

# Technology Innovation Adoption for Business Performance in the Digital Economy

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## Article Info

### Article history:

Submission March 16, 2026

Revised July 13, 2026

Accepted August 14, 2026

Published August 26, 2026

### Keywords:

Technology Innovation Adoption

Digital Economy

Business Performance

Digital Technologies



## ABSTRACT

**The rapid development** of the digital economy has encouraged businesses to adopt digital technologies such as digital payment systems, e-commerce platforms, cloud-based management systems, and digital marketing tools. However, many businesses, particularly small and medium-sized enterprises, still face adoption challenges due to limited resources, digital skills, and implementation costs. **This study aims** to explore how technology innovation adoption influences business performance by examining the experiences, strategies, and challenges of business actors. **A descriptive qualitative** approach was employed through interviews, observations, and documentation involving business owners, managers, and technology stakeholders. Data were analyzed using data reduction, data display, thematic analysis, and conclusion drawing. **The novelty of this study** lies in its integrated qualitative perspective that views technology adoption as a multidimensional transformation process. Unlike previous studies that often focus on individual technologies or quantitative relationships, this research examines the combined adoption of multiple digital technologies within a unified framework. The findings show that technology adoption improves operational efficiency, productivity, market expansion, customer engagement, and competitiveness, while organizational readiness and digital capability remain key challenges. **The study concludes** that successful digital transformation requires alignment between technological readiness, organizational capability, and strategic implementation, providing contextual insights into how integrated digital technologies create business value.

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### \*Corresponding Author:

DOI: <https://doi.org/10.33050/atm.v10i3.2644>

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## 1. INTRODUCTION

The rapid growth of the digital economy has reshaped how businesses operate, compete, and create value in modern markets [1]. Digital technologies such as cloud computing, artificial intelligence, big data analytics, digital payment systems, e-commerce platforms, and digital marketing tools enable organizations to streamline operations, improve decision-making, expand market access, and strengthen customer engagement. In this context, technology innovation adoption has become an important strategy for businesses to remain

competitive and responsive to changing market demands [2, 3].

Despite these opportunities, many businesses, particularly small and medium-sized enterprises, are not fully prepared to adopt technological innovations effectively [4]. Financial limitations, inadequate digital skills, organizational resistance, and uncertainty regarding technology benefits may slow down digital transformation and reduce its contribution to business performance. Therefore, understanding how businesses adopt and implement digital technologies is important for explaining their impact on operational efficiency, productivity, customer engagement, and competitiveness [5, 6].

Previous studies have examined the relationship between technology adoption and business performance, but many have relied mainly on quantitative approaches that emphasize statistical relationships between variables. Although these studies provide useful empirical evidence, they often provide limited explanation of how business actors make adoption decisions, assess organizational readiness, allocate resources, develop digital capabilities, and respond to practical implementation barriers. Therefore, qualitative exploration is needed to provide deeper insights into how technology adoption is experienced, interpreted, and managed in real business contexts [7].

This study aims to explore how technology innovation adoption influences business performance in the digital economy era using a descriptive qualitative approach. By examining business actors' experiences, this study identifies the processes, challenges, and strategies underlying successful digital transformation [8, 9]. The novelty of this study lies in its integrated perspective of technology adoption as a multidimensional organizational transformation process. Unlike previous studies focusing on individual technologies or statistical relationships, this research examines the combined adoption of digital payment systems, e-commerce platforms, cloud-based management systems, and digital marketing tools. Integrating TOE, TAM, and DOI perspectives, this study explains how technological readiness, organizational capability, user acceptance, and innovation diffusion contribute to digital transformation and business performance improvement [10].

The conceptual framework in Figure 1 is theoretically supported by the Technology-Organization-Environment (TOE) framework as the main foundation, complemented by the Technology Acceptance Model (TAM) and the Diffusion of Innovations (DOI) [11, 12]. TOE explains technological readiness, organizational capability, and environmental pressure TAM explains user acceptance of digital technologies, while DOI describes the process through which innovations are adopted and integrated into organizational routines.

