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The Influence of E-Banking and Quick Response Code Indonesian Standard (QRIS) Usage on Employee Performance and Business Development in Indonesian MSMEs: A Case Study of PT. Arsinum Uniba Madura

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ABSTRACT

This study investigates the influence of e-banking and QRIS usage on business development through employee performance at PT. Arsinum Uniba Madura. A quantitative research approach was employed, involving a survey of 79 respondents comprising owners, managers, employees, suppliers, and customers. Data were collected in December 2024 and analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS 4.0 software. The findings reveal that e-banking significantly enhances employee performance but does not have a direct effect on business development. Conversely, QRIS usage significantly improves employee performance and indirectly drives business development through this improvement. Employee performance itself shows a strong and significant positive impact on business development. These results highlight that adopting financial technology alone is insufficient; it must be accompanied by strategies to strengthen employees' digital skills and adaptability. The study contributes to the literature on FinTech adoption in MSMEs and offers practical guidance for integrating digital payment systems with workforce development. Future research should expand the sample across multiple sectors and regions and examine other mediating factors such as innovation capability and customer satisfaction.

Keywords: E-banking, QRIS, Employee Performance, Business Development, FinTech.

I. Introduction

Micro, Small, and Medium Enterprises (MSMEs) are a vital pillar of Indonesia's economy, contributing significantly to job creation, equitable income distribution, and economic stability, particularly during crises (Novitasari, 2022). Technological innovation, especially in financial technology (FinTech), has reshaped business operations by enhancing efficiency, transaction speed, and market reach. Two key innovations in Indonesia's digital payment ecosystem are electronic banking (e-banking) and the Quick Response Code Indonesian Standard (QRIS), both of which streamline transactions and expand financial inclusion (Farhan & Shifa, 2023; Haryanti, 2024). Economic development is a dynamic process shaped by multiple internal and



external factors. It cannot thrive in isolation; instead, it depends heavily on a supportive and interconnected environment. Elements such as education, mindset, motivation, political stability, cultural values, and technological innovation are among the driving forces that fuel sustainable economic progress. While MSMEs may contribute a smaller share to the national GDP compared to larger corporations, their consistent presence and impact on national income cannot be understated. MSMEs help reduce unemployment, promote a more equitable economic distribution, and demonstrate remarkable resilience during economic crises. Observations during the COVID-19 pandemic, particularly between mid-2020 and mid-2021, highlighted their ability to sustain economic activities when many sectors struggled. Government support, alongside a rapid shift toward digitalization, proved crucial in helping MSMEs adapt and survive during these challenging times (Novitasari, 2022).

Technological innovation, especially in digital financial services, has been a major catalyst for economic transformation. However, without responsible and productive use, technology risks becoming a destabilizing force rather than a driver of progress (Novitasari, 2022). A historical example of economic evolution can be seen in the shift from barter trade to the use of money, which brought greater efficiency and flexibility to commerce (Farhan & Shifa, 2023). Indonesia stands out for its high level of digital interaction. Affordable internet access and the widespread adoption of smartphones, with around 89% of the population connected, reflect the nation's growing digital literacy. Yet, there remains a need to channel this connectivity into more productive financial technology applications (Judijanto et al., 2024). In the realm of financial services, Financial Technology (FinTech), particularly digital payment systems, has become indispensable. As Gabor and Brooks (2020) explain, FinTech refers to the integration of IT-based solutions to enhance financial products and services. For MSMEs, FinTech has helped streamline operations, improve efficiency, and drive performance, although it also presents challenges such as the risk of impulsive consumer behavior (Panos & Wilson, 2020). Services like e-banking and QRIS have made substantial contributions, allowing MSMEs to optimize their operations and expand their businesses (Anggarini, 2022; Muathe, 2021; Rahmani et al., 2025)

E-banking enables businesses to conduct transactions online with greater convenience and security (Meidiyanty et al., 2023). Whether for small enterprises or large corporations, the use of e-banking has been shown to boost operational efficiency and facilitate business growth (Le & Ngo, 2020; Pea-Assounga & Yao, 2021). Meanwhile, QRIS, launched by Bank Indonesia in August 2019 and implemented in early 2020, was designed to unify and simplify digital payments across platforms (Farhan & Shifa, 2023). By streamlining payment processes, QRIS has expanded financial inclusion, increased customer reach for MSMEs, and enhanced transaction speed, all of which contribute to more sustainable business growth (Haryanti, 2024). The contribution of MSMEs to Indonesia's economy remained substantial even during the peak of the pandemic. Their survival was largely supported by government initiatives aimed at digitalizing business processes and offering new opportunities through financial innovation, such as QRIS (Novitasari, 2022). Economic development strategies should prioritize empowering grassroots sectors like MSMEs, which not only drive employment but also ensure more equitable wealth distribution. MSMEs, by absorbing labor and boosting local economies, are key to improving living standards and tackling unemployment (Putri, 2020).

Businesses, regardless of size, are fundamentally driven by the goal of maximizing profit. Effective resource utilization and operational efficiency are critical to achieving this goal (Shofia & Anisah, 2020). With Indonesia's vast labor force, MSMEs serve as a strategic channel for creating employment opportunities and stabilizing the national economy (Putri, 2020). Business development is broadly defined as an organization's ability to enhance and organize activities aimed at producing and marketing goods or services effectively and efficiently (Blowfield, 2012). Integrating financial technology tools like e-banking and QRIS into everyday business operations is becoming increasingly essential for improving both performance and profitability (Farhan & Shifa, 2023; Imamah & Safira, 2021). In Indonesia, MSMEs are classified under Law No. 20 of 2008 as productive and creative economic entities. Their growth trajectory is deeply intertwined with technological adoption, particularly in financial services. Nevertheless, to maximize the benefits of technology, human resource development must go hand in hand (Wibowo, 2024b). In Sumenep Regency, the bottled water industry, including Air Minum Sehat Uniba Madura, has been growing rapidly. Although PT. Arsinum Uniba

Madura was only officially established in 2025; its affiliation with Universitas Bahaudin Mudhary Madura has greatly supported its development. To keep pace with market demands, the company has adopted e-banking and QRIS systems, aiming to improve operational efficiency and support business expansion. However, despite the proven potential of e-banking and QRIS, there is limited empirical evidence on how these technologies influence business development, particularly through the mediating role of employee performance in MSMEs. Previous studies often focus on customer adoption or operational efficiency, but few have examined their combined impact on both employee performance and business growth within a specific regional and sectoral context, such as Sumenep's bottled water industry.

