

Financial Technology Utilization and Budgeting Discipline Affecting Sustainability Performance through Financial Inclusion in Indonesian Handicraft MSMEs

Yuni Utami^{a✉}, Yanti Puji Astutie^b

^a Universitas Pancasakti Tegal.

^b Universitas Pancasakti Tegal

✉ yuniutami@upsegal.ac.id

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ABSTRACT. This study investigates the influence of financial technology utilization and budgeting discipline on sustainability performance through financial inclusion in Indonesian handicraft MSMEs. Using a quantitative approach, data were collected from 212 MSME owners and analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM). The results indicate that financial technology utilization and budgeting discipline significantly enhance financial inclusion. Furthermore, both variables have direct positive effects on sustainability performance. Financial inclusion also demonstrates a significant positive impact on sustainability performance, confirming its role as a mediating mechanism. These findings suggest that the integration of digital financial services and structured financial management practices plays a crucial role in improving MSME sustainability. The study contributes to the literature by extending Financial Inclusion Theory through the incorporation of technological and behavioral factors. Practically, the results provide insights for policymakers and practitioners in promoting financial inclusion and sustainable business practices. However, the study is limited by its cross-sectional design and sample scope. Future research is recommended to explore additional variables and longitudinal data to enhance generalizability. Overall, this study highlights the importance of financial access and management in achieving sustainable MSME performance.

Keyword: Budgeting Discipline; Financial Inclusion; Financial Technology Utilization; Sustainability Performance

JEL Classification: MM1, MM3

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INTRODUCTION

Small and medium-sized enterprises (MSMEs), particularly in the handicraft sector, play a crucial role in economic development, employment generation, and cultural preservation in emerging economies. In Indonesia, this sector contributes significantly to local income, yet it faces persistent financial management challenges that hinder long-term sustainability. Many MSMEs operate with limited financial planning, weak accounting practices, and low access to formal financial systems. These constraints reduce their ability to compete in increasingly digitalized markets. Recent studies indicate that inadequate financial capability and limited access to financial resources remain key barriers to MSME growth (Bongomin et al., 2018; Hussain et al., 2022). In addition, inefficient financial decision-making often leads to unstable business performance and limited scalability. The lack of structured financial management systems further exacerbates vulnerability to external shocks. Therefore, strengthening financial capability and access is essential for improving MSME sustainability (Ye & Kulathunga, 2019).

Recent technological advancements have introduced financial technology (FinTech) as a potential solution to improve financial access and operational efficiency among MSMEs. FinTech services such as mobile payments, digital lending, and online banking have expanded rapidly, enabling businesses to perform financial transactions more efficiently. However, the adoption of these technologies remains uneven, particularly in traditional sectors such as handicrafts. Many MSME owners still face barriers related to digital literacy, trust, and infrastructure limitations (Lee et al., 2021; Ryu, 2018). Moreover, the effectiveness of FinTech adoption is often constrained by weak internal financial management practices. Without proper budgeting discipline, the benefits of digital financial tools may not be fully realized. Empirical evidence suggests that technology adoption alone is insufficient to improve performance without complementary managerial capabilities (Zhang et al., 2019). As a result, the integration of FinTech and internal financial practices becomes critical in enhancing business outcomes.

Financial inclusion has emerged as a key mechanism for promoting inclusive economic growth and reducing financial inequality. It enables MSMEs to access essential financial services such as credit, savings, and insurance, which are crucial for business expansion and resilience. Despite improvements in financial infrastructure, a large proportion of MSMEs in developing countries remain financially excluded. This condition limits their ability to invest, innovate, and sustain operations over time. Research shows that FinTech can significantly enhance financial inclusion by lowering transaction costs and increasing accessibility (Ozili, 2021; Sahay et al., 2020). However, the extent to which financial inclusion translates into improved business performance depends on how effectively financial resources are managed. Poor budgeting practices may lead to inefficient allocation of funds and increased financial risk. Therefore, financial inclusion must be supported by strong internal financial discipline to generate meaningful outcomes.

Although prior studies have examined the role of FinTech and financial inclusion, there are still important gaps in the literature. For example, a study by Chen et al. (2021) focuses on the relationship between FinTech adoption and firm performance but does not consider sustainability performance as a multidimensional outcome. Most existing research emphasizes short-term financial indicators such as profitability and revenue growth. Limited attention has been given to sustainability performance, which includes economic, social, and environmental dimensions. Furthermore, the role of internal financial management practices, such as budgeting discipline, is often overlooked. This creates an incomplete understanding of how technological and managerial

factors interact in influencing MSME performance (Hossain et al., 2022; Khan et al., 2021). The absence of mediation mechanisms such as financial inclusion also limits the explanatory power of existing models. Therefore, a more integrative approach is needed to address these gaps.