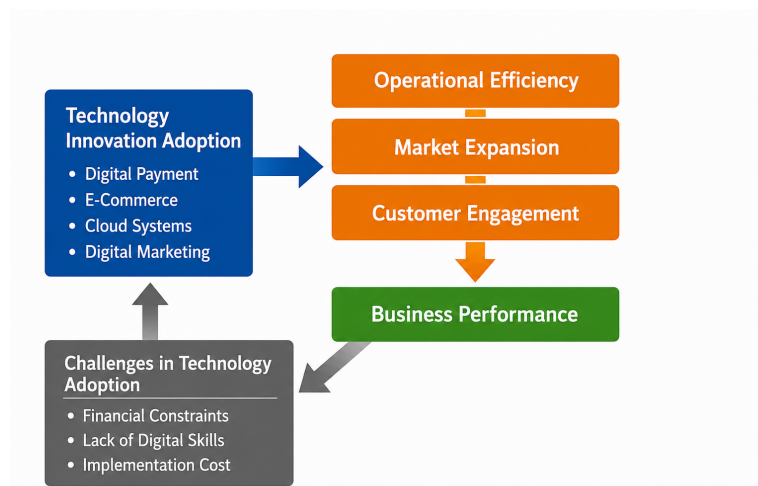


Figure 1. Conceptual Framework of Technology Innovation Adoption, Business Performance, and Technology Adoption Challenges

Figure 1 illustrates the conceptual framework of this study. It explains how the adoption of technological innovations, including digital payment systems, e-commerce platforms, cloud-based systems, and digital marketing tools, can influence business performance. The framework also highlights that the adoption process may be affected by several challenges, such as financial constraints, limited digital skills, and technology implementation costs.

## 2. LITERATURE REVIEW

### 2.1. Technology Innovation Adoption

Technology innovation adoption refers to the process through which organizations accept, implement, and integrate new technological solutions into their operational and strategic activities [13]. In modern business environments, technological innovation includes the use of digital tools, information systems, automation technologies, cloud computing, and digital platforms that support business processes [14, 15]. The adoption of technological innovation enables organizations to improve efficiency, enhance service quality, and strengthen competitive advantage in dynamic markets. In the context of the digital economy, companies that successfully adopt technological innovations are more capable of adapting to rapid technological changes and responding to evolving customer needs.

Several factors influence the adoption of technological innovations within organizations [16]. These factors include technological readiness, organizational resources, managerial support, and employees' digital capabilities. External factors such as market competition, technological infrastructure, and government policies also play an important role in encouraging organizations to adopt new technologies. Research indicates that organizations with strong technological capabilities and supportive leadership tend to adopt digital technologies more effectively than organizations with limited resources or rigid organizational structures [17, 18].

Various theoretical models have been developed to explain technology adoption behavior [19]. The TAM emphasizes perceived usefulness and perceived ease of use as key factors influencing the acceptance of digital technologies. In this study, TAM helps explain why business actors are more willing to adopt digital payment systems, e-commerce platforms, cloud-based management systems, and digital marketing tools when they perceive these technologies as useful, easy to operate, and beneficial for business activities. The DOI theory explains how technological innovations are introduced, adopted, and gradually integrated into organizational routines [20, 21].

This framework is relevant because digital adoption in business does not occur instantly, but through stages of awareness, evaluation, trial, implementation, and continuous use [22]. Meanwhile, the TOE framework is used as the main theoretical foundation of this study because it provides a broader explanation of technology adoption by considering technological readiness, organizational capacity, and environmental pressure [23]. The TOE framework supports the research model by explaining that technology innovation adoption can improve business performance when digital tools are aligned with organizational readiness, managerial support, employee digital skills, financial capacity, market competition, and customer expectations. Therefore, TAM, DOI, and TOE are not treated as separate descriptive theories, but as complementary frameworks that explain how technology adoption leads to operational efficiency, market expansion, customer engagement, productivity, competitiveness, and business performance [24].

### 2.2. Business Performance

Business performance refers to the ability of an organization to achieve its strategic objectives and operational goals effectively and efficiently [25, 26]. It reflects how well a company utilizes its resources to generate economic value and maintain sustainable growth. In academic research, business performance is often used as a key indicator for evaluating the effectiveness of organizational strategies, including technological innovation adoption. Organizations that successfully integrate technology into their operations often experience improvements in productivity, operational efficiency, and financial performance [27].

One important indicator of business performance is profitability, which reflects the organization's ability to generate financial returns from its business activities. Profitability is often used to evaluate the financial success of a company and its ability to sustain long-term growth. Companies that adopt digital technologies are often able to reduce operational costs, improve decision-making processes, and increase revenue generation through more efficient business operations [28].