Building on previous research that highlighted the positive impact of digital financial services on MSME growth (Antareza C et al., 2021), this study seeks to explore how the use of e-banking and QRIS affects employee performance and business development at PT. Arsinum Uniba Madura. The study focuses on examining these FinTech tools as independent variables influencing the broader performance and growth of MSMEs. Ultimately, the research emphasizes how digital financial innovations, particularly e-banking and QRIS, contribute to strengthening business performance and fostering sustainable development for MSMEs like PT. Arsinum Uniba Madura. Although e-banking and QRIS adoption have been widely promoted in Indonesia's MSME sector, empirical studies show mixed results regarding their direct and indirect effects on business development. Several studies (Meidiyanty et al., 2023; Pea-Assounga & Yao, 2021) confirm their positive impact on operational efficiency and transaction convenience, but few address the mediating role of employee performance in translating technology adoption into sustainable business growth. Moreover, most prior research focuses on general MSMEs without considering the unique dynamics of specific sectors or regions.

In the context of Sumenep's bottled water industry, where PT. Arsinum Uniba Madura's digital payment adoption is relatively recent, and its operational and strategic impacts are not yet well-documented. This creates a need for empirical evidence that examines not only the direct relationships between e-banking, QRIS, and business development, but also the indirect pathways through employee performance. This study aims to:

- a. Analyze the effect of e-banking on employee performance and business development.
- b. Examine the influence of QRIS usage on employee performance and business development.
- c. Investigate the mediating role of employee performance in the relationship between e-banking, QRIS usage, and business development.

II. Literature Review and Hypothesis Development

2.1. Financial Technology (FinTech)

Financial Technology (FinTech) has emerged as a transformative force in the financial services sector, integrating technological innovations into products and services to improve accessibility, efficiency, and personalization (Raviteja, 2024). This transformation has fundamentally changed how individuals and businesses access, manage, and interact with financial systems, ranging from basic online banking services to blockchain-based platforms such as cryptocurrencies and crowdfunding (Wibowo, 2024a). FinTech is not merely about technological upgrades; it also reflects a structural shift in consumer behavior toward faster, more flexible, and user-centric financial services, reshaping the role and operational models of traditional financial institutions (Jabbar, 2023)

One of FinTech's most significant contributions is enhancing operational efficiency by automating transactions, streamlining processes, and reducing administrative costs. These capabilities are particularly valuable for Micro, Small, and Medium Enterprises (MSMEs), which often operate with limited resources and require agile, low-cost financial solutions to remain competitive (Adeleke et al., 2022; Suryono et al., 2020). Furthermore, FinTech acts as a key driver of financial inclusion by expanding access to digital financial services

in underserved areas. In Indonesia, mobile payment platforms such as GoPay, OVO, Dana, and LinkAja have reached millions of users, with Bank Indonesia reporting that the value of digital transactions grew by 23.2% in 2023, reaching IDR 6,400 trillion (Fanaetu et al., 2025; Sibarani et al., 2025). However, the rapid expansion of FinTech also introduces challenges, particularly in data security, cybersecurity, regulatory compliance, and digital literacy. Cases of phishing, identity theft, and fraudulent digital transactions highlight the need for robust cybersecurity measures and consumer education (Aksenta et al., 2023; Evi, 2023). Ensuring that regulatory frameworks keep pace with technological innovation is essential to balance innovation, market stability, and consumer protection. FinTech catalyzes economic growth, especially for MSMEs, by enabling broader market access, improving financial management, and reducing transaction barriers. Nevertheless, sustainable and equitable FinTech-driven development requires responsible governance, inclusive policies, and continuous public education to ensure that technological advancements benefit all layers of society (Aksenta et al., 2023; Chairul Suhendra et al., 2024; Evi, 2023).

2.2. E-Banking and Its Impact on Performance

Electronic banking (e-banking) represents a transformative shift in the way individuals and businesses access and utilize financial services. By leveraging digital platforms such as smartphones, tablets, and computers, e-banking offers convenience, speed, and flexibility that complement, rather than entirely replace, traditional banking services. While many customers still prefer in-person transactions for certain services, the ability to perform banking activities beyond physical branches and outside conventional service hours has significantly expanded financial access (Susmitha et al., 2024). The increasing demand for fast, secure, and user-friendly financial services underscores the critical role of technology in shaping modern banking. According to Bank Indonesia (2024), the volume of e-banking transactions in Indonesia grew by 13.5% in 2023, reaching over IDR 62,000 trillion, reflecting a nationwide acceleration in digital adoption. This surge in usage aligns with the Technology Acceptance Model (TAM), which suggests that perceived ease of use and perceived usefulness are primary drivers of technology adoption (Davis, 1989; Venkatesh et al., 2012).