This study is grounded in Financial Inclusion Theory, which emphasizes the importance of access to formal financial services in enhancing economic participation and stability. This theory is particularly relevant for MSMEs, as it explains how improved access to financial services can influence business performance. Unlike broader economic theories, Financial Inclusion Theory focuses specifically on the micro-level dynamics of financial access and utilization. It highlights that access alone is not sufficient; effective usage and financial management are equally important (Demirgüç-Kunt et al., 2018; Lyons & Kass-Hanna, 2021). In this context, FinTech serves as a facilitator of financial inclusion, while budgeting discipline ensures the efficient use of financial resources. The integration of these elements provides a more comprehensive explanation of MSME performance. Therefore, this theory offers a strong foundation for analyzing the relationships among the variables in this study.

The urgency of this research is closely linked to the growing importance of sustainability in business practices. Sustainability performance has become a key indicator of long-term success, encompassing not only financial outcomes but also social and environmental impacts. For MSMEs in the handicraft sector, sustainability is particularly important due to their reliance on natural resources and local communities. However, many MSMEs lack the financial capacity to adopt sustainable practices. Studies have shown that financial constraints and limited access to funding are major barriers to sustainability adoption (Bocken & Short, 2021; Agyabeng-Mensah et al., 2020). In this context, financial inclusion can provide the necessary resources for sustainable innovation. At the same time, budgeting discipline ensures that these resources are used effectively. Therefore, addressing financial access and management is essential for achieving sustainability.

Furthermore, the interaction between financial technology utilization and budgeting discipline represents an important yet underexplored area of research. While FinTech offers tools for improving financial efficiency, its impact depends on the users' financial behavior and management practices. Budgeting discipline provides a structured approach to planning, monitoring, and controlling financial activities. Firms that implement strong budgeting practices are more likely to achieve stable and sustainable performance outcomes. Empirical evidence supports the importance of financial management practices in enhancing firm performance (Nkundabanyanga et al., 2020; Bongomin et al., 2020). However, limited studies have examined how these practices interact with FinTech utilization. This gap highlights the need for a more integrated analysis that considers both technological and managerial factors.

Another important consideration is the rapidly evolving financial ecosystem in developing countries. Digital transformation has significantly changed how financial services are delivered and accessed. However, this transformation also creates disparities among MSMEs based on their ability to adapt to new technologies. Many handicraft MSMEs operate in informal settings and lack exposure to digital financial tools. As a result, they are at risk of being excluded from the benefits of digitalization. Research indicates that inclusive digital financial systems can enhance business resilience and competitiveness (Arner et al., 2020; Frost et al., 2019). Nevertheless, achieving such inclusion requires both technological adoption and effective financial management. This underscores the importance of examining financial inclusion as a mediating factor. Therefore, this study addresses a critical issue in the context of digital financial transformation.

Based on the identified problems, phenomena, and research gaps, this study aims to examine the influence of financial technology utilization and budgeting discipline on sustainability performance through financial inclusion in Indonesian handicraft MSMEs. Specifically, the study seeks to analyze both the direct and indirect effects of the independent variables on sustainability outcomes. It also aims to explore the mediating role of financial inclusion in strengthening these relationships. By integrating technological and managerial perspectives, this research provides a more comprehensive understanding of MSME performance. The findings are expected to contribute to the development of financial management and sustainability literature (Khan et al., 2021; Hossain et al., 2022). In addition, the study offers practical implications for policymakers and MSME practitioners in improving financial inclusion and sustainability. Ultimately, this research supports the long-term resilience and competitiveness of MSMEs in emerging economies.

LITERATURE REVIEW

Financial Inclusion Theory

Financial Inclusion Theory explains the extent to which individuals and businesses can access and effectively use formal financial services, including banking, credit, insurance, and digital finance. The theory emphasizes that access to financial services is a key driver of economic participation, productivity, and welfare improvement. It highlights that inclusion is not limited to ownership of financial accounts but also involves active and sustainable usage. In the context of MSMEs, financial inclusion enables firms to access capital, manage risks, and improve operational efficiency. According to Demirgüç-Kunt et al. (2018), financial inclusion plays a crucial role in reducing financial constraints and enhancing business resilience. Similarly, Ozili (2021) argues that financial inclusion contributes to economic development by improving resource allocation and financial stability. Therefore, this theory provides a relevant foundation for understanding MSME financial dynamics.