Operational efficiency also represents an important dimension of business performance. Efficiency refers to how effectively an organization utilizes its resources, including labor, technology, and capital, to achieve optimal output with minimal cost [29]. The integration of digital technologies such as automation systems, digital platforms, and cloud computing allows organizations to streamline their processes and improve operational performance. Another indicator commonly used to evaluate business performance is productivity. Productivity reflects the ability of a company to increase output relative to the inputs used in production processes. Technological innovations can significantly enhance productivity by enabling faster communication, improved information processing, and better decision-making capabilities within organizations [30].

Finally, competitiveness represents a critical dimension of business performance in the digital economy. Companies that adopt innovative technologies are better positioned to compete in global markets by improving product quality, expanding market reach, and enhancing customer experience. Technological innovation enables firms to develop innovative products and services that create sustainable competitive advantages [31].

### 2.3. Digital Economy Era

The digital economy era refers to a period in which economic activities are increasingly driven by digital technologies, internet connectivity, and data-driven innovation. In this era, businesses rely heavily on digital infrastructure to conduct transactions, manage operations, and interact with customers. The growth of e-commerce platforms, cloud computing services, and digital payment systems has significantly transformed traditional business models and created new opportunities for business expansion [32].

Digital transformation has become an essential component of modern business strategies. Organizations across industries are integrating digital technologies such as big data analytics, artificial intelligence, and cloud computing into their operational processes to enhance efficiency and improve decision-making capabilities. These technologies allow companies to analyze large volumes of data and generate valuable insights that support strategic planning and business innovation [33].

Moreover, the digital economy has intensified competition among businesses by lowering entry barriers and expanding global market access. Companies must continuously innovate and adopt new technologies in order to remain competitive and sustain long-term growth. As digital technologies continue to evolve, businesses that fail to adapt to technological changes risk losing their competitive position in the market [34].

### 2.4. Relationship between Technology Innovation and Business Performance

A growing body of research has examined the relationship between technology innovation adoption and business performance. Many studies suggest that the adoption of digital technologies positively influences organizational performance by improving efficiency, reducing operational costs, and enhancing productivity. Digital technologies enable companies to automate processes, optimize resource utilization, and improve communication within organizations [35].

Empirical evidence also shows that companies that actively adopt technological innovations tend to achieve higher levels of competitiveness and financial performance. Digital technologies enable firms to create new business models, enhance customer engagement, and expand their market reach, which ultimately contributes to improved business performance.

However, the relationship between technological innovation and business performance is often influenced by various organizational factors. The effectiveness of technology adoption depends on how well organizations integrate technology into their strategic planning, organizational culture, and operational processes. Organizations with strong digital capabilities and supportive leadership are more likely to experience significant performance improvements through technological innovation.

## 3. RESEARCH METHODOLOGY

### 3.1. Research Approach

This study employs a qualitative research approach to explore the impact of technology innovation adoption on business performance in the digital economy era. Qualitative research is particularly suitable for examining complex social phenomena and gaining a deeper understanding of participants' experiences, perceptions, and interpretations [36]. Through this approach, the study seeks to capture detailed insights into how business actors perceive and implement technological innovations within their organizations. By focusing on the perspectives of individuals directly involved in business operations, qualitative research enables the researcher to explore the underlying factors, motivations, and challenges associated with technology adoption in contemporary business environments [37].

### 3.2. Research Design

This research adopts a descriptive qualitative research design. The descriptive qualitative approach aims to provide a comprehensive understanding of a particular phenomenon by describing and interpreting real-life experiences and situations [38]. In this study, the descriptive qualitative design is used to examine how business actors adopt technological innovations and how such adoption influences their business performance.

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The research focuses on exploring the experiences, strategies, and challenges faced by business practitioners in integrating digital technologies into their operational and managerial processes [39].

### 3.2.1. Data Collection Methods

Data for this study were collected through in-depth interviews, observations, and documentation to obtain comprehensive and reliable information. The primary method was semi-structured interviews with selected informants to explore their experiences, perceptions, and strategies in adopting digital technologies. The interviews focused on the types of technologies adopted, reasons for adoption, decision-making processes, organizational readiness, implementation challenges, perceived benefits, and the impact of technology adoption on business performance.