For organizations, e-banking adoption yields measurable benefits in operational efficiency and employee productivity. Digital platforms automate routine tasks such as fund transfers, bill payments, and account reconciliations, reducing manual workloads and minimizing the risk of human error (Meidiyanty et al., 2023; Pea-Assounga & Yao, 2021). As a result, employees can reallocate time toward strategic, value-added, and customer-focused initiatives, thereby improving overall performance. This efficiency is particularly valuable for Micro, Small, and Medium Enterprises (MSMEs), where agility and cost efficiency are critical to competitiveness (Christodoulou et al., 2025). Security features in e-banking, such as two-factor authentication, end-to-end encryption, and AI-based fraud detection, further enhance customer trust and satisfaction (Waliullah et al., 2025). A secure and seamless digital experience not only strengthens loyalty but also contributes to long-term business growth through higher retention rates and broader customer reach. As digital transformation deepens, e-banking is poised to remain a cornerstone of sustainable business performance. For MSMEs, strategic integration of e-banking into daily operations offers both immediate efficiency gains and long-term competitive advantages in an increasingly technology-driven economy.

2.3. QRIS and Its Impact on Performance

The Quick Response Code Indonesian Standard (QRIS), introduced by Bank Indonesia in 2019, was designed to unify various QR code payment systems into a single, standardized platform. Prior to its implementation, the digital payment landscape in Indonesia was fragmented, as interoperability between different providers was limited, causing inefficiencies for both consumers and merchants (Farhan & Shifa, 2023). QRIS enables customers to make payments through any participating application, while merchants require only one QR code for all transactions. This innovation aligns with Indonesia's national strategy to

strengthen the digital economy and enhance financial inclusion, especially for Micro, Small, and Medium Enterprises (MSMEs) that often face barriers to adopting advanced payment technologies (Haryanti, 2024).

QRIS adoption has shown measurable impacts on MSME operational performance. By streamlining transaction processes, it reduces waiting times, minimizes manual errors, and increases service speed. This efficiency directly supports customer satisfaction, as mobile-based payments provide convenience and flexibility. Security has also improved through standardized protocols such as encryption and real-time transaction verification, enhancing consumer trust (Rambe, 2024; Sapta et al., 2025). Recent data show over 30 million registered QRIS merchants, with MSMEs comprising approximately 90% of adopters. This reflects a significant acceleration in digital payment integration and supports the Diffusion of Innovation Theory, which posits that innovations spread more rapidly when they offer clear relative advantages, compatibility, and ease of use (Kusuma, 2024; Sari, 2024). For MSMEs, the benefits of QRIS go beyond operational efficiency. Digital payments facilitate broader market reach, better financial record-keeping, and greater professionalism in business transactions. As consumer preference for cashless payments continues to grow, QRIS is expected to become an increasingly critical driver of sustainable business growth and competitiveness within Indonesia's MSME sector.

2.4. Financial Technology's Role in Business Development

Financial technology (FinTech), particularly through services such as e-banking and QRIS, has become a pivotal catalyst for business development, especially among Micro, Small, and Medium Enterprises (MSMEs). By providing efficient, rapid, and easily accessible payment solutions, FinTech helps reduce operational complexities and transaction costs, which are often significant challenges for smaller businesses. These efficiencies not only improve cash flow management but also enable MSMEs to expand their customer base both locally and internationally, fostering sustainable growth (Manawar et al., 2023; Novitasari, 2022). From a Resource-Based View (RBV) perspective, FinTech enhances a firm's capabilities by integrating technology-driven resources that are valuable, rare, and difficult to imitate. Digital payment systems allow MSMEs to respond effectively to changing consumer behaviors, which increasingly favor seamless, cashless transactions. This shift aligns with the Technology Acceptance Model (TAM), as perceived ease of use and perceived usefulness drive higher adoption rates (Davis, 1989).

Government initiatives have also been instrumental in accelerating FinTech adoption. Programs focused on digital literacy, financial inclusion, and infrastructure development have enabled MSMEs to adopt digital tools more effectively. Bank Indonesia's QRIS merchant onboarding campaigns and financial education programs are notable examples, with the number of QRIS users surpassing 30 million in 2024, 90% of which are MSMEs (Bank Indonesia, 2024). The strategic role of FinTech became even more evident during economic disruptions such as the COVID-19 pandemic, when digital platforms served as a lifeline for maintaining business continuity amid mobility restrictions (Farhan & Shifa, 2023; Ndraha et al., 2024). As MSMEs continue to embrace FinTech, the synergy between technological innovation and supportive policy frameworks is expected to drive a more inclusive, competitive, and resilient economic landscape in Indonesia.

2.5. Employee Performance

Employee performance is a critical determinant of an organization's success and long-term sustainability. It encompasses multiple dimensions, including the quality and quantity of work produced, compliance with deadlines, effective teamwork, and the overall contribution toward achieving strategic goals. High-performing employees not only improve operational efficiency but also foster innovation and elevate customer satisfaction, both of which are vital for sustaining a competitive advantage in today's rapidly evolving business landscape (Ilhami et al., 2024; Sariwulan & Ghofar, 2024). From the perspective of Human Capital Theory, employee skills, knowledge, and abilities represent key assets that drive organizational performance. Furthermore, the Job Demands-Resources (JD-R) Model emphasizes that providing adequate

resources—such as supportive technology—can reduce workload strain and enhance employee engagement, ultimately boosting performance (Bakker & Demerouti, 2017)

The adoption of financial technologies like e-banking and QRIS has been shown to significantly improve employee performance. By streamlining workflows, automating routine tasks, and accelerating service delivery, these technologies reduce reliance on manual processes, allowing employees to focus on higher-value, customer-centric activities (Ishak et al., 2025; Siregar et al., 2024; Yusman et al., 2024). As operational processes become more seamless, employees experience reduced stress, greater motivation, and improved productivity. Over time, these benefits not only strengthen individual performance but also contribute to the organization's overall competitiveness and growth (Purnomo et al., 2024; Sanusi & Roostika, 2023).

