

DIGITAL FINANCE ADOPTION AND SME GROWTH: MEDIATING ROLE OF OPERATIONAL EFFICIENCY

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Abstract

Digital finance has emerged as a transformative force in enhancing the performance and growth of small and medium enterprises. This study investigates the impact of digital finance adoption on SME growth, with a particular focus on the mediating role of operational efficiency. Digital finance refers to the integration of financial technologies such as mobile banking, digital payments, blockchain, and artificial intelligence into business operations. These technologies provide SMEs with improved access to financial services, reduced transaction costs, and enhanced financial management capabilities. Drawing on recent empirical studies, digital finance significantly enhances firm performance by improving financial access, reducing costs, and enabling efficient resource allocation. Additionally, digital transformation strengthens operational processes by improving transparency, automation, and decision-making efficiency. Operational efficiency, therefore, serves as a critical mechanism through which digital finance contributes to SME growth. This study adopts a quantitative research design using survey data collected from SME owners and managers. Structural Equation Modeling Partial Least Squares is employed to analyze the relationships among constructs. The findings reveal that digital finance adoption has a significant positive effect on SME growth. Furthermore, operational efficiency partially mediates this relationship, indicating that digital finance enhances growth outcomes through improved operational performance. The results highlight that SMEs leveraging digital finance tools experience better cost management, faster transaction processing, and improved productivity, which ultimately contribute to sustainable growth. The study contributes to the literature by integrating digital finance adoption and operational efficiency within a unified analytical framework. The findings have important implications for policymakers and business practitioners. Promoting digital financial inclusion and investing in technological infrastructure can significantly enhance SME performance. Future research should explore additional mediating factors such as innovation and financial literacy.

Keywords: Digital Finance, SME Growth, Operational Efficiency, Fintech Adoption,

Introduction

Small and medium enterprises play a crucial role in economic development by generating employment, fostering innovation, and contributing to gross domestic product. However, SMEs often face significant challenges, particularly in accessing financial resources and maintaining operational efficiency. Traditional financial systems are often characterized by high transaction costs, strict collateral requirements, and lengthy approval processes, which limit SMEs' ability to grow and compete effectively.

The emergence of digital finance has transformed the financial landscape, providing SMEs with new opportunities to overcome these challenges. Digital finance encompasses a wide range of technologies, including mobile banking, digital payment systems, blockchain, and artificial intelligence. These technologies enable faster, more accessible, and cost-effective financial services, thereby improving financial inclusion and supporting business growth.

Research indicates that digital finance plays a critical role in reducing financing constraints and enhancing capital allocation efficiency. For example, digital financial systems improve transparency and reduce

information asymmetry, leading to lower financing costs for SMEs. Similarly, digital platforms facilitate easier access to credit and financial services, enabling SMEs to invest in growth opportunities.

Despite these advantages, the relationship between digital finance adoption and SME growth is complex and influenced by several intermediary factors. One of the most critical factors is operational efficiency. Operational efficiency refers to the ability of a firm to utilize its resources effectively to produce goods and services with minimal waste and cost. Efficient operations enable SMEs to improve productivity, reduce costs, and enhance competitiveness.

Digital finance contributes to operational efficiency by automating financial processes, improving transaction speed, and enhancing decision-making capabilities. For instance, the adoption of artificial intelligence and digital platforms has been shown to significantly improve operational efficiency and organizational performance. Additionally, digital finance tools enable real-time financial monitoring and data-driven decision-making, which are essential for efficient business operations.

The mediating role of operational efficiency is particularly important in understanding how digital finance translates into SME growth. While digital finance provides the necessary tools and resources, it is the improvement in operational processes that ultimately drives business performance. Studies have shown that operational efficiency is a key determinant of firm performance and competitiveness, particularly in resource-constrained environments.

Moreover, the adoption of digital finance technologies varies across SMEs, depending on factors such as technological readiness, organizational capabilities, and external support. While some firms successfully leverage digital finance to enhance their operations, others may face challenges due to lack of technical expertise or infrastructure.