Observations were conducted to examine how digital payment systems, e-commerce platforms, cloud-based systems, and digital marketing tools were used in daily business activities. The observation focused on transaction processes, online sales activities, data management practices, customer communication, and digital promotion activities. Documentation was used to support and verify the interview and observation findings, including business reports, sales records, transaction records, product catalogues, social media content, e-commerce platform data, customer feedback, and internal records related to digital technology usage.

Data collection was conducted over two months, from March to April 2026. The research protocol consisted of preparing the interview guide, identifying eligible informants, requesting participation consent, conducting interviews, carrying out observations, collecting supporting documents, and verifying the collected data. This protocol was applied to ensure that the data collection process was systematic, transparent, and consistent with the objectives of the qualitative study.

### 3.2.2. Research Informants

The research informants consisted of individuals directly involved in business activities and technological implementation, including business owners, operational managers, digital marketing staff, e-commerce administrators, and technology-related stakeholders. This study involved 12 informants selected through purposive sampling. The selection criteria included direct involvement in business decision-making or technology implementation, the use of at least one digital technology, at least one year of business experience, and willingness to participate in interviews, observations, and documentation.

The informants were drawn from retail, culinary, service-based, and small-scale trading businesses that actively use digital technologies in operational and marketing activities. These sectors were selected because they commonly adopt digital payment systems for transactions, e-commerce platforms for online sales, cloud-based systems for data management, and digital marketing tools for customer engagement and promotion. These criteria ensured that each informant had relevant knowledge and practical experience regarding adoption decisions, readiness conditions, implementation challenges, and business performance outcomes.

## 3.3. Data Analysis Technique

The data collected in this study were analyzed using qualitative data analysis techniques. The analysis process began with data reduction, in which relevant information from interviews, observations, and documentation was selected, organized, and simplified. After that, the data were presented in a structured form to facilitate interpretation and understanding of the research findings. Thematic analysis was then used to identify key themes and patterns related to technology innovation adoption and its influence on business performance. Finally, conclusions were drawn based on the interpretation of the analyzed data to provide insights into how technological innovation contributes to business performance in the digital economy era.

To ensure data validity, this study applied triangulation and verification techniques. Source triangulation compared information from business owners, managers, digital platform operators, and technology stakeholders, while method triangulation combined interviews, observations, and documentation. Member checking was conducted to validate interpretations, supported by cross-checking business records, digital activities, and transaction data. These procedures enhanced the credibility, dependability, and trustworthiness of the qualitative findings.

### 3.3.1. Research Protocol and Ethical Considerations

This study followed a qualitative research protocol to ensure methodological transparency and credibility. Data were collected through semi-structured interviews based on research objectives, covering technology adoption, organizational readiness, digital capabilities, implementation challenges, and business performance outcomes. Using purposive sampling, 12 informants from retail, culinary, service, and small-scale

trading businesses were selected based on their experience in adopting digital technologies, including digital payment systems, e-commerce platforms, cloud-based management systems, and digital marketing tools.

Data were collected from March to April 2026 through interviews, observations, and documentation. Interviews were conducted in a semi-structured manner to allow informants to explain their experiences while remaining aligned with the research themes. Observations focused on the use of digital technologies in transaction processing, online sales, data management, customer communication, and digital promotion. Documentation included business reports, sales records, transaction records, product catalogues, social media content, e-commerce platform data, customer feedback, and internal records related to digital technology usage.

Ethical considerations were applied throughout the research process. Informants were informed about the study purpose, voluntary participation, and their right to withdraw. Informed consent was obtained before interviews and observations. Confidentiality was maintained by protecting personal identities and sensitive business information. The data were used only for research purposes and reported in aggregate form. To provide a clearer overview of the methodological framework, the main components of the research methodology are summarized in Table 1.