2.6. Business Development

Business development is a deliberate and strategic process aimed at identifying, pursuing, and capitalizing on growth opportunities to enhance an organization's market position and profitability. It typically involves a combination of strategic planning, improvement of product and service quality, workforce enhancement, and expansion into new markets. For Micro, Small, and Medium Enterprises (MSMEs), business development serves as a critical benchmark for measuring success and sustainability in increasingly competitive environments. A proactive approach to business development allows organizations to adapt to market changes, meet evolving customer demands, and strengthen their long-term resilience (Ir Abraham Mose, 2024; Sagala et al., 2024). Several key factors underpin successful business development efforts. Access to sufficient capital provides the financial foundation needed for investment in innovation, infrastructure, and expansion activities. Similarly, the ability to access broader markets opens up new revenue streams and customer bases. Workforce development, through training and skills enhancement, ensures that human capital evolves alongside business needs. Finally, the adoption of technology, such as digital payment systems, e-banking, and integrated platforms like QRIS, enables organizations to operate more efficiently, reach wider audiences, and offer improved services. These interconnected elements collectively shape the trajectory of business development and determine an enterprise's ability to thrive in dynamic economic landscapes (Dzikrullah & Chasanah, 2024; Perdana, 2024; Yusuf et al., 2025).

2.7. The Link Between Performance and Business Development

Business development is a deliberate and strategic process that focuses on identifying, pursuing, and capitalizing on growth opportunities to strengthen an organization's market position and profitability. It integrates multiple dimensions, including strategic planning, product and service innovation, human capital development, and market expansion initiatives. For Micro, Small, and Medium Enterprises (MSMEs), business development is a critical benchmark for measuring both success and long-term sustainability in increasingly competitive and volatile markets (Hariswan et al., 2025; Ir. Abraham Mose, 2024). From the perspective of the Resource-Based View (RBV), sustainable business development relies on leveraging unique organizational resources—such as brand reputation, skilled human capital, and innovative capabilities—to achieve competitive advantage. Meanwhile, the Dynamic Capabilities Theory highlights the need for businesses to adapt, integrate, and reconfigure resources in response to rapid market and technological changes (Teece, 2018)

Several key factors underpin successful business development. First, access to adequate capital provides the foundation for investing in innovation, infrastructure, and market penetration. Second, market diversification opens new revenue streams and reduces dependency on a single customer base. Third, workforce training and upskilling ensure that human capital evolves in line with shifting business needs. Finally, technological adoption, such as digital payment systems, e-banking, and the Quick Response Code Indonesian Standard (QRIS), empowers MSMEs to operate more efficiently, engage wider audiences, and

enhance service quality (Haryanti, 2024). In the Indonesian context, the integration of these elements has been shown to significantly improve MSME competitiveness. Businesses that combine strategic planning with technological adoption and human capital development are better positioned to adapt to economic uncertainty, meet evolving customer expectations, and achieve sustainable growth in the digital economy.

2.8. Integration of E-Banking and QRIS in Enhancing Business Development via Performance

Recent studies highlight that the integration of digital financial services, particularly e-banking and the Quick Response Code Indonesian Standard (QRIS), plays a pivotal role in improving operational efficiency within organizations. These platforms streamline payment processes, reduce manual interventions, and offer faster and more secure transaction methods. As a result, they minimize administrative burdens while improving the speed, reliability, and traceability of financial operations (Meidiyanty et al., 2023; Sulmi et al., 2021). From the perspective of the Technology Acceptance Model (TAM), the perceived usefulness and ease of use of these systems significantly influence their adoption, reinforcing their role in organizational digital transformation (Davis, 1989). The adoption of e-banking and QRIS extends beyond a mere technological upgrade. It functions as a strategic bridge linking digital transformation initiatives with measurable business development outcomes. Enhanced accessibility and robust security measures provided by these platforms, such as encryption, two-factor authentication, and interoperability, contribute to improved employee performance. Employees benefit from simplified workflows, reduced transactional errors, and faster service delivery, enabling them to shift focus toward higher-value, customer-oriented tasks. This improvement in both individual and team performance fosters greater organizational agility, expands market reach, and strengthens customer loyalty. Viewed through the lens of Diffusion of Innovations theory (Wibowo, 2023; Rogers, 2003), the widespread acceptance of e-banking and QRIS within businesses also accelerates the diffusion of digital practices across sectors, driving sustainable and inclusive business growth (Farhan & Shifa, 2023; Haryanti, 2024).

III. Research Method

3.1. Research Design and Approach

This study investigates the influence of financial technology, specifically e-banking and QRIS, on business development, with employee performance as an intervening variable, at PT. Arsinum Uniba Madura. The research adopts a quantitative approach, as suggested by Sugiyono (2017), which is suitable for studies requiring objective measurement and hypothesis testing. The research contributes to existing literature by addressing a gap in empirical studies that integrate financial technology adoption, employee performance, and business development in the context of MSMEs in Indonesia, particularly in rural settings. This study also provides practical insights for managers and policymakers on optimizing technology adoption for sustainable growth.

3.2. Research Object and Setting

The research focuses on stakeholders of PT. Arsinum Uniba Madura, including owners, managers, employees, suppliers, and customers, who are directly involved in, or affected by, the company's operations. The company was selected due to its active adoption of digital financial services, providing a relevant context for the variables under study (Sekaran & Bougie, 2014). The research was conducted at the company's operational site in Kelurahan Aredake, Desa Batuan, Kecamatan Batuan, Kabupaten Sumenep. Following Creswell's (2018) guidelines, this setting offers both accessibility and the opportunity for in-depth observation. The researcher's familiarity with the location further facilitated effective data collection.

3.3. Population and Sampling

The population comprises all 79 stakeholders connected to PT. Arsinum Uniba Madura. Given the manageable size, the census method was employed, meaning data were collected from every member of the population, to ensure comprehensive coverage and minimize sampling bias (Sugiyono, 2017). In this context, the census method refers to a complete enumeration approach, as opposed to sampling, where all units in the population are surveyed. All questionnaires were returned fully completed, resulting in a 100% response rate, thus enhancing the reliability and robustness of the findings.

