 indicators in this investigation, the outcome of the $\chi 2$ (16, 0.001) formula at p level less than 0.001 is 39.252. The maximum value, as determined by Mahalanobis d-squared testing, is 32.399, meaning it is not greater than 39.252. This finding indicates that the data in this study (see **Table 5**) does not contain any multivariate outliers.

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Table 5. Multivariate Outliers Testing

Observation number	Mahalanobis d-squared	p1	p2
83	32.399	.009	.746
64	29.705	.020	.806
25	28.480	.028	.802
22	28.162	.030	.687
58	27.610	.035	.634
84	26.443	.048	.755

Source: Processed Data, 2025

It is logically that generally dispersed in data SEM testing. Both univariate and multivariate values in the critical ratio (c.r.) with a range of values ± 2.580 (level of 5 per cent) can be used to determine it. It is evident from the data normally test table that the univariate c.r. values are within the required range of ± 2.580, and the multivariate c.r. is in the range of 0.315 (in **Table 6**). The multicollinearity and singularity of the variable combination are then ascertained using the multicollinearity test. The determinant value of the sample covariance matrix, which is tiny or near 0, indicates multicollinearity and singularity. The determinant findings of the covariance matrix are 17.850 according to the data test result. It indicates that there is multicollinearity and singularity in this analysis since the sample covariance matrix's determinant value is far from zero.

Table 6. Normality Test of Data

Variable	Min	Max	Skew	c.r.	Kurtosis	c.r.
MTP1	4.000	10.000	-.352	-1.785	-.547	-1.385
EAS4	4.000	10.000	-.373	-1.888	-.420	-1.064
EAS3	4.000	10.000	-.123	-.624	-.856	-2.168
MTP3	4.000	10.000	-.406	-2.059	-.617	-1.563
MTP4	4.000	10.000	-.341	-1.728	-.287	-.727
EAS1	4.000	10.000	-.313	-1.586	-.529	-1.339
EAS2	4.000	10.000	-.286	-1.449	-.676	-1.712
MTP2	4.000	10.000	-.450	-2.282	-.577	-1.460
DGT1	4.000	10.000	-.019	-.096	-.781	-1.978
DGT4	4.000	10.000	-.164	-.830	-.780	-1.976
DGT3	4.000	10.000	-.374	-1.894	-.786	-1.991
DGT2	4.000	10.000	-.299	-1.513	-.850	-2.152
USF4	4.000	10.000	-.446	-2.260	-.869	-2.201
USF3	4.000	10.000	-.386	-1.956	-.784	-1.986
USF2	4.000	10.000	-.270	-1.369	-.853	-2.160
USF1	4.000	10.000	-.308	-1.559	-.888	-2.249
Multivariate					1.217	**0.315**

Source: Processed Data, 2025

Confirmatory factor analysis, which is used to assess indicators to produce latent variables, is the next step in the evaluation process towards the study model. Before it was validated in the complete model (see **Figure 4**), confirmatory factor analysis was performed to identify the expediency on the exogenous variable (see **Figure 2**) and endogenous variable (see **Figure 3**).

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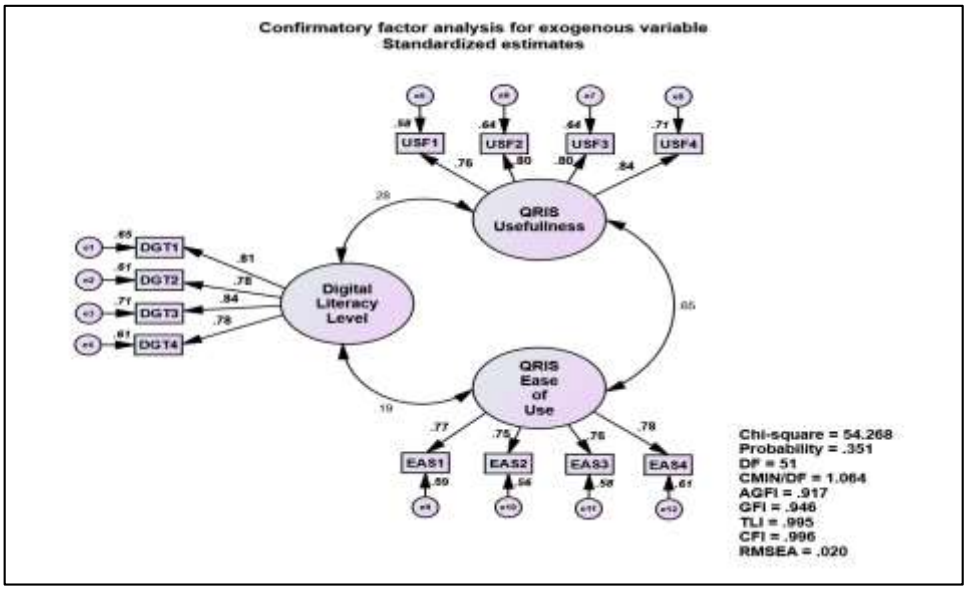