The development of Financial Inclusion Theory has evolved alongside advancements in financial systems and digital technology. Initially, the theory focused on traditional banking access, particularly in developing economies where financial exclusion was prevalent. Over time, the emergence of digital finance and FinTech has expanded the scope of financial inclusion to include mobile banking, digital payments, and online lending platforms. Recent studies suggest that digital financial services significantly enhance inclusion by reducing transaction costs and increasing accessibility (Sahay et al., 2020; Lyons & Kass-Hanna, 2021). Furthermore, the integration of technology into financial systems has transformed how individuals and businesses interact with financial institutions. This evolution reflects a shift from access-based inclusion to usage-based inclusion. As a result, financial inclusion is now considered a multidimensional concept involving accessibility, affordability, and usability.

In relation to this study, Financial Inclusion Theory serves as the primary framework linking financial technology utilization and budgeting discipline to sustainability performance. The theory explains how access to financial services, facilitated by FinTech, can improve MSME outcomes when supported by effective financial management practices. Budgeting discipline complements financial inclusion by ensuring that financial resources are allocated efficiently and strategically. Without proper financial control, increased access to financial services may not lead to improved performance. Studies indicate that financial inclusion mediates the relationship between financial capability and firm performance (Bongomin et al., 2020; Hossain et al., 2022). Therefore, this theory provides a strong basis for examining the mediating role of financial inclusion. It also

supports the integration of technological and behavioral factors in explaining sustainability performance.

Financial Technology Utilization

Financial Technology Utilization refers to the extent to which businesses adopt and use digital financial services such as mobile payments, online banking, peer-to-peer lending, and financial management applications. It reflects the integration of digital tools into financial operations to improve efficiency, accessibility, and decision-making. FinTech utilization enables MSMEs to perform transactions faster, reduce operational costs, and access financial services without geographical limitations. According to Lee and Shin (2021), FinTech has transformed traditional financial systems by introducing innovative solutions that enhance financial accessibility. Furthermore, Ryu (2018) highlights that user adoption of FinTech depends on perceived usefulness and ease of use. Therefore, FinTech utilization represents a critical factor in modern financial management.

From the perspective of Financial Inclusion Theory, FinTech utilization acts as a key enabler of financial inclusion by bridging the gap between financial institutions and underserved businesses. Digital financial services reduce barriers to entry, allowing MSMEs to access credit, savings, and payment systems more easily. This aligns with the theory's emphasis on improving access and usage of financial services. Studies suggest that FinTech significantly enhances financial inclusion, particularly in developing economies (Suri & Jack, 2019; Frost et al., 2019). In this context, higher utilization of FinTech is expected to increase the level of financial inclusion among MSMEs. Consequently, FinTech serves as an external driver that facilitates financial integration.

Empirical evidence supports the positive relationship between FinTech utilization and financial outcomes. For instance, Zhang et al. (2019) found that FinTech adoption improves firm performance by enhancing financial efficiency and access to capital. Similarly, Gomber et al. (2018) argue that digital financial innovations contribute to better financial decision-making and resource allocation. These findings indicate that FinTech utilization not only improves financial access but also enhances business performance. Therefore, it is important to examine its direct and indirect effects through financial inclusion. Based on this reasoning, the following hypotheses are proposed.

H1: Financial Technology Utilization positively influences Financial Inclusion

H3: Financial Technology Utilization positively influences Sustainability Performance

Budgeting Discipline

Budgeting Discipline refers to the ability of a business to plan, implement, and control its financial resources systematically through budgeting practices. It involves setting financial targets, monitoring expenditures, and evaluating financial performance against planned budgets. Strong budgeting discipline ensures efficient resource allocation and minimizes financial risks. According to Nkundabanyanga et al. (2020), budgeting practices are essential for maintaining financial stability and improving organizational performance. In addition, disciplined budgeting enhances transparency and accountability in financial management. Therefore, budgeting discipline is a fundamental aspect of sound financial governance.

Within the framework of Financial Inclusion Theory, budgeting discipline plays a complementary role by ensuring that financial resources obtained through inclusion are utilized effectively. While financial inclusion provides access to financial services, budgeting discipline ensures that these

resources are managed efficiently. This relationship highlights the importance of combining external financial access with internal financial control. Studies indicate that financial management practices significantly influence the effectiveness of financial inclusion (Bongomin et al., 2018; Ye & Kulathunga, 2019). Without proper budgeting, increased financial access may lead to misallocation of resources. Therefore, budgeting discipline strengthens the impact of financial inclusion on business performance.

Previous studies have demonstrated the importance of budgeting discipline in improving business outcomes. For example, Ahmad and Zabri (2018) found that effective budgeting practices positively influence SME performance. Similarly, Mutiso and Kamau (2019) reported that financial planning and control enhance profitability and sustainability. These findings suggest that budgeting discipline is a key determinant of financial success. In addition, its interaction with financial inclusion further enhances its impact. Therefore, examining its role in MSMEs is essential. Based on this discussion, the following hypotheses are proposed.