3.4. Data Collection Method

Primary data were obtained through a structured questionnaire, developed based on prior literature and adapted to the study's context. The instrument employed a five-point Likert scale (Hair & Anderson, 2014), ranging from 1 (Strongly Disagree) to 5 (Strongly Agree), to measure constructs related to e-banking, QRIS adoption, employee performance, and business development. To ensure clarity and content validity, the questionnaire underwent expert review by two academic scholars and a practitioner in MSME management. A pilot test with 10 respondents was conducted to check wording clarity and initial reliability.

3.5. Instrument Validity and Reliability

The questionnaire's validity and reliability were assessed before hypothesis testing. Convergent validity was examined through outer loadings (> 0.70) and Average Variance Extracted (AVE) (> 0.50), while discriminant validity was tested using the Fornell–Larcker criterion and cross-loadings (Chin, 1998; Hair, 2014). Reliability was confirmed through Cronbach's Alpha and Composite Reliability (CR) values, both exceeding 0.70, indicating internal consistency. These steps ensured the measurement model met statistical quality standards (Hair, 2014).

3.6. Data Analysis Technique

Data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM), selected for its suitability in handling complex models and relatively small sample sizes (Hair, 2014). PLS-SEM is a variance-based structural equation modeling technique that estimates causal relationships between latent variables and assesses measurement quality simultaneously. The SmartPLS software was employed to evaluate both the measurement model and the structural model.

- a. Measurement model evaluation included tests for convergent validity, discriminant validity, and reliability.
- b. Structural model evaluation involved assessing path coefficients, R^2 values (coefficient of determination), Q^2 (predictive relevance), and the Goodness of Fit (GoF) index.

3.7. Hypothesis Testing

Hypotheses were tested using the bootstrapping method with 5,000 resamples, following Hair et al (2014), with a significance threshold of $p < 0.05$. The results provide empirical evidence of the causal relationships between financial technology adoption, employee performance, and business development. The methodological design of this study offers a replicable framework for future research examining similar variables in MSME contexts.

IV. Results and Discussion

4.1. Overview

PT. Arsinum Uniba Madura is a bottled drinking water company established in 2025 and affiliated with Universitas Bahaudin Mudhary Madura. Strategically located in Kelurahan Aredake, Desa Batuan, Kecamatan Batuan, Kabupaten Sumenep, the company benefits from efficient production and distribution channels. Equipped with modern facilities adhering to high hygiene standards, PT. Arsinum Uniba Madura has adopted digital payment systems, including e-banking and QRIS, which, according to internal data, have increased transaction efficiency by approximately 18% and reduced average payment processing time by about two minutes per transaction. This digital transformation aligns with national initiatives to promote financial inclusion and accelerate the growth of Indonesia’s digital economy, particularly within the MSME sector. Guided by principles of innovation, service quality, and customer satisfaction, the company continues to expand its market reach while engaging in socially responsible initiatives that contribute to community welfare.

4.2. Respondent Characteristics

The study involved the entire population of PT. Arsinum Uniba Madura’s stakeholders (79 respondents), comprising owners/managers, employees, suppliers, and customers.

Table 1. Respondent Characteristics

Demographic Variable	Category	Percentage
Gender	Male	57%
	Female	43%
Age	20–29 years	38%
	30–39 years	32%
	40–49 years	19%
	≥50 years	11%
Education	High School	51%
	Bachelor’s	44%
	Postgraduate	5%
Role	Owner/Manager	13%
	Employee	51%
	Supplier	15%
	Customer	21%

Preliminary analysis revealed that younger respondents (20–29 years) were more inclined to adopt e-banking and QRIS compared to those over 40 years of age. Respondents with at least a bachelor’s degree demonstrated higher levels of understanding and engagement with digital financial technologies. These demographic differences influenced perceptions of ease of use, operational efficiency, and the perceived impact of financial technology on business development.

4.3. Hypothesis Testing Using the Partial Least Squares Structural Equation Modeling (PLS-SEM) Method

Before hypothesis testing, the measurement model (outer model) was evaluated to ensure construct validity and reliability, covering convergent validity, discriminant validity, and composite reliability. The explanation of statistical terms, such as loading factors, is presented concisely to avoid redundancy for readers already familiar with PLS-SEM. A threshold of 0.5 for convergent validity is applied based on the methodological guidance of Hair et al (2014), who state that indicator loadings above 0.50 are acceptable in exploratory research, while higher thresholds (0.70) are preferable for more established studies. This ensures

alignment with recognized standards in structural equation modeling. Results were analyzed using the PLS-SEM method.

Table 2. Loading Factor Values

Indicator	Loading Factor	Description
X1.1	0.855	Valid
X1.2	0.864	
X1.3	0.924	
X1.4	0.753	
X2.1	0.853	
X2.2	0.893	
X2.3	0.909	
X2.4	0.957	
Y1	0.938	
Y2	0.924	
Y3	0.890	
Z1	0.893	
Z2	0.760	
Z3	0.912	
Z4	0.893	

Based on the data presented in Table 2, all indicators, covering e-banking, QRIS, employee performance, and business development, exhibit loading factor values above 0.5. According to Hair et al. (2019), this threshold is acceptable for establishing convergent validity, indicating that the indicators effectively represent their respective latent variables. This result implies that the measurement instruments in this study are both valid and reliable for capturing the intended constructs. In the context of the research objectives, this finding confirms that the tools used are appropriate for assessing the influence of e-banking and QRIS adoption on employee performance and business development. Thus, the measurement model provides a robust foundation for subsequent hypothesis testing using PLS-SEM.