Figure 2. CFA Exogeneous
Source: Developed for this Research, 2025

Testing revealed that every indicator in every exogenous variable satisfied the requirements, with factor loading above 0.700 and additional lambda values not falling below 0.500 (Santoso, 2018). It demonstrates how those indicators considerably create undimensionality with regard to latent variables, such as the degree of digital literacy, the utility, and the simplicity of use of QRIS.

Table 7. Result of Confirmatory Factor Analysis Testing with Exogenous Variable

Goodness of fit Indeks	Cut-off Value	Result of this model	Model Evaluation
Chi-square (df is 51)	(less than 68.669)	54.268	Good
Probability	greater than or equal to 0.050	0.351	Good
CMIN/DF	less than or equal to 2.000	1.064	Good
AGFI	greater than or equal to 0.900	0.917	Good
GFI	greater than or equal to 0.900	0.946	Good
TLI	greater than or equal to 0.950	0.995	Good
CFI	greater than or equal to 0.950	0.996	Good
RMSEA	less than or equal to 0.080	0.020	Good

Source: Processed Data, 2025

The chi-square value is 54.268 and the probability value is 0.351, according to the results of the confirmatory factor analysis test with the exogenous variable (see **Table 7**). It proves that the values have reached the defined cut-off point. The results of other evaluation criteria, including CMIN/DF of 1.064, AGFI of 0.917, GFI of 0.946, TLI of 0.995, CFI of 0.996, and RMSEA of 0.020, are all positive, indicating that the requirements of confirmatory factor analysis testing with exogenous variable have been met.

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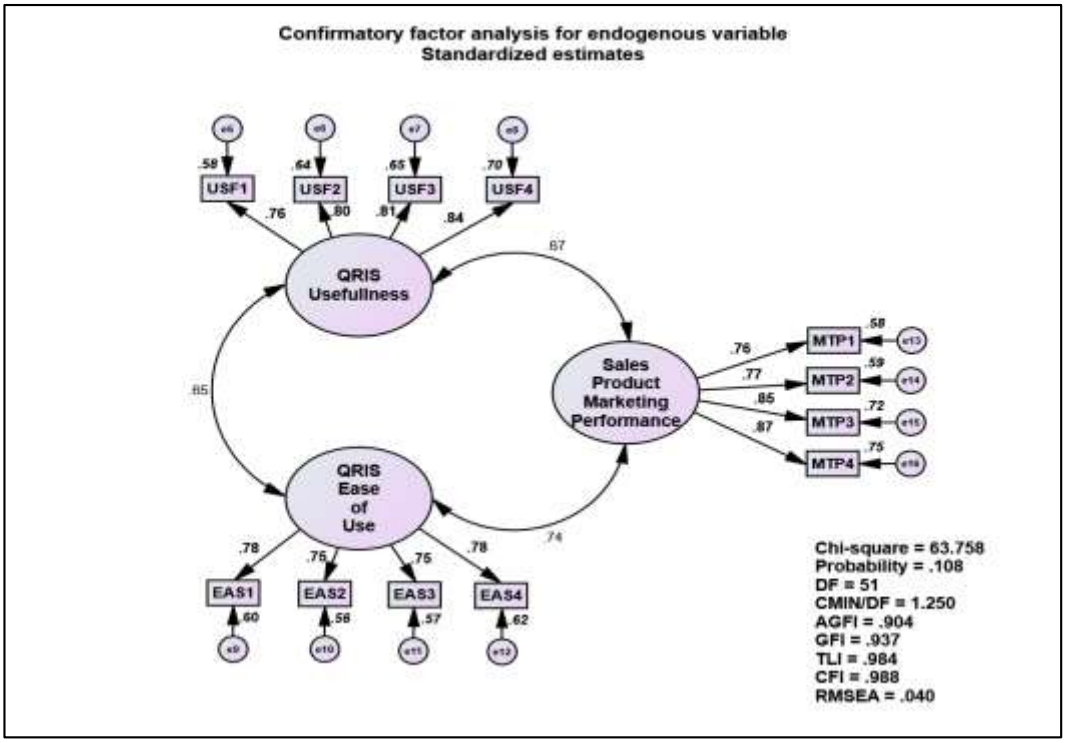