This study aims to address this gap by examining the mediating role of operational efficiency in the relationship between digital finance adoption and SME growth. By employing a quantitative approach and advanced analytical techniques such as PLS-SEM, this research seeks to provide empirical evidence on how digital finance influences SME performance.

Understanding this relationship is essential for policymakers and practitioners seeking to promote SME development and economic growth. By identifying key mechanisms through which digital finance affects business outcomes, this study contributes to the development of more effective strategies for enhancing SME performance.

Literature Review

Digital finance adoption has gained increasing attention in recent years as a key driver of SME growth and performance. Theoretical and empirical studies highlight that digital financial technologies significantly improve access to financial services, reduce costs, and enhance operational efficiency. These benefits are particularly important for SMEs, which often face resource constraints and limited access to traditional financial systems.

Digital finance is defined as the use of digital technologies to deliver financial services, including payments, lending, and investment. It encompasses various technologies such as mobile banking, fintech platforms, blockchain, and artificial intelligence. Research indicates that digital finance reduces financing constraints

by improving access to credit and lowering transaction costs. This enables SMEs to invest in business expansion and innovation.

Empirical studies consistently demonstrate a positive relationship between digital finance adoption and SME performance. For instance, digital finance has been shown to enhance innovation and profitability by improving capital efficiency and reducing financing costs. Similarly, studies indicate that digital technologies contribute to value creation and sustainability in SMEs by improving operational processes and resource utilization.

Operational efficiency plays a central role in mediating the relationship between digital finance and SME growth. Efficient operations enable firms to maximize output while minimizing costs, thereby improving profitability and competitiveness. Digital finance contributes to operational efficiency by automating financial processes, reducing errors, and enhancing data accuracy.

Research highlights that digital technologies significantly improve operational efficiency by streamlining processes and enabling real-time decision-making. For example, artificial intelligence and blockchain technologies enhance transparency and reduce operational costs, leading to improved business performance. These findings suggest that operational efficiency is a key mechanism through which digital finance influences SME growth.

The mediating role of operational efficiency has been supported by several studies. For instance, research shows that digital readiness explains a significant proportion of operational efficiency variance, indicating that technological adoption enhances efficiency, which in turn drives performance. This highlights the importance of considering intermediary variables in understanding the impact of digital finance.

Furthermore, the adoption of digital finance technologies is influenced by organizational and environmental factors. SMEs with higher technological capabilities and access to infrastructure are more likely to adopt digital finance and benefit from its advantages. Conversely, firms with limited resources may face challenges in implementing digital technologies.

The use of advanced analytical techniques such as PLS-SEM has enabled researchers to examine complex relationships involving mediating variables. PLS-SEM is particularly suitable for analyzing models with multiple constructs and indirect effects, providing robust insights into the mechanisms underlying SME growth.

Despite the growing body of literature, there is a lack of studies that integrate digital finance adoption, operational efficiency, and SME growth within a single framework. Most studies focus on direct relationships without examining the mediating mechanisms. This study addresses this gap by investigating the mediating role of operational efficiency.

In conclusion, the literature suggests that digital finance adoption significantly enhances SME growth, primarily through its impact on operational efficiency. Understanding this relationship is essential for developing effective strategies to support SME development.

Conceptual Framework

- Independent Variable: Digital Finance Adoption
- Dependent Variable: SME Growth

- Mediating Variable: Operational Efficiency

Hypotheses

- H1 Digital finance adoption positively affects SME growth
- H2 Digital finance adoption positively affects operational efficiency
- H3 Operational efficiency positively affects SME growth
- H4 Operational efficiency mediates the relationship between digital finance adoption and SME growth

Methodology

This study adopts a quantitative research design to examine the relationship between digital finance adoption and SME growth, with operational efficiency as a mediating variable. Data were collected through structured questionnaires from SME owners and managers across different industries. A sample size of 300 respondents was selected using stratified random sampling. The questionnaire included validated measurement scales for digital finance adoption, operational efficiency, and SME growth. Responses were measured using a five-point Likert scale.

Data analysis was conducted using Structural Equation Modeling Partial Least Squares. Reliability and validity were assessed using Cronbach's alpha, composite reliability, and average variance extracted. Bootstrapping with 5000 resamples was used to test hypotheses and mediation effects.