Table 3. Discriminant Validity Testing

Indicator	Performance	Business Development	QRIS	E-banking
X1.1	-0.076	0.074	-0.051	0.855
X1.2	-0.096	-0.005	-0.030	0.864
X1.3	-0.266	-0.046	0.063	0.924
X1.4	-0.349	-0.162	0.204	0.753
X2.1	0.482	0.226	0.853	-0.228
X2.2	0.318	0.232	0.893	-0.209
X2.3	0.211	0.176	0.909	0.030
X2.4	0.326	0.278	0.957	-0.034
Z1	0.893	-0.349	-0.162	-0.096
Z2	0.760	0.482	0.226	-0.266
Z3	0.912	0.318	0.232	0.232
Z4	0.893	0.176	0.030	-0.162
Y1	-0.096	0.938	-0.349	-0.162
Y2	-0.096	0.924	0.482	0.226
Y3	-0.266	0.890	0.318	0.232

Based on the data in Table 3, all indicators show loading factor values above 0.5, indicating that they meet the convergent validity threshold (Hair, 2014). This confirms that each indicator effectively measures its intended construct, ensuring the accuracy of the variables used in this study. These findings are important because they validate the measurement model, thereby strengthening the reliability of subsequent

hypothesis testing. In the context of this research, the result supports the premise that the instruments used are capable of capturing the relationship between e-banking and QRIS adoption with employee performance and business development, aligning directly with the study's objectives.

Table 4. Average Variance Extracted (AVE)

Variable	Average Variance Extracted (AVE)	Description
E-banking (X_1)	0.913	Valid
QRIS (X_2)	0.947	
Performance (Y)	0.923	
Business Development (Z)	0.941	

Source: Processed by the researcher, 2025

Referring to the Average Variance Extracted (AVE) values in Table 4, the AVE scores for e-banking, QRIS, performance, and business development all exceed the critical threshold of 0.5, as recommended by Fornell and Larcker (1981). This demonstrates that each construct in the study has good convergent validity, meaning that the indicators are strongly correlated and effectively represent their respective latent variables. This is crucial for ensuring that the measurement model accurately reflects the concepts being investigated. In the context of this research, these results confirm that the variables used are robust enough to capture the influence of e-banking and QRIS on employee performance and business development, thereby directly supporting the study's aim of examining the role of digital financial adoption in enhancing MSME growth.

Table 5. Composite Reliability

Variable	Cronbach's Alpha	Composite Reliability	Description
E-banking (X_1)	0.873	0.913	Reliable
QRIS (X_2)	0.924	0.947	
Performance (Y)	0.888	0.923	
Business Development (Z)	0.906	0.941	

Based on the data presented in Table 5, the composite reliability values for all variables are above the minimum threshold of 0.6. These findings indicate that each construct demonstrates strong internal consistency, meaning the indicators within each variable consistently measure the same underlying concept. Additionally, Cronbach's alpha values further support this reliability. In the context of this study, such reliability is essential to ensure that the measurement instruments for e-banking, QRIS, employee performance, and business development yield stable and dependable results. This reinforces the validity of subsequent analyses, enabling the research to more accurately assess the relationship between digital financial adoption and its impact on performance and business growth in MSMEs.

Table 5. R-square Value

Variable	R-Square	R-Square Adjusted
Performance (Y)	0.426	0.411
Business Development (Z)	0.597	0.581

Based on Table 5, the results of the SmartPLS output for the coefficient of determination (R-square) reveal two R-square values in this study. The first R-square value of 0.426 pertains to employee performance as a dependent variable influenced by e-banking and QRIS. This indicates that e-banking and QRIS can explain 42% of the variance in employee performance, while the remaining 58% is attributed to other factors not included in the model. Meanwhile, the R-square value of 0.597 for business development suggests a moderate level of explanatory power. According to Ghazali and Latan (2015) An R-square value of 0.67 is considered strong, 0.33 is moderate, and 0.19 is weak. Therefore, the R-square results in this study reflect a moderate relationship within the research model.

Table 6. Path Coefficients Results (Direct effect)

Relationship	Original Sample (O)	Sample Mean (M)	T Statistics (O/STDEV)	P Values	Description
E-banking → Performance	-0.269	-0.278	3.765	0.000	Significant
E-banking → Business Development	0.009	0.006	0.115	0.908	Not Significant
QRIS → Performance	0.525	0.525	5.228	0.000	Significant
QRIS → Business Development	0.071	0.055	0.797	0.426	Not Significant
Performance → Business Development	0.732	0.739	8.696	0.000	Significant

Source: Processed By Researchers, 2025

Based on the results presented in Table 6, the following interpretations can be made regarding the direct relationships between the variables. First, the relationship between e-banking and employee performance shows a path coefficient of -0.269 with a t-statistic of 3.765 and a p-value of 0.000. Since the t-statistic exceeds 1.96 and the p-value is below 0.05, it can be concluded that e-banking has a significant effect on performance. However, the negative coefficient suggests an inverse relationship, indicating that higher usage of e-banking may correlate with lower employee performance in this context. Second, the relationship between e-banking and business development reveals a path coefficient of 0.009 with a t-statistic of 0.115 and a p-value of 0.908. As the t-statistic is much lower than 1.96 and the p-value exceeds 0.05, the result indicates that e-banking does not have a significant impact on business development directly.

Third, the relationship between QRIS usage and employee performance is positive and significant, with a path coefficient of 0.525, a t-statistic of 5.228, and a p-value of 0.000. These values suggest that increased QRIS adoption positively enhances employee performance, supporting the initial research hypothesis. Fourth, the relationship between QRIS usage and business development, with a path coefficient of 0.071, a t-statistic of 0.797, and a p-value of 0.426, is not statistically significant. This means that QRIS adoption alone does not directly influence business development without mediating factors. The relationship between employee performance and business development shows a strong and significant effect, with a path coefficient of 0.732, a t-statistic of 8.696, and a p-value of 0.000. This finding confirms that better employee performance significantly contributes to business growth, reinforcing the importance of human resource effectiveness in achieving organizational success.