Figure 3. CFA Endogeneous
Source: Developed for this Research, 2025

Testing revealed that every indicator in every exogenous variable satisfied the requirements, with factor loading above 0.700 and additional lambda values not falling below 0.500 (Santoso, 2018). It demonstrates how those indications considerably create undimensionality with regard to latent variables, such as the utility, usability, and sales products marketing performance of QRIS.

The chi-square value is 63.758 and the probability value is 0.108 according to the results of the confirmatory factor analysis test with the endogenous variable (see **Table 8**). It proves that the values have reached the defined cut-off point. The results of other evaluation criteria, including CMIN/DF of 1.250, AGFI of 0.904, GFI of 0.937, TLI of 0.984, CFI of 0.988, and RMSEA of 0.040, are all positive, indicating that the requirements of confirmatory factor analysis testing with endogenous variables have been met.

Table 8. Result of Confirmatory Factor Analysis Testing with Endogenous Variable

Goodness of fit Indeks	Cut-off Value	Result of this model	Model Evaluation
Chi-square (df = 51)	(less than 68.669)	63.758	Good
Probability	greater than or aqual to 0.050	0.108	Good
CMIN/DF	less than or equal to 2.000	1.250	Good
AGFI	greater than or aqual to 0.900	0.904	Good
GFI	greater than or aqual to 0.900	0.937	Good
TLI	greater than or aqual to 0.950	0.984	Good

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CFI	greater than or aqual to 0.950	0.988	Good
RMSEA	gess than or equal to 0.080	0.040	Good

Source: Processed Data (2025)

The entire model's outcome indicates that the probability value is 0.107 and the chi-square value is 115.664. It proves that the values have reached the defined cut-off point. Additional evaluation criteria include TLI of 0.984, AGFI of 0.884, GFI of 0.917, CMIN/DF of 1.180, CFI of 0.987, and RMSEA of 0.034. Since majority of these criteria yield positive results, it can be concluded that the model has met all of the testing requirements.