Table 1. Summary of Research Methodology

| Aspect                  | Description                                                                                                                                                                                                                                                   |
|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Research Approach       | Qualitative research approach                                                                                                                                                                                                                                 |
| Research Design         | Descriptive qualitative design                                                                                                                                                                                                                                |
| Research Focus          | Technology innovation adoption and business performance in the digital economy                                                                                                                                                                                |
| Number of Informants    | 12 informants                                                                                                                                                                                                                                                 |
| Sampling Technique      | Purposive sampling                                                                                                                                                                                                                                            |
| Informant Categories    | Business owners, operational managers, digital marketing staff, e-commerce administrators, and technology-related stakeholders                                                                                                                                |
| Business Sectors        | Retail, culinary, service-based businesses, and small-scale trading businesses                                                                                                                                                                                |
| Inclusion Criteria      | Informants were directly involved in business decision-making or technology implementation, used at least one digital technology, had at least one year of business experience, and were willing to participate in interviews, observation, and documentation |
| Data Collection Period  | March to April 2026                                                                                                                                                                                                                                           |
| Data Collection Methods | Semi-structured interviews, observation, and documentation                                                                                                                                                                                                    |
| Interview Guide Focus   | Types of digital technologies adopted, reasons for adoption, decision-making processes, organizational readiness, digital skills, implementation challenges, perceived benefits, and business performance outcomes                                            |
| Observation Focus       | Transaction processes, online sales activities, data management, customer communication, and digital promotion activities                                                                                                                                     |
| Documentation Sources   | Business reports, sales records, transaction records, product catalogues, social media content, e-commerce platform data, customer feedback, and internal records related to digital technology usage                                                         |
| Data Analysis Technique | Data reduction, data display, thematic analysis, and conclusion drawing                                                                                                                                                                                       |
| Data Validity           | Source triangulation, method triangulation, member checking, and documentation cross-checking                                                                                                                                                                 |
| Ethical Considerations  | Informed consent, voluntary participation, confidentiality, protection of sensitive business information, and responsible use of research data                                                                                                                |

Table 1 summarizes the key methodological elements applied in this study, including the research approach, data collection techniques, research participants, and qualitative data analysis procedures. This table provides a structured overview of how the study was designed and conducted to ensure the reliability and consistency of the research process. By presenting the methodological framework in a concise format, it helps readers understand the relationship between the research objectives, data sources, and analytical procedures used in this study. Furthermore, the table clarifies how qualitative data obtained from interviews, observations,



and documentation were systematically processed to generate meaningful insights regarding the adoption of technological innovation and its impact on business performance in the digital economy era.

## 4. RESULTS AND DISCUSSION

### 4.1. Forms of Technology Innovation Adoption

The findings of this study indicate that businesses have adopted various technological innovations to support their operations in the digital economy era. Among the most commonly adopted technologies are digital payment systems, e-commerce platforms, cloud-based management systems, and digital marketing tools.

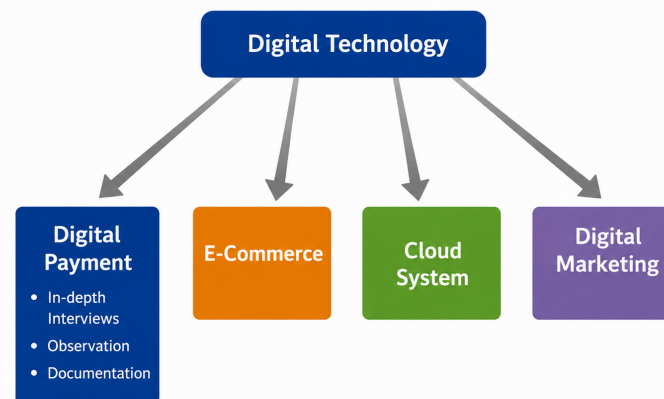


Figure 2. Technologies Adopted by Businesses in the Digital Economy

Figure 2 illustrates the main digital technologies adopted by businesses in the digital economy, including digital payment systems, e-commerce platforms, cloud-based management systems, and digital marketing tools. These technologies support operational efficiency, market expansion, and customer engagement. The implementation model identified in this study consists of several stages: identifying business problems and digital needs, assessing digital readiness, selecting suitable platforms, integrating technologies into daily operations, providing basic user training, and monitoring adoption outcomes. This process shows that digital adoption is not a single technical action, but a gradual process that connects technology readiness, platform integration, human capability, and performance evaluation.

These technologies also help businesses conduct transactions more efficiently, manage operational data, and expand market reach through online platforms. For example, digital payment systems provide faster and more convenient transactions, while e-commerce platforms allow businesses to reach customers beyond geographical boundaries. The major forms of technology innovation adoption identified in this study are summarized in Table 2.