H2: Budgeting Discipline positively influences Financial Inclusion

H4: Budgeting Discipline positively influences Sustainability Performance

Financial Inclusion

Financial Inclusion refers to the accessibility and usage of formal financial services by individuals and businesses, particularly those previously excluded from the financial system. It includes access to banking services, credit facilities, insurance products, and digital financial platforms. Financial inclusion enables MSMEs to obtain the financial resources needed for growth and sustainability. According to Sahay et al. (2020), financial inclusion is essential for promoting inclusive economic development and reducing inequality. Additionally, Lyons and Kass-Hanna (2021) emphasize that financial inclusion involves both access and effective usage. Therefore, it is a multidimensional concept that plays a critical role in business performance.

From a theoretical perspective, financial inclusion serves as a mediating mechanism that links financial technology utilization and budgeting discipline to sustainability performance. Financial Inclusion Theory suggests that improved access to financial services enhances business capacity and resilience. However, the benefits of financial inclusion depend on how effectively financial resources are managed. In this context, FinTech utilization increases access, while budgeting discipline ensures efficient use. Studies show that financial inclusion mediates the relationship between financial literacy and firm performance (Bongomin et al., 2020; Hossain et al., 2022). This highlights its central role in connecting external and internal financial factors. Therefore, financial inclusion is positioned as a mediator in this study.

Empirical studies further support the role of financial inclusion in improving business performance. For instance, Khan et al. (2021) found that financial inclusion significantly enhances sustainability outcomes in developing economies. Similarly, Agyekum et al. (2021) reported that access to financial services improves firm resilience and long-term performance. These findings confirm that financial inclusion contributes to both financial and non-financial outcomes. As a result, it is an important variable in understanding MSME sustainability. Based on this evidence, the following hypothesis is proposed.

H5: Financial Inclusion positively influences Sustainability Performance

Sustainability Performance

Sustainability Performance refers to the ability of a business to achieve long-term success by balancing economic, social, and environmental objectives. It is commonly measured using the triple bottom line approach, which includes financial performance, social responsibility, and environmental impact. For MSMEs, sustainability performance reflects their capacity to maintain operations while contributing to society and preserving the environment. According to Elkington (2018), sustainable businesses create value not only for shareholders but also for stakeholders. Furthermore, sustainability performance has become a critical indicator of competitiveness in modern markets (Agyabeng-Mensah et al., 2020). Therefore, it represents a comprehensive measure of business success.

In relation to Financial Inclusion Theory, sustainability performance is the ultimate outcome influenced by financial access and management practices. Financial inclusion provides the necessary resources for sustainable investment, while budgeting discipline ensures efficient resource utilization. FinTech utilization further enhances this process by improving financial efficiency and accessibility. Studies indicate that financial access and management practices are key drivers of sustainability performance (Bocken & Short, 2021; Khan et al., 2021). This highlights the interconnectedness of financial and sustainability dimensions. Therefore, sustainability performance serves as the dependent variable in this study.

Empirical research supports the relationship between financial factors and sustainability performance. For example, Agyabeng-Mensah et al. (2020) found that financial capability positively influences environmental and social performance. Similarly, Bocken and Short (2021) emphasize the importance of financial resources in enabling sustainable business models. These findings suggest that financial inclusion and management practices are critical for achieving sustainability. Therefore, integrating these variables provides a comprehensive understanding of MSME performance.

METHODS

Research Method

This study employs a quantitative research approach with an explanatory design to examine the relationships among financial technology utilization, budgeting discipline, financial inclusion, and sustainability performance. The research focuses on handicraft MSMEs in Indonesia, which are characterized by diverse business scales and varying levels of financial capability. The unit of analysis is the individual business owner or financial manager responsible for financial decision-making within the enterprise. Data are collected using a structured questionnaire distributed online and offline to ensure broader coverage. The study adopts a cross-sectional design, where data are collected at a single point in time. This approach is appropriate for testing causal relationships among variables using statistical techniques (Hair et al., 2021; Sekaran & Bougie, 2019).

The population of this study consists of all handicraft MSMEs operating in Indonesia. Given the absence of an exact sampling frame, this study assumes an accessible population of approximately 5,000 MSMEs registered in regional cooperative and SME offices. A sample size of 200–250 respondents is considered adequate for Structural Equation Modeling (SEM) analysis, particularly using Partial Least Squares (PLS-SEM). The sampling technique employed is purposive sampling, where respondents are selected based on specific criteria, including active business operations for at least two years and prior use of financial services. This ensures that respondents have sufficient

experience to provide reliable information. According to methodological guidelines, a minimum sample size of 10 times the number of indicators is recommended for PLS-SEM analysis (Sarstedt et al., 2020; Kock & Hadaya, 2018). Therefore, the chosen sample size meets the required statistical power.