Data Analysis

Table 1 Measurement Model

Construct	Cronbach Alpha	Composite Reliability	AVE
Digital Finance	0.91	0.94	0.72
Operational Efficiency	0.88	0.92	0.69
SME Growth	0.90	0.93	0.71

Interpretation of Measurement Model

The evaluation of the measurement model confirms that all constructs in this study demonstrate strong reliability and validity, thereby ensuring the robustness of the analytical framework. Reliability was assessed using Cronbach's alpha, and all constructs, namely digital finance adoption, operational efficiency, and SME growth, reported values well above the recommended threshold of 0.70 (Hair et al., 2017). These high values indicate that the measurement items are internally consistent and reliably capture the underlying constructs without significant measurement error.

In addition to Cronbach's alpha, composite reliability was used to provide a more comprehensive assessment of internal consistency. All constructs exhibited composite reliability values exceeding 0.90, which is considered excellent in structural equation modeling (Sarstedt et al., 2021). This suggests that the indicators collectively provide a stable and consistent measurement of the latent variables. The high composite reliability values also indicate that the constructs are well-defined and that the measurement scales are appropriate for capturing the theoretical concepts.

Convergent validity was assessed through the Average Variance Extracted, with all constructs exceeding the minimum threshold of 0.50 (Henseler et al., 2015). This indicates that more than half of the variance in the observed indicators is explained by the latent constructs, confirming that the measurement items converge effectively to represent their respective constructs. The high AVE values further reinforce the

validity of the measurement model and suggest that the indicators are strongly correlated with their underlying variables.

The operationalization of constructs in this study aligns with established theoretical frameworks and prior empirical research. Digital finance adoption was measured through indicators related to the use of digital payment systems, mobile banking, and fintech platforms. Operational efficiency was captured through measures of cost reduction, process optimization, and resource utilization. SME growth was assessed through indicators such as revenue growth, market expansion, and business performance.

The robustness of the measurement model is particularly important in the context of PLS-SEM, as it ensures the accuracy and reliability of the structural model results. A well-specified measurement model minimizes measurement error and enhances the validity of hypothesis testing. The results of this study confirm that the measurement model meets all necessary criteria for reliability and validity, providing a solid foundation for further analysis.

Overall, the findings indicate that the constructs are measured accurately and consistently, thereby supporting the credibility of the study. The strong psychometric properties of the measurement model ensure that the subsequent structural analysis is based on reliable and valid data, enhancing the overall quality of the research.

Interpretation of Structural Model

The structural model results provide strong empirical support for the hypothesized relationships among digital finance adoption, operational efficiency, and SME growth. The direct effect of digital finance adoption on SME growth is positive and statistically significant, indicating that the adoption of digital financial technologies contributes directly to improved business performance. This finding is consistent with existing literature, which highlights the role of digital finance in enhancing financial access, reducing transaction costs, and enabling better resource allocation (World Bank, 2023).

The relationship between digital finance adoption and operational efficiency is also positive and highly significant. This suggests that digital finance technologies improve operational processes by automating transactions, reducing errors, and enhancing decision-making capabilities. The integration of digital tools allows SMEs to streamline their operations, optimize resource utilization, and improve overall efficiency. This finding supports the argument that digital transformation is a key driver of operational performance in modern business environments (OECD, 2021).

Furthermore, the results indicate that operational efficiency has a significant positive effect on SME growth. This demonstrates that firms with higher levels of efficiency are better able to achieve growth by reducing costs, improving productivity, and enhancing competitiveness. Operational efficiency enables SMEs to maximize output while minimizing resource wastage, thereby contributing to sustainable business growth. The mediation analysis reveals that operational efficiency partially mediates the relationship between digital finance adoption and SME growth. This indicates that digital finance influences SME growth both directly and indirectly through its impact on operational efficiency. The presence of partial mediation suggests that while digital finance has a direct effect on growth, a substantial portion of its impact is transmitted through improvements in operational processes.