Table 2. Forms of Technology Innovation Adoption

| Technology Innovation          | Main Function                                                      | Business Benefit                                         |
|--------------------------------|--------------------------------------------------------------------|----------------------------------------------------------|
| Digital Payment Systems        | Facilitate fast and secure financial transactions                  | Improves transaction efficiency and customer convenience |
| E-commerce Platforms           | Provide online platforms for product marketing and sales           | Expands market reach beyond geographical limitations     |
| Cloud-Based Management Systems | Store and manage operational and customer data                     | Enhances data management and operational control         |
| Digital Marketing Tools        | Support online promotion through social media and digital channels | Strengthens customer engagement and brand visibility     |

The reasons for adopting technological innovations vary among business actors. Many participants indicated that the primary motivation for adopting digital technologies is to improve operational efficiency

and simplify business processes. In addition, technological innovation helps businesses enhance customer engagement through digital communication channels such as social media and online marketplaces. Some informants also highlighted that adopting technology has become necessary in order to remain competitive in increasingly digitalized markets. The rapid development of digital platforms has encouraged businesses to integrate technology into their strategies to maintain relevance and competitiveness.

#### 4.2. Impact of Technology Adoption on Business Performance

The results show that technology innovation adoption influences business performance, particularly through operational efficiency, productivity, and competitiveness. In terms of operational efficiency, digital systems help businesses automate routine tasks, reduce administrative work, and improve coordination across business functions. Several informants explained that digital payment systems accelerated transactions and reduced errors in sales recording, while cloud-based management tools made it easier to monitor stock, sales, and customer data without relying on manual records. Before using digital payment and cloud-based recording systems, we needed to manually check transaction records and stock availability. After adopting these technologies, transaction processing became faster, and business records were easier to manage. These findings indicate that technology adoption simplifies work processes, reduces transaction delays, and improves operational control.

Technology adoption also contributes to productivity improvement. Participants reported that digital tools enabled employees to complete tasks more quickly and accurately, especially in data management, communication, customer service, and online promotion. A digital marketing staff member explained that digital tools helped prepare promotional content, respond to customers, and monitor campaign results more efficiently. Similarly, an e-commerce informant stated that product updates, order management, and customer communication could be handled faster through marketplace dashboards. These findings suggest that digital technology supports productivity by improving task completion, coordination, and access to real-time information.

Another important impact is enhanced business competitiveness. Businesses that adopt e-commerce platforms and digital marketing tools are better able to expand market reach, improve promotion strategies, and deliver better customer experiences. Informants stated that online platforms helped businesses reach customers beyond local areas, while social media promotion increased brand visibility and responsiveness to market trends. These statements show that digital technology adoption strengthens competitiveness by expanding market access, improving customer engagement, and supporting faster adaptation to the digital economy.

#### 4.3. Challenges in Technology Adoption

Despite the benefits associated with the adoption of technological innovation, this study also identified several challenges faced by businesses when implementing digital technologies. One of the most common challenges is limited organizational resources. Many small and medium-sized enterprises often face financial constraints that limit their ability to invest in advanced technological infrastructure and digital systems. The main challenges encountered in the adoption of technological innovation are summarized in Table 3.

Table 3. Challenges in Technology Innovation Adoption

| Challenge                        | Description                                                                                                            | Implication for Business                                               |
|----------------------------------|------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|
| Limited Organizational Resources | Many businesses have limited financial capacity to invest in digital infrastructure and technological systems          | Slows down digital transformation and technology adoption              |
| Lack of Digital Skills           | Employees and business owners may lack the technical competencies required to operate digital technologies effectively | Reduces the effectiveness of technology utilization                    |
| High Implementation Costs        | Technology adoption requires investment in tools, system maintenance, training, and upgrades                           | Discourages businesses from adopting or expanding digital technologies |

Another challenge relates to the lack of digital skills among employees and business owners [40]. Some participants indicated that the successful implementation of new technologies requires specific technical knowledge and competencies that are not always readily available within the organization. As a result, businesses may struggle to utilize the technologies they adopt fully. Participant statements regarding adoption barriers also supported this finding. Several informants explained that the main obstacles were limited budgets,



lack of technical skills, and the need for continuous system maintenance [41, 42]. One small business owner stated, “We want to use more digital tools, but the cost of subscription, training, and system maintenance is still a burden.” Another informant noted that some employees needed time to adapt because they were not familiar with digital platforms. These statements show that technology adoption requires not only access to digital tools, but also financial readiness, employee training, and continuous technical support [43].