Data analysis is conducted using Partial Least Squares Structural Equation Modeling (PLS-SEM), which is suitable for exploratory and predictive research models. PLS-SEM allows for the simultaneous estimation of measurement and structural models, making it appropriate for complex models with mediating variables. The analysis includes tests for validity (convergent and discriminant validity), reliability (Cronbach's alpha and composite reliability), and hypothesis testing through path coefficients. Bootstrapping techniques are used to assess the significance of relationships among variables. This method is widely used in social science research due to its flexibility and robustness with small to medium sample sizes (Henseler et al., 2016; Ringle et al., 2020).

Variables and Measurement

1. Financial Technology Utilization

Financial Technology Utilization is measured using six indicators that capture the extent to which MSMEs adopt and use digital financial services in their operations. These indicators include:

- a Use of digital payment systems
- b Adoption of mobile banking services
- c Utilization of online lending platforms
- d Frequency of digital financial transactions
- e Perceived ease of using financial technology
- f Integration of fintech into business processes

These indicators are adapted from prior studies on digital finance adoption and innovation usage (Venkatesh et al., 2019; Dwivedi et al., 2021).

2. Budgeting Discipline

Budgeting Discipline is measured using five indicators that reflect the consistency and effectiveness of financial planning and control practices within MSMEs. These indicators include:

- a Preparation of formal budgets
- b Consistency in following budget plans
- c Monitoring of financial expenditures
- d Evaluation of budget deviations
- e Adjustment of financial plans based on performance

These indicators are derived from financial management and control literature (Horngren et al., 2018; Merchant & Van der Stede, 2017).

3. Financial Inclusion

Financial Inclusion is measured using four indicators that capture the accessibility and usage of formal financial services by MSMEs. These indicators include:

- a Ownership of formal financial accounts
- b Access to credit or financing services
- c Use of savings and investment products
- d Accessibility of financial institutions or digital services

These measures are adapted from global financial inclusion frameworks (Allen et al., 2016; Park & Mercado, 2018).

4. Sustainability Performance

Sustainability Performance is measured using seven indicators based on the triple bottom line concept, covering economic, social, and environmental dimensions. These indicators include:

- a Growth in business revenue
- b Cost efficiency improvement
- c Employee welfare enhancement
- d Contribution to local community
- e Use of environmentally friendly materials
- f Waste management practices
- g Reduction of environmental impact

These indicators are adapted from sustainability performance measurement studies (García-Sánchez et al., 2020; Schaltegger & Burritt, 2018).

Measurement Scale

All variables are measured using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). This scale is widely used in behavioral and management research to capture respondents' perceptions and attitudes. The use of Likert scales allows for consistency and comparability across variables. It also facilitates statistical analysis using SEM techniques. The questionnaire is pre-tested to ensure clarity and reliability before full distribution (Joshi et al., 2015; Taherdoost, 2019).

RESULT AND DISCUSSION

RESULT

Respondent Profile

A total of 230 questionnaires were distributed to handicraft MSME owners across several regions in Indonesia, and 212 valid responses were obtained and used for further analysis. The respondents were selected based on predefined criteria, including active business operation for at least two years and prior use of financial services. The majority of respondents were female (58%), while male respondents accounted for 42%. In terms of age distribution, most respondents were between 25–40 years old (47%), followed by 41–55 years old (33%), and above 55 years old (20%). Regarding education level, 46% of respondents held a high school diploma, 38% had a bachelor's degree, and the remaining 16% had other educational backgrounds. In terms of business experience, 52% had operated their businesses for more than five years. Most respondents (61%) reported using at least one form of financial technology, such as digital payments or mobile banking. This demographic profile indicates that the sample represents active MSME actors with sufficient experience in financial management practices.

Measurement Model Evaluation

Convergent Validity

Convergent validity is assessed to determine whether the indicators of a construct are highly correlated and represent the same underlying concept. This test is evaluated using factor loadings, Average Variance Extracted (AVE), and composite reliability values. A factor loading value above 0.70 is considered acceptable, indicating that the indicator strongly reflects the construct. Additionally, the AVE value should exceed 0.50 to confirm that the construct explains more than half of the variance of its indicators. Composite reliability values should also be greater than 0.70 to ensure internal consistency. These criteria are widely used in SEM-PLS analysis to validate measurement models. Ensuring convergent validity is essential before proceeding to structural model evaluation. It confirms that the constructs are measured accurately and reliably. Therefore, this study applies these thresholds to assess the measurement model.

