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Research Article

The Effect of Financial Inclusion and Fintech Adoption on MSME Sustainability Mediated by Financial Literacy and Self-Efficacy

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ABSTRACT

Introduction: This study aims to determine the results of the mediation of financial literacy and self-efficacy. It seeks to empirically evaluate the effect of financial inclusion and fintech adoption on financial sustainability in micro enterprises in Agam Regency.

Objectives: This study's population consists of micro-businesses registered in the e-UMKM database of Agam Regency, specifically those in the processed food industry, embroidery and embroidery industry, and the agriculture and fisheries sectors.

Methods: This study employed descriptive statistics for data collection and inferential statistics with SEM-PLS for variable influence analysis. According to the findings, financial literacy is a full mediator of the association between financial inclusion and sustainability. A partial mediator of the relationship between sustainability is financial self-efficacy.

Results and Conclusions: The study found that MSMEs in Agam Regency were better able to weather financial storms after adopting fintech. It also found that financial self-efficacy and literacy played a mediating role in this relationship.

Keywords: Financial inclusion, fintech adoption, financial literacy, financial self-efficacy, financial sustainability of MSMEs.

INTRODUCTION

Small and medium enterprises (SMEs) are crucial for fostering economic development and generating employment (Manzoor et al., 2021). Despite their abundant resources and significance in the global economy, SMEs encounter various obstacles to sustained development (V., 2020). Technological improvements and heightened competition necessitate that Micro, Small, and Medium Enterprises (MSMEs) formulate astute market tactics to surpass competitors (Permata et al., 2023). Entrepreneurial drive also drives the creation of innovative MSMEs, guided by education, motivation, and opportunity assessment using imagination and information (Wardoyo et al., 2023). A healthy SME landscape is essential for a robust industrial sector, as its prosperity underpins sustainable economic growth (Runtuk et al., 2023). Emerging markets offer burgeoning opportunities for SMEs to thrive domestically and abroad, fueled by accelerated development and profitability (Yeh et al., 2020). However, maintaining solvency is challenging for many SMEs given their central role (ADB, 2023). Literature suggests that MSMEs face more obstacles than large firms, including financing, regulations, competition, and instability barriers that vary by region (Endris & Kassegn, 2022). Chief among their problems is low turnover, which constrains profits and returns due to limited market access that limits consumer outreach (Nordhagen et al., 2021). This condition is often caused by limited market access, which makes it difficult for MSMEs to reach a broader range of consumers.

Many small businesses still rely on traditional goods without making meaningful innovations, leaving them vulnerable to fluctuations in local demand patterns (Chatra et al., 2023). Consumer preferences are evolving increasingly rapidly and unpredictably, creating difficulties for small businesses that lack the flexibility to adapt their offerings accordingly. Unable to adapt to these changing tides, numerous small companies struggle to maintain financial stability, potentially jeopardizing long-term viability (Prasanna et al., 2019). In addition, unstable cash flow is a significant hurdle for small businesses. Many struggle to manage cash flow due to fluctuating sales and increasing receivables, often due to delayed customer payments (Sogomi et al., 2024). This inability to balance income and expenses puts an immense strain on small business finances, especially as operating costs squeeze profit margins (Christen et al., 2022). Eton et al. (2021) find that financial inclusion affects the performance and sustainability of small businesses based on their empirical research. Advancements in financial technology have been a driving force in broadening access to formal financial services. Money services that employ cutting-edge tech to address critical unmet requirements in the future are known as fintech (Hamdan, 2024).

According to Eca et al. (2022), among most significant advancements in the financial industry, fintech has been particularly useful for MSME. Digital payments, investments, and financial services are all made more accessible, quicker, and cheaper by fintech. By facilitating better economic management, increasing access to financing, and expanding markets through digitisation, fintech can significantly aid the financial sustainability of MSMEs (Khando et al., 2022). Fintech is a new type of technology-based financial service that provides services through the internet, such as installment payments, insurance premium payments, household bills, remittances, residual balances, financing, and investments (Iwashita, 2022).

Financial sustainability is a crucial component of MSME sustainability, influencing cash flow management, access to financing, and long-term financial viability (Hererra et al., 2023). While financial literacy does influence self-efficacy, it is not directly related to the performance of SMEs when this relationship is mediated by financial inclusion (Rahadjeng et al., 2023). Fintech allows micro, small, and medium-sized enterprises (MSMEs) to streamline operations by eliminating the need for cash and increasing access to unsecured loans through peer-to-peer lending platforms, digital financial applications, and transaction management tools. Higher levels of financial literacy significantly increase people's knowledge of and use of fintech goods (Morgan & Trinh, 2019). Widyastuti & Hermanto (2022) found that financial literacy significantly affects the adoption of financial technology, even though the effect is limited. According to Hasan et al. (2023), understanding the consequences of various fintech services can greatly influence access to these services.