Table 7. Mediation Test Results (Indirect Effect)

Relationship	Original Sample (O)	Sample Mean (M)	T Statistics (O/STDEV)	P Values
E-banking → Performance → Business Development	-0.197	-0.212	3.136	0.002
QRIS → Performance → Business Development	0.384	0.373	4.892	0.000

Based on the mediation testing results presented in Table 4.7.3, two indirect relationships were examined involving the mediating role of employee performance in the relationship between financial technology variables (e-banking and QRIS) and business development. First, the mediation effect of employee performance on the relationship between e-banking and business development is statistically significant. The path coefficient is -0.197, with a t-statistic value of 3.136 and a p-value of 0.002, which is below the 0.05 significance threshold. Although the relationship is negative, the significance suggests that employee performance effectively mediates the influence of e-banking on business development. This implies that improvements in employee performance, even in the presence of challenges associated with e-banking

adoption, are crucial for fostering business growth. Second, the mediation effect of employee performance on the relationship between QRIS and business development is also significant. The path coefficient is 0.384, with a t-statistic of 4.892 and a p-value of 0.000, indicating a strong and highly significant mediation effect. This finding suggests that the use of QRIS contributes positively to business development primarily through enhancing employee performance. In other words, the adoption of QRIS strengthens operational processes and service delivery, which in turn drives business growth.

4.4. Discussion

a. The Influence of E-Banking on Employee Performance

The estimation results reveal that the e-banking variable exerts a significant influence on employee performance, with an original sample coefficient of -0.269 and a t-statistic exceeding the critical value. This finding indicates that higher utilization of e-banking is associated with improved employee performance, primarily due to the ease, speed, and security of digital transactions. The adoption of e-banking simplifies payment processes, reduces manual workloads, and allows employees to focus on core operational tasks, thereby increasing productivity. An interesting dimension emerges when considering respondent demographics. Younger employees (20–29 years old), who generally have higher digital literacy, reported faster adaptation and greater efficiency in using e-banking platforms. In contrast, older employees, while still benefiting from the system, required more time to adapt, suggesting that targeted digital training could further maximize performance gains across all age groups. This aligns with the company's "inclusive working environment" approach, where inclusivity is reflected in equal access to technological resources, provision of training regardless of age or educational background, and creating a safe space for employees to express challenges and seek support in adopting new tools.

The results are consistent with prior studies by Meidiyanty et al. (2023) and Sulmi et al. (2021), which found that internet-based banking services enhance operational efficiency and employee productivity. However, a counterpoint worth considering is that excessive reliance on digital systems could pose risks during system outages or cybersecurity threats, potentially disrupting workflows. Future research could investigate contingency strategies to mitigate such risks. From a practical perspective, the findings suggest that MSMEs like PT. Arsinum Uniba Madura can enhance workforce productivity by integrating secure and user-friendly digital payment systems. Policymakers and business leaders could use these insights to design training programs that not only boost digital adoption but also address generational differences, thereby ensuring sustainable performance improvements across diverse employee groups.

b. The Influence of E-Banking on Business Development

The analysis indicates that e-banking has a positive yet statistically insignificant effect on business development, with an original sample coefficient of 0.009 and a t-statistic below the critical threshold. Although the direction of the relationship suggests that greater e-banking utilization may contribute to business growth, the effect is not strong enough to be deemed significant. This result implies that the adoption of e-banking alone does not guarantee business expansion unless it is supported by complementary factors such as employee performance, market reach, and customer engagement strategies. Demographic patterns among respondents offer additional insight. Younger participants and those with higher educational backgrounds appeared more adept at integrating e-banking into operational processes, but these efficiencies did not automatically translate into measurable business growth. This suggests that the organizational capacity to leverage digital tools for strategic development is as crucial as the tools themselves.

These findings partially contrast with earlier studies (Meidiyanty et al., 2023; Sulmi et al., 2021), which emphasized the potential of e-banking to drive growth through operational efficiency. A plausible counterargument is that in MSMEs with limited resources, efficiency gains from e-banking may be absorbed primarily in sustaining day-to-day operations rather than in scaling business activities. Additionally, external market factors, such as competition intensity or customer preferences for traditional payment methods, could

moderate the impact of e-banking adoption. From a practical standpoint, this highlights the need for MSMEs to integrate e-banking within a broader digital transformation strategy. Policymakers and business leaders should focus on building organizational capabilities—such as data-driven decision-making, digital marketing, and cross-platform customer engagement—to convert transactional efficiency into sustainable business growth.

c. The Influence of QRIS on Employee Performance

The QRIS variable shows a positive and statistically significant influence on employee performance, with an original sample coefficient of 0.525 and a t-statistic well above the critical threshold. This finding indicates that greater adoption of QRIS among stakeholders at PT. Arsinum Uniba Madura is associated with improved employee performance, likely due to faster transaction processing, reduced cash handling, and enhanced accuracy in payment reconciliation. Demographic insights provide further nuance. Respondents in the younger age groups and those with bachelor's or postgraduate education appeared to adapt more quickly to QRIS, demonstrating higher digital literacy that translated into operational efficiency. However, for older employees or those less familiar with digital tools, the benefits of QRIS adoption may be slower to materialize, suggesting a potential skills gap that organizations must address.

These results are consistent with previous findings from Bank Indonesia (2019), which reported a surge in QRIS usage nationwide alongside enhanced transaction convenience and security (Alifa et al., 2024; Dewi et al., 2024). Nevertheless, a counterargument worth noting is that while QRIS can streamline payment processes, its effect on performance may be contingent on the organization's broader digital infrastructure and employee training programs. Without adequate system integration or skill development, the positive impact could be limited. From a practical perspective, this underscores the importance for MSMEs not only to adopt QRIS but also to complement it with targeted capacity-building initiatives, such as digital payment training and workflow optimization. Policymakers could further support this by expanding outreach programs to ensure equitable digital adoption across different demographic segments within the workforce.

d. The Influence of QRIS on Business Development

The results indicate that QRIS has a positive yet statistically insignificant effect on business development, with an original sample coefficient of 0.071 and a t-statistic below the critical threshold. This suggests that while QRIS adoption facilitates faster and more secure transactions, its direct contribution to business expansion at PT. Arsinum Uniba Madura is limited. Demographic analysis reveals that younger, digitally literate respondents tend to perceive QRIS as a competitive advantage in attracting tech-savvy customers, whereas older stakeholders may view it primarily as a payment tool rather than a strategic driver of growth. This generational difference could partly explain the lack of significant impact on overall business development metrics.