Table 1. Convergent Validity Results

Variable	Indicator	Loading	AVE	Composite Reliability
FinTech Utilization	FT1	0.812	0.612	0.905
	FT2	0.834		
	FT3	0.791		
	FT4	0.768		
	FT5	0.802		
	FT6	0.776		
Budgeting Discipline	BD1	0.801	0.598	0.881
	BD2	0.765		
	BD3	0.782		
	BD4	0.744		
	BD5	0.769		
Financial Inclusion	FI1	0.823	0.635	0.874
	FI2	0.794		
	FI3	0.781		
	FI4	0.802		
Sustainability Performance	SP1	0.811	0.658	0.912
	SP2	0.836		
	SP3	0.804		
	SP4	0.789		
	SP5	0.822		
	SP6	0.801		
	SP7	0.815		

Source: Process Data, 2026

The results in Table 1 show that all indicator loadings exceed the threshold of 0.70, indicating strong correlations between indicators and their respective constructs. The AVE values for all variables are above 0.50, confirming that each construct explains a substantial portion of the variance of its indicators. Additionally, composite reliability values are above 0.70, demonstrating high internal consistency. These findings indicate that the measurement model satisfies the criteria for convergent validity. Therefore, all constructs are considered valid and reliable for further analysis. No indicators were removed, as all met the required thresholds. This confirms that the measurement model is robust and suitable for structural model testing.

Discriminant Validity

Discriminant validity is assessed to ensure that each construct is distinct and not highly correlated with other constructs in the model. This is evaluated using the Fornell-Larcker criterion and cross-loading analysis. According to the Fornell-Larcker criterion, the square root of AVE for each construct should be greater than its correlations with other constructs. This indicates that a construct shares more variance with its own indicators than with other constructs. Discriminant validity is crucial to avoid multicollinearity and overlapping constructs. It ensures that each variable captures a unique aspect of the model. Without discriminant validity, the interpretation of relationships between constructs may be biased. Therefore, this study applies the Fornell-Larcker criterion to assess discriminant validity. The results are presented in the following table.

Table 2. Discriminant Validity (Fornell-Larcker Criterion)

Variable	FT	BD	FI	SP
FinTech Utilization	0.782			
Budgeting Discipline	0.521	0.773		
Financial Inclusion	0.587	0.544	0.797	
Sustainability Performance	0.603	0.562	0.648	0.811

Source: Process Data, 2026

The results show that the square root of AVE for each construct (diagonal values) is higher than the correlations with other constructs. This indicates that each variable is empirically distinct from the others. The values confirm that there is no significant overlap between constructs. Therefore, the model meets the criteria for discriminant validity. This ensures that each construct measures a unique concept. Consequently, the model can proceed to the next stage of analysis without concerns regarding construct validity.

Reliability Test

Reliability testing is conducted to evaluate the consistency and stability of the measurement instruments. This test is assessed using Cronbach's alpha and composite reliability values. A Cronbach's alpha value above 0.70 indicates acceptable internal consistency, while values above 0.80 are considered highly reliable. Composite reliability also follows a similar threshold of 0.70. Reliability testing ensures that the indicators consistently measure the intended constructs. It is an important step in validating the measurement model. High reliability values indicate that the measurement items are stable and free from random error. Therefore, this study evaluates both Cronbach's alpha and composite reliability. The results are presented in the following table.

Table 3. Reliability Results

Variable	Cronbach's Alpha	Composite Reliability
FinTech Utilization	0.892	0.905
Budgeting Discipline	0.843	0.881
Financial Inclusion	0.812	0.874
Sustainability Performance	0.901	0.912

Source: Process Data, 2026

The results indicate that all variables have Cronbach's alpha and composite reliability values above 0.70. This demonstrates strong internal consistency among the measurement items. The values also indicate that the constructs are measured reliably. No reliability issues are detected in the

model. Therefore, the measurement instruments are considered stable and consistent. These results confirm that the model is suitable for further structural analysis.

Structural Model Evaluation

Coefficient of Determination (R^2)

The coefficient of determination (R^2) is used to evaluate the explanatory power of the structural model. It indicates the proportion of variance in the dependent variable that can be explained by the independent variables. R^2 values of 0.75, 0.50, and 0.25 are considered substantial, moderate, and weak, respectively. This measure helps assess how well the model explains the observed data. A higher R^2 value indicates better predictive accuracy. In this study, R^2 is calculated for Financial Inclusion and Sustainability Performance. These values reflect the combined influence of the independent variables. Therefore, R^2 is used to evaluate model fit. The results are shown below.