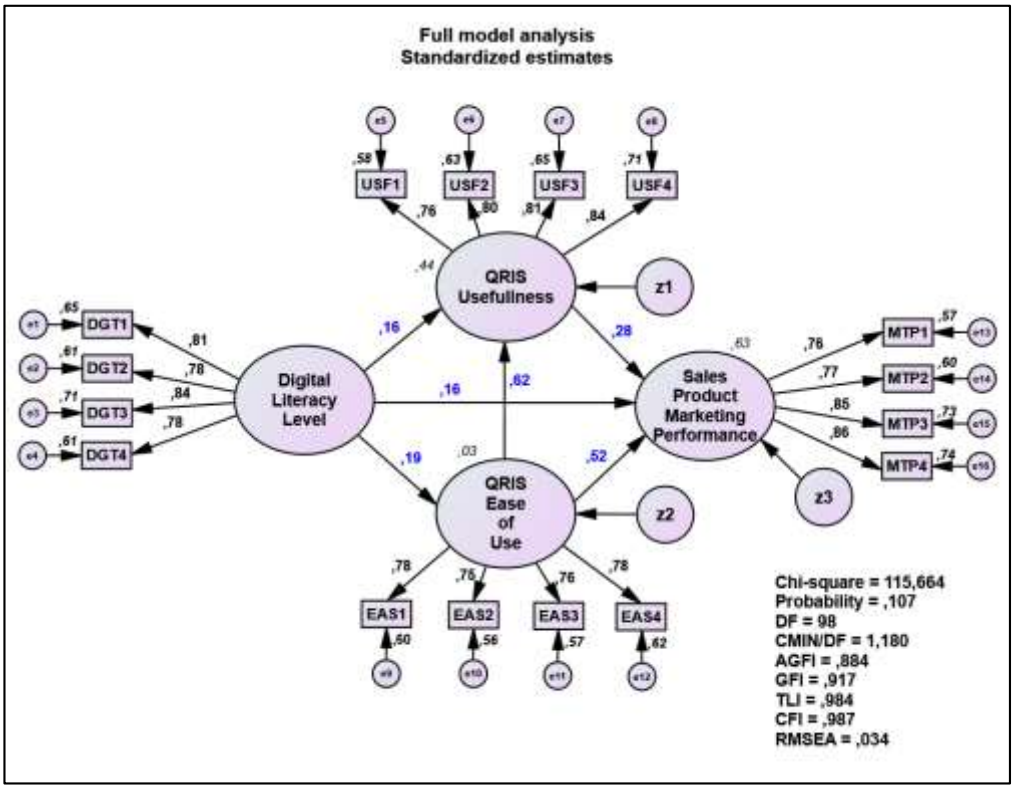

Figure 4. Full Model Analysis
Source: Developed for this Research, 2025

The probability value (in **Table 9**) for the first hypothesis (H1), which states that digital literacy level is positively influencing toward QRIS usefulness, with a probability value 0.042. It indicates that the hypothesis is accepted at a five percent significance level (0.050). This hypothesis testing result validates the findings of Yao & Wang (2024) and Khoso et al. (2025) research that there is an influence between digital literacy toward perceived usefulness. In summary, A key factor in increasing the perceived value and actual uptake of QRIS is the users' degree of digital literacy. People are more likely to understand the advantages of QRIS as they get better at using digital technologies, which will enhance its use and acceptance across a range of demographic groups.

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Table 9. Regression Weights Full Model

Variables			Estimate	S.E.	C.R.	P
H1: QRIS_Usefullness	<---	Digital_Literacy_Level	0.187	0.092	2.034	0.042
H2: QRIS_Ease_of_Use	<---	Digital_Literacy_Level	0.190	0.095	1.997	0.046
H3: QRIS_Usefullness	<---	QRIS_Ease_of_Use	0.703	0.107	6.596	0.000
H4: Sales_Product_Marketing_Performance	<---	QRIS_Usefullness	0.278	0.095	2.931	0.003
H5: Sales_Product_Marketing_Performance	<---	QRIS_Ease_of_Use	0.586	0.118	4.966	0.000
H6: Sales_Product_Marketing_Performance	<---	Digital_Literacy_Level	0.177	0.079	2.226	0.026

Source: Processed Data (2025)

The probability value for the second hypothesis (H2), which states that digital literacy level is positively influencing toward QRIS ease of use, with a probability value 0.046. It indicates that the hypothesis is accepted at a five percent significance level (0.050). This hypothesis testing result validates the findings of Yao & Wang (2024) and Khoso et al. (2023) research that there is an influence between digital literacy toward perceived ease of use. Digital literacy significantly influences the ease of use of QRIS, ultimately enhancing its adoption among users. This relationship is particularly evident in the context of MSMEs and other users who engage with digital payment systems. Higher levels of digital literacy positively influence the ease of use of QRIS, leading to increased adoption and satisfaction among users. By fostering digital skills, stakeholders can enhance user experiences and encourage broader acceptance of digital payment technologies.

The third hypothesis (H3), which states that QRIS ease of use is positively influencing toward QRIS usefulness, with a probability value 0.000. It indicates that the hypothesis is accepted at a level of significance of one percent (0.010). The hypotheses testing results support the findings of Yao & Wang (2024) and Fahrizal et al. (2023) research that there is an influence between perceived ease of use toward perceived usefulness. The ease of use of QRIS plays a crucial role in enhancing its usefulness among users. This relationship is particularly significant in the context of digital payments, where user experience directly impacts adoption rates. Users' perceived utility of QRIS is substantially influenced by its ease of use. By creating a user-friendly environment, stakeholders can enhance user confidence and satisfaction, leading to higher adoption rates and more effective utilization of digital payment systems like QRIS.

In the fourth hypotheses (H4) which states QRIS usefulness is positively influencing toward sales products marketing performance, with a probability value 0.003. It signifies that the hypothesis is accepted at a level of significance of 5 per cent (0.050). The hypotheses testing results support Rahimi et al. (2024) research that there is an influence between perceived usefulness toward MSMEs marketing performance. The usefulness of QRIS positively influences sales and marketing performance, particularly for MSMEs. The relationship is evident through various mechanisms that enhance business operations and customer engagement. The usefulness of QRIS significantly influences sales and marketing performance by streamlining transactions, enabling data-driven strategies, fostering customer loyalty, enhancing brand awareness, and supporting cashless payments.