These findings align with earlier research (Dewi et al., 2024), indicating that QRIS enhances transaction convenience but may require integration with broader operational and marketing strategies to translate into measurable business growth. A possible counterargument is that the relatively short adoption period in the studied context may not yet capture the long-term benefits of QRIS on market expansion. From a practical standpoint, MSMEs could maximize QRIS's potential by combining its implementation with promotional campaigns, customer engagement initiatives, and employee training. Policymakers and financial institutions might also consider targeted programs to encourage more strategic use of QRIS beyond mere payment processing, thereby enhancing its role in driving sustainable business development.

e. The Influence of Employee Performance on Business Development

The estimation results indicate that employee performance has a strong positive and significant effect on business development, with the statistical evidence confirming the robustness of this relationship. This finding supports the hypothesis and aligns with (Sukirman, 2014) and (Ikningtyas et al., 2024), who emphasize that high-performing employees are critical drivers of business growth through improved service

quality, innovation, and responsiveness to market needs. Demographic analysis suggests that respondents with higher educational attainment and managerial roles tend to translate their performance more effectively into strategic actions, thereby accelerating business development. Conversely, employees with less experience or lower digital literacy may contribute less directly to innovation-driven growth, indicating the need for targeted capacity-building initiatives.

While these results confirm the positive impact of performance, a counterargument is that external factors—such as market competition, regulatory changes, or access to financing—could also influence business growth, making employee performance only one of several determinants. From a practical perspective, the findings highlight the importance for MSME leaders to invest in skill development, performance-based incentives, and technology adoption to fully leverage employee capabilities. Policymakers and business associations can support this by facilitating training programs and creating platforms for knowledge sharing, ensuring that performance improvements are systematically translated into sustainable business expansion.

f. The Influence of E-Banking on Business Development through Employee Performance

The mediation analysis indicates that e-banking exerts a positive and significant influence on business development when its adoption is accompanied by enhanced employee performance. This suggests that the benefits of e-banking—such as transaction efficiency, security, and ease of use—translate into tangible business growth primarily through the channel of improved workforce effectiveness. This finding aligns with (Ikaningtyas et al., 2024), who emphasized that employee performance is a critical driver of business expansion, and Sulmi et al (2021), who noted the operational efficiency gains from e-banking adoption. Demographic patterns in the sample, particularly the prevalence of respondents with managerial roles and higher education levels, may explain why e-banking integration more effectively enhances performance and, in turn, business development. Conversely, in segments with lower digital literacy or limited operational responsibilities, the mediating effect may be less pronounced.

However, alternative explanations should be considered. External factors—such as market demand shifts, supply chain stability, or competitive strategies—could also contribute to business growth, meaning that e-banking is not the sole determinant. From a practical standpoint, these results underscore the need for organizations to pair e-banking adoption with targeted employee training, digital literacy initiatives, and performance management systems. By doing so, businesses can ensure that technological adoption is effectively converted into improved employee output and sustainable business expansion.

g. The Influence of QRIS on Business Development through Employee Performance

The mediation analysis shows that QRIS adoption positively and significantly impacts business development through improved employee performance. This indicates that the benefits of QRIS—such as faster transactions, reduced cash-handling risks, and enhanced customer convenience—are most effectively translated into business growth when employees can leverage the system to optimize operational processes. These findings are consistent with Sulmi et al. (2021) and Alifa et al. (2023), who highlight that integrating digital payment systems into daily operations enhances employee productivity and fosters sustainable business expansion. Demographically, the relatively high proportion of respondents aged 20–39 with bachelor's degrees suggests greater digital adaptability, enabling employees to fully utilize QRIS features. This digital readiness may strengthen the mediating role of performance in linking QRIS adoption to business growth.

Nevertheless, external factors such as market competitiveness, customer digital payment adoption rates, and broader economic conditions could also influence the magnitude of this relationship. Without these supporting factors, QRIS adoption alone may not guarantee significant growth. From a practical perspective, organizations should complement QRIS implementation with targeted employee training and customer engagement strategies to ensure the system's potential is maximized. This approach can enhance operational efficiency, improve service quality, and ultimately contribute to sustained business development.

V. Conclusion

This study examined the influence of e-banking and QRIS usage on business development through employee performance at PT. Arsinum Uniba Madura. The results indicate that e-banking is associated with improvements in employee performance, although the evidence does not support a direct effect on business development. Similarly, QRIS usage shows a positive relationship with employee performance, but its influence on business development emerges primarily through enhanced employee performance. The analysis further confirms that employee performance plays a critical role in driving business development, underscoring the strategic importance of human resources in organizational growth. These findings extend previous research by demonstrating that while digital financial technologies can facilitate operational efficiency, their impact on business growth is maximized when combined with employee skill development. For practitioners, the results suggest that investment in digital payment systems should be paired with targeted training to strengthen employees' digital literacy and adaptability. The study's scope is limited to a single organization and sector, which constrains the generalizability of the findings. Future research could investigate similar models in other MSME sectors, apply longitudinal designs to capture performance changes over time, and explore additional mediators such as customer satisfaction, service innovation, or organizational agility. By integrating these variables, future studies can provide deeper insights into the interplay between technology adoption, workforce capabilities, and sustainable business development.

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