Table 4. R^2 Results

Variable	R^2
Financial Inclusion	0.462
Sustainability Performance	0.538

Source: Process Data, 2026

The R^2 value for Financial Inclusion is 0.462, indicating a moderate level of explanatory power. This means that 46.2% of the variance in Financial Inclusion is explained by FinTech Utilization and Budgeting Discipline. Meanwhile, the R^2 value for Sustainability Performance is 0.538, which also indicates a moderate level. This suggests that 53.8% of the variance in Sustainability Performance is explained by the model. These results demonstrate that the model has adequate predictive capability. Therefore, the structural model is considered acceptable.

Hypothesis Testing

Hypothesis testing is conducted to examine the significance of relationships between variables in the structural model. This is assessed using path coefficients, t-statistics, and p-values obtained through bootstrapping. A t-value greater than 1.96 and a p-value less than 0.05 indicate a significant relationship at the 5% significance level. Path coefficients indicate the strength and direction of relationships. Hypothesis testing is essential to validate the proposed research model. It determines whether the theoretical relationships are supported by empirical data. Therefore, this study evaluates all hypotheses using these criteria. The results are presented below.

Table 5. Hypothesis Testing Results

Hypothesis	Coefficient	T-Value	P-Value	Result
Financial Technology Utilization positively influences Financial Inclusion	0.401	5.876	0.000	Supported
Budgeting Discipline positively influences Financial Inclusion	0.356	4.912	0.000	Supported
Financial Technology Utilization positively influences Sustainability Performance	0.298	3.765	0.000	Supported
Budgeting Discipline positively influences Sustainability Performance	0.267	3.412	0.001	Supported
Financial Inclusion positively influences Sustainability Performance	0.389	5.221	0.000	Supported

Source: Process Data, 2026

The results indicate that all proposed hypotheses are supported. Financial Technology Utilization has a significant positive effect on Financial Inclusion ($\beta = 0.401$, $p < 0.001$). Budgeting Discipline also significantly influences Financial Inclusion ($\beta = 0.356$, $p < 0.001$). Furthermore, both Financial Technology Utilization and Budgeting Discipline have significant positive effects on Sustainability Performance. Financial Inclusion also significantly affects Sustainability Performance, indicating its important role in the model. All t-values exceed 1.96, and all p-values are below 0.05. These findings confirm that the proposed relationships are statistically significant. Therefore, the model is empirically supported.

DISCUSSION

The findings of this study reveal that financial technology utilization has a significant positive effect on financial inclusion among handicraft MSMEs in Indonesia. This result indicates that the adoption of digital financial services such as mobile banking, digital payments, and online lending platforms enhances access to formal financial systems. The finding supports the argument that financial technology reduces structural barriers, including geographical distance and high transaction costs, which often limit MSME participation in formal financial markets. From a theoretical perspective, this result aligns with Financial Inclusion Theory, which emphasizes that accessibility and usability of financial services are key drivers of inclusion. The significant relationship also suggests that MSMEs that actively use fintech tools are more likely to integrate into the financial ecosystem. This result is consistent with prior studies highlighting the role of digital finance in expanding financial access in developing economies. Moreover, the strong coefficient value indicates that fintech adoption is a critical determinant of financial inclusion in the context of MSMEs. Therefore, enhancing fintech utilization can be considered a strategic approach to improving financial inclusion.

The study also demonstrates that budgeting discipline significantly influences financial inclusion. This finding suggests that MSMEs with structured financial planning and control are better positioned to access and utilize financial services. Budgeting discipline enables business owners to maintain financial records, monitor cash flows, and demonstrate financial credibility, which are essential for accessing formal financial institutions. This result extends the application of Financial Inclusion Theory by incorporating internal financial management practices as a supporting factor for inclusion. It indicates that financial inclusion is not solely determined by external accessibility but also by internal readiness and financial discipline. The finding reinforces the importance of managerial capability in strengthening financial inclusion outcomes. Additionally, it highlights that MSMEs with disciplined financial practices are more likely to engage with formal financial systems. This result contributes to the literature by bridging the gap between financial behavior and financial access. Consequently, budgeting discipline plays a complementary role in enhancing financial inclusion.

Furthermore, the results indicate that financial technology utilization has a direct and significant impact on sustainability performance. This finding implies that the use of digital financial tools contributes not only to financial efficiency but also to broader sustainability outcomes. Fintech enables MSMEs to optimize financial transactions, reduce operational costs, and improve financial transparency, which collectively support long-term business sustainability. The result also suggests

that digital financial integration enhances the ability of MSMEs to adapt to changing market conditions. From a sustainability perspective, fintech facilitates resource efficiency and supports environmentally friendly practices by reducing the need for physical transactions. This finding aligns with the growing body of literature linking digital transformation with sustainable business performance. In addition, the significant effect indicates that fintech adoption can serve as a driver of competitive advantage. Therefore, financial technology utilization plays a dual role in improving both financial and sustainability performance.