Furthermore, the cost of technology implementation remains a significant barrier for many organizations. In addition to the initial investment required to acquire technological tools, businesses must also allocate resources for system maintenance, training programs, and technological upgrades. These financial considerations may discourage some organizations from adopting technological innovations despite their potential benefits.

#### 4.4. Discussion with Previous Studies

The findings of this study confirm previous research indicating that technology adoption contributes to business performance through operational improvement and efficiency [44]. This study supports these findings by showing that digital payment systems, e-commerce platforms, cloud-based management systems, and digital marketing tools help businesses accelerate transactions, manage operational data, expand market reach, and strengthen customer engagement [45]. The theoretical contribution of this study extends beyond confirming the positive relationship between technology adoption and business performance. Previous studies frequently analyze digital transformation through specific technology domains or quantitative models that identify significant relationships among adoption constructs. In contrast, this research contributes a holistic explanation of digital transformation by revealing how multiple technologies interact within business operations and how adoption outcomes depend on organizational readiness, digital competency, financial capacity, and environmental conditions. The integration of TOE, TAM, and DOI provides a comprehensive theoretical lens for understanding not only why businesses adopt digital technologies but also how these technologies are implemented and transformed into business value [46].

The results also support previous studies showing that technology adoption improves productivity, market reach, and competitiveness among small and medium-sized enterprises [47]. However, this study provides a deeper understanding of the adoption process from the perspective of business owners, managers, digital marketing staff, e-commerce administrators, and technology-related stakeholders, particularly regarding decision-making, organizational readiness, digital skills, financial capacity, and implementation challenges.

Furthermore, the findings are consistent with previous research emphasizing that technology and innovation adoption contribute to business development and firm performance [48]. The current study supports this argument by demonstrating that digital technologies improve customer engagement, online sales activities, productivity, and competitiveness [49]. However, unlike studies that focus on specific sectors, this research examines broader digital adoption practices involving digital payment systems, e-commerce platforms, cloud-based systems, and digital marketing tools across different business activities [50, 51].

This study extends previous research by providing field-based qualitative insights into digital adoption readiness, technology integration, employee capability, and adoption barriers. Furthermore, the digital adoption architecture proposed in this study provides an additional technical contribution by illustrating the operational mechanism through which digital technologies generate business value. Unlike previous studies that often examine technology adoption through individual applications or adoption intention models, this study demonstrates that business performance improvement emerges from the integration of interconnected digital components, including transaction systems, customer relationship management platforms, cloud-based infrastructure, and business analytics capabilities. This integrated perspective highlights that successful digital transformation depends not only on technology availability but also on effective data flow, system interoperability, organizational capability, and continuous performance evaluation. While previous studies mainly emphasize innovation performance, sustainable business performance, or technology diffusion processes, this study highlights that technology adoption represents a comprehensive transformation process involving several interconnected stages, including business needs identification, digital readiness assessment, platform selection, system integration, user capability development, and continuous performance monitoring.

The findings of this study are also relevant to the Sustainable Development Goals, particularly SDG 8, SDG 9, and SDG 12. Technology innovation adoption supports SDG 8 by improving productivity, competitiveness, market expansion, and economic growth. It supports SDG 9 by encouraging digital innovation, infrastructure readiness, and technology-based business transformation. In addition, it contributes to SDG 12

by helping businesses manage data more efficiently, reduce manual processes, optimize resource use, and support more responsible operational practices. Therefore, technology innovation adoption should be viewed not only as a strategy for improving business performance, but also as part of sustainable and innovation-oriented business development.

## 5. MANAGERIAL IMPLICATIONS

The findings of this study provide several practical implications for business owners and managers in managing technology innovation adoption. First, managers should treat digital adoption as a gradual strategic process rather than a one-time technological investment. Before adopting new digital tools, businesses need to assess organizational readiness by evaluating financial capacity, employee digital skills, internet access, available devices, operational needs, and managerial support. This readiness assessment helps businesses choose technologies that are suitable for their current capacity and reduces the risk of ineffective implementation.