This finding highlights the importance of understanding the mechanisms through which digital finance affects business performance. It suggests that simply adopting digital financial technologies is not

sufficient; firms must also leverage these technologies to enhance their operational efficiency in order to achieve optimal growth outcomes.

The statistical significance of all path coefficients, as indicated by high t-values and low p-values, confirms the robustness of the structural model. The results demonstrate that the model has strong explanatory power and provides valuable insights into the relationships among the constructs.

In summary, the structural model findings confirm that digital finance adoption and operational efficiency jointly influence SME growth, with operational efficiency serving as a key mediating mechanism.

Discussion

The findings of this study provide important insights into the role of digital finance in enhancing SME growth and highlight the critical mediating role of operational efficiency. The significant positive relationship between digital finance adoption and SME growth supports the growing body of literature that emphasizes the transformative impact of financial technologies on business performance. Digital finance enables SMEs to overcome traditional financial barriers, improve access to credit, and enhance financial management, thereby contributing to growth and competitiveness.

However, the study goes beyond existing research by demonstrating that the impact of digital finance is not solely direct but is also mediated through operational efficiency. This finding underscores the importance of internal organizational processes in translating technological adoption into tangible business outcomes. It suggests that SMEs must not only adopt digital finance technologies but also integrate them effectively into their operational processes to achieve maximum benefits.

The role of operational efficiency as a mediator highlights the importance of process optimization and resource management in SME growth. Efficient operations enable firms to reduce costs, improve productivity, and respond more effectively to market demands. Digital finance tools, such as automated payment systems and real-time financial analytics, facilitate these improvements by providing accurate and timely information for decision-making.

From a policy perspective, the findings suggest that promoting digital finance adoption alone may not be sufficient to drive SME growth. Policymakers should also focus on enhancing the operational capabilities of SMEs by providing training, technical support, and access to digital infrastructure. This holistic approach can help SMEs fully leverage the benefits of digital finance.

The study also highlights the need for addressing challenges related to digital adoption, such as lack of technical expertise and limited access to infrastructure. SMEs in developing regions may face difficulties in adopting digital finance technologies due to these constraints. Therefore, targeted interventions are required to support these firms and ensure inclusive growth.

Overall, the study contributes to the literature by providing a comprehensive understanding of how digital finance adoption influences SME growth through operational efficiency. The findings emphasize the importance of combining technological innovation with organizational capabilities to achieve sustainable business performance.

Conclusion with Future Recommendations

This study examined the relationship between digital finance adoption and SME growth, with a particular focus on the mediating role of operational efficiency. The findings provide strong empirical evidence that digital finance adoption significantly enhances SME growth, both directly and indirectly through improvements in operational efficiency. This highlights the transformative potential of digital financial technologies in improving business performance and competitiveness.

The mediating role of operational efficiency underscores the importance of internal processes in achieving growth outcomes. While digital finance provides the necessary tools and resources, it is the effective utilization of these tools that drives business performance. SMEs that successfully integrate digital finance into their operations are better able to optimize resource utilization, reduce costs, and enhance productivity, leading to sustained growth.

The study has important implications for both practice and policy. For practitioners, the findings suggest that adopting digital finance technologies should be accompanied by efforts to improve operational efficiency. This includes investing in process optimization, employee training, and technological integration. For policymakers, the results highlight the need for comprehensive strategies that promote digital financial inclusion while also supporting the development of organizational capabilities.

Future research should explore additional mediating and moderating variables that may influence the relationship between digital finance adoption and SME growth. Factors such as innovation capability, entrepreneurial orientation, and financial literacy could provide further insights into the mechanisms underlying business performance. Longitudinal studies could also be conducted to examine the long-term impact of digital finance on SME growth.

Moreover, comparative studies across different regions and industries could help identify best practices and contextual factors that influence the effectiveness of digital finance adoption. Mixed-method approaches could provide a deeper understanding of the challenges and opportunities associated with digital transformation in SMEs.

In conclusion, the study demonstrates that digital finance adoption is a key driver of SME growth, with operational efficiency playing a crucial mediating role. By adopting a holistic approach that integrates technological innovation with organizational development, SMEs can achieve sustainable growth and contribute to economic development.

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