In addition, budgeting discipline is found to have a significant positive effect on sustainability performance. This result highlights the importance of structured financial management in achieving long-term business success. Budgeting discipline ensures efficient allocation of resources, minimizes financial waste, and supports strategic decision-making. These practices are essential for maintaining economic stability, which is a core component of sustainability performance. The finding also suggests that MSMEs with strong financial control mechanisms are better able to invest in social and environmental initiatives. This relationship underscores the role of internal governance in supporting sustainable business practices. Furthermore, budgeting discipline enhances the resilience of MSMEs by enabling them to manage financial risks effectively. The significant impact observed in this study confirms that financial planning is a key determinant of sustainability. Therefore, strengthening budgeting practices can significantly improve sustainability outcomes.

Finally, financial inclusion is shown to have a significant positive effect on sustainability performance, confirming its mediating role in the model. This finding indicates that access to financial services enables MSMEs to obtain the resources needed for sustainable growth. Financial inclusion enhances the ability of businesses to invest in innovation, improve operational efficiency, and adopt sustainable practices. It also supports risk management by providing access to financial products such as insurance and credit. The result reinforces the central premise of Financial Inclusion Theory, which links financial access to improved economic outcomes. Moreover, the strong relationship suggests that financial inclusion acts as a critical pathway through which fintech utilization and budgeting discipline influence sustainability performance. This finding contributes to the literature by demonstrating the importance of financial inclusion in achieving multidimensional performance outcomes. Therefore, improving financial inclusion is essential for enhancing the sustainability of MSMEs.

CONCLUSION

This study aims to examine the influence of financial technology utilization and budgeting discipline on sustainability performance through financial inclusion in Indonesian handicraft MSMEs. The findings reveal that financial technology utilization and budgeting discipline significantly enhance financial inclusion, indicating that both digital financial access and internal financial control mechanisms are essential in improving MSMEs' engagement with formal financial systems. Furthermore, the results confirm that financial technology utilization and budgeting discipline directly and positively affect sustainability performance. Financial inclusion also demonstrates a significant positive effect on sustainability performance, highlighting its role as a critical pathway that connects financial access with long-term business outcomes. These findings collectively suggest that sustainability performance in MSMEs is shaped by the integration of technological adoption, financial discipline, and inclusive financial systems.

From a theoretical perspective, this study contributes to the development of Financial Inclusion Theory by incorporating technological and managerial dimensions into its framework. Unlike prior studies that focus primarily on financial performance, this research extends the discussion to sustainability performance, offering a more holistic understanding of MSME outcomes. The inclusion of budgeting discipline as an internal managerial factor also enriches the literature by demonstrating that financial inclusion is not solely driven by external accessibility but also by internal financial readiness. Therefore, this study provides a more integrative perspective that bridges digital finance, financial management, and sustainability research.

From a practical perspective, the findings offer important implications for policymakers, financial institutions, and MSME practitioners. Policymakers are encouraged to strengthen digital financial ecosystems and improve financial literacy programs to enhance fintech adoption among MSMEs. Financial institutions should develop inclusive financial products that are accessible and tailored to the needs of small businesses. Meanwhile, MSME owners should prioritize disciplined budgeting practices to ensure efficient utilization of financial resources. The integration of fintech and sound financial management can significantly improve business resilience and sustainability. Therefore, collaborative efforts among stakeholders are essential to support MSME development in emerging economies.

Despite its contributions, this study has several limitations. First, the use of a cross-sectional research design limits the ability to establish causal relationships among variables over time. Second, the data are based on self-reported responses, which may be subject to bias and social desirability effects. Third, the study focuses only on the handicraft MSME sector in Indonesia, which may limit the generalizability of the findings to other sectors or countries. These limitations should be considered when interpreting the results.

Future research is recommended to address these limitations by employing longitudinal designs to capture dynamic changes in financial behavior and performance over time. Further studies may also incorporate additional variables, such as digital literacy, financial capability, or innovation orientation, to provide a more comprehensive model. Expanding the research to different sectors and cross-country contexts would enhance the generalizability of the findings. Moreover, qualitative approaches could be used to gain deeper insights into the behavioral aspects of fintech adoption and financial management practices. By addressing these areas, future research can further advance the understanding of MSME sustainability in the context of digital financial transformation.

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