Second, business owners and managers should invest in digital training to improve employees' ability to use digital payment systems, e-commerce platforms, cloud-based management systems, and digital marketing tools. Training should focus on practical skills such as processing digital transactions, managing online product catalogues, using cloud-based data storage, analyzing customer data, responding to online customers, and creating digital promotional content. Strengthening employee digital skills is important because the findings show that lack of digital capability remains one of the main barriers to effective technology adoption.

Third, businesses should select affordable, scalable, and user-friendly cloud-based platforms that match their operational needs. Small and medium-sized enterprises do not always need to adopt complex or expensive systems at the initial stage. Instead, they can begin with simple cloud-based tools for sales recording, inventory monitoring, customer database management, and financial documentation. As the business grows, managers can gradually expand the use of more advanced systems. This step-by-step approach allows businesses to improve operational efficiency while controlling implementation costs.

Fourth, managers should build digital marketing capabilities to strengthen customer engagement and competitiveness. Businesses can use social media, e-commerce dashboards, customer feedback, and digital campaign analytics to understand customer preferences, improve promotional strategies, and expand market reach. Digital marketing should not only be used for promotion, but also as a tool for building brand visibility, maintaining customer relationships, and responding to market changes more quickly.

Finally, technology implementation should be monitored using clear performance indicators, such as transaction speed, sales growth, customer engagement, productivity, operational efficiency, and competitiveness. Continuous monitoring helps managers evaluate whether digital technology adoption actually contributes to business performance. Therefore, business owners and managers are encouraged to adopt technology progressively, starting from the most urgent business needs and expanding digital adoption based on organizational readiness, employee capability, and available resources.

Based on these managerial implications, technology innovation adoption should be understood as a strategic and continuous process that requires readiness assessment, employee capability development, affordable platform selection, digital marketing strengthening, and performance monitoring.

## 6. CONCLUSION

This study aimed to explore the impact of technology innovation adoption on business performance in the digital economy era using a qualitative research approach. The findings reveal that businesses increasingly adopt various forms of digital technologies, including digital payment systems, e-commerce platforms, cloud-based management tools, and digital marketing technologies. These technological innovations support business operations by improving efficiency, facilitating faster communication, and expanding market reach. The results also indicate that the adoption of technology plays an important role in helping businesses adapt to the rapidly evolving digital environment.

The study further shows that technology innovation adoption contributes positively to business performance in several ways. Businesses that adopt digital technologies tend to experience improvements in operational efficiency, increased productivity, and stronger competitiveness in the marketplace. However, the study also identifies several challenges that businesses face when implementing technological innovations, such as limited financial resources, insufficient digital skills, and the high cost of technology implementation. These challenges highlight the importance of organizational readiness and continuous learning in successfully

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integrating technological innovations into business operations.

The findings of this study provide important implications for business practitioners, particularly entrepreneurs and managers who seek to enhance their business performance through technological innovation. These findings also align with SDG 8 Decent Work and Economic Growth, SDG 9 Industry Innovation and Infrastructure, and SDG 12 Responsible Consumption and Production. Technology innovation adoption supports SDG 8 by improving productivity, competitiveness, and opportunities for business growth. It supports SDG 9 by encouraging digital innovation, infrastructure readiness, and technology-based transformation. In addition, it contributes to SDG 12 by enabling more efficient data management, reduced manual processes, optimized resource use, and more responsible business operations. Businesses are encouraged to invest in digital capabilities, provide training to improve employees' digital skills, and develop strategic approaches to technology adoption. For future research, it is recommended that researchers expand the scope of the study by involving a larger number of participants or combining qualitative and quantitative approaches in order to gain more comprehensive insights into the relationship between technology innovation adoption and business performance in the digital economy era. This study also contributes to the literature by showing that the impact of technology innovation adoption on business performance should not only be measured through statistical outcomes, but also understood through the practical experiences, readiness conditions, and implementation barriers faced by business actors. This qualitative contribution provides a more contextual perspective for explaining how digital technologies create business value in the digital economy era.

## 7. DECLARATIONS

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### 7.2. Author Contributions

Conceptualization: MM and AR; Methodology: MM; Software: MM and AR; Validation: MM and AR; Formal Analysis: MM and AR; Investigation: MM; Resources: MM; Data Curation: MM; Writing Original Draft Preparation: MM and AR; Writing Review and Editing: JE and AR; Visualization: MM. All authors, MM, AR, and JE, have read and agreed to the published version of the manuscript.

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