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These factors collectively contribute to improved sales outcomes for MSMEs leveraging this digital payment system.

The fifth hypothesis (H5), which states that QRIS ease of use is positively influencing toward sales products marketing performance, with a probability value 0.000. It signifies that the hypothesis is accepted at a level of significance of 1 percent (0.010). The hypotheses testing results support Rahimi et al. (2024) research that there is an influence between perceived ease of use toward MSMEs marketing performance. The ease of use of QRIS significantly influences sales and marketing performance by simplifying payment processes, improving customer experiences, increasing transaction volumes, providing valuable marketing data, and enhancing operational efficiency. These factors collectively contribute to better sales outcomes for MSMEs leveraging this digital payment system.

The sixth hypothesis (H6), which states that digital literacy level is positively influencing toward sales products marketing performance, with a probability value 0.026. It signifies that the hypothesis is accepted at a 5 per cent level of significance (0.050). The hypotheses testing results support Wulansari et al. (2024) research there is an influence between digital literacy toward MSMEs marketing performance. Digital literacy has a substantial impact on sales and marketing performance, especially among MSMEs. Digital literacy improves sales and marketing effectiveness by strengthening marketing tactics, making better use of digital resources, allowing for data-driven decision-making, increasing online presence, and providing a competitive advantage. These factors collectively contribute to better sales outcomes for MSMEs leveraging their digital capabilities effectively.

CONCLUSION

The aim of this empirical study was to investigate a resource-based hypothesis investigate technology as a source of competitive advantage which influences marketing performance and by exploring the relationship between digital literacy level, QRIS Usefulness, QRIS ease of use and sales products marketing performance. It was empirically tested with a sample size of 154 MSMEs in Semarang City using SEM. The relationship between digital literacy level, QRIS usefulness, QRIS ease of use, and sales products marketing performance is complex and important for understanding consumer behavior and marketing strategy efficacy.

The Interconnectedness of digital literacy level, QRIS usefulness, QRIS ease of use, and sales products marketing performance are all closely related components in the Technology Acceptance Model (TAM). While perceived utility refers to the degree to which a technology is viewed as beneficial, perceived ease of use refers to how simple it is to use. According to research, increased perceived ease of use increases perceived utility because users are more likely to realize the benefits of technology that is easy to navigate. This link is crucial for marketing performance in sales products, as customers who see a product as both useful and easy to use are more likely to interact and make purchases.

The combined effects of digital literacy, PU and PEOU significantly influence marketing performance. When consumers believe a technology is beneficial and simple to use, they are more likely to engage in positive behaviors such as improved purchase intentions, higher customer satisfaction, and stronger brand loyalty. This is particularly

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important for MSMEs in retail, where effective marketing strategies depend on understanding consumer perceptions and behaviors.

This study's implication for marketers is that knowing these correlations emphasizes the need of building user-friendly technologies that clearly explain their benefits. By focusing on improving digital literacy among consumers through educational initiatives or support resources, Businesses can improve views of usefulness and simplicity of use. This strategic strategy can boost marketing performance for sales products by increasing consumer involvement and loyalty.

The interaction of perceived usefulness, perceived simplicity of use, digital literacy, and marketing effectiveness is critical for increasing consumer engagement and corporate success in today's digital landscape. Marketers should prioritize enhancing these factors to optimize their strategies and achieve sustainable growth in competitive markets.

However, these variables are not the only ones that determine marketing performance, there are numerous other aspects that contribute to a successful marketing performance. More research in the future can look into how other elements affect marketing performance. Customer satisfaction and trust frequently mediate the relationship between the PU, PEOU, and marketing performance (Keni, 2020). High levels of perceived usefulness and simplicity of use result in increased consumer satisfaction, which develops trust in the brand. This trust enhances customer loyalty and encourages repeat purchases, ultimately driving better marketing performance outcomes The study data were obtained on retail MSMEs enterprises in Semarang City, Indonesia, hence the findings' generalizability is restricted. The focus of future study should be expanded not only to retail but also to other business contexts and geographical places, which can lead to diverse research outcomes. As a result, additional study is expected to be conducted in the context of enterprises other than retail MSMEs and in a broader area in order to reach more widely recognized results.

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