The novelty aspect of this study is the new information it provides on the impact of fintech services on the long-term viability of MSMEs. Previous research has shown that financial literacy affects those two variables: the accessibility of financial technology and the familiarity with and utilisation of fintech products (Hasan et al., 2023; Morgan & Trinh, 2019). However, this study fills a gap in the current literature by exploring how MSMEs can improve their cash flow management, access to financing, and long-term financial stability using fintech services. These services include digital financial applications, cashless payment systems, and peer-to-peer lending platforms. This study's primary objective is to assist policymakers and MSMEs in Agam Regency, West Sumatra Province, Indonesia, in making the most of fintech's benefits to guarantee the financial sustainability of MSMEs.

This research is critically needed since SMEs currently lack the expertise, resources, or awareness to guarantee that they will profit from sustainability programs. The long-term viability of MSME actors' companies is directly influenced by their level of financial literacy and confidence in their abilities to manage their finances. Business accessibility guidelines should be created by individuals who are financially literate, self-assured, and have a firm knowledge of the fundamentals of fintech and financial inclusion. Therefore, this research aims to assess the effects of financial inclusion, fintech adoption, financial literacy, and financial self-efficacy on the financial sustainability MSME in the processed food industry, specifically those dealing with agricultural and fishery goods.

METHODS

This quantitative research employs experimental and survey methods to collect data on preset instruments and provide statistical data. Therefore, research can be called hypothesis testing. The explanatory research aims to scientifically prove and explain how financial inclusion, literacy, and self-efficacy affect financial performance and MSMEs' sustainability. The theoretical underpinning and gap research relationship between prior research variables refer to some research results. According to Batrancea (2021), the company's financial sustainability is based on financial performance, as well as a stable financial situation (financial balance), which is the goal of all companies, regardless of their size and field of activity. Financial literacy can be interpreted as knowledge that is the basis for financial inclusion, so it is closely related to economic concepts to support decision making, be it investment, lending, or saving (Khan et al., 2022a). Financial literacy is multidimensional, meaning different things to different people.

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Financial literacy combines awareness, knowledge, skills, attitudes, and behaviors necessary to make informed financial decisions and ultimately achieve individual well-being (Kumar et al., 2023). Fintech adoption refers to the acceptance and usage of financial technology services and products by individuals, businesses, or institutions to enhance financial transactions and management(Singh et al., 2020). Financial self-efficacy refers to an individual's confidence in their ability to effectively manage and make decisions about their finances(Lone & Bhat, 2024). Building financial self-efficacy often involves education, practical experience, and support systems that enhance a person's capability to navigate financial matters independently(Palmer et al., 2021). The following research design:

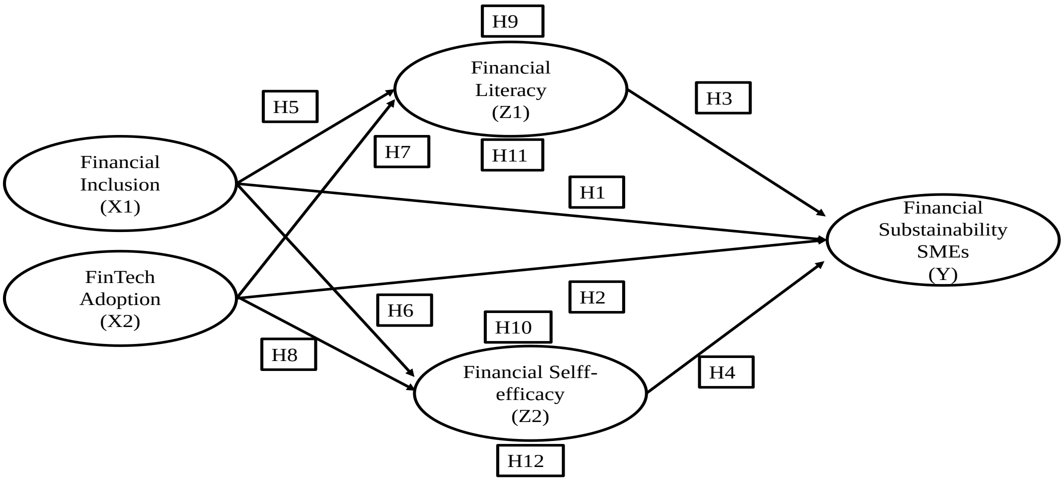

Figure 1. Conceptual Framework

Microbusinesses in the processed food, agricultural, and fishing product processing industries, as well as the embroidery industry, which are all part of the e-UMKM database in Agam Regency, constitute the population of this research. The sample size was determined using the Raosoft sample size calculator, and the sampling technique used was multistage random sampling. Within the e-UMKM database in 2023, 284 MSME actors were selected from 1072 MSME actors. To examine the effects of the variables under consideration, this study used both descriptive and inferential statistics, SEM-PLS. SmartPLS 3 is utilised in SEM-PLS analysis.

RESULTS

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1. Results of Descriptive Analysis of Respondent Demographics

Table 1. Demographics of research respondents

Individual Description		Total Respondent	%
Gender	Man	59	20.8
	Woman	225	79.2
		284	100
Age	<30 years old	23	8.1
	31 - 35 years old	88	31
	35 - 40 years old	101	35.6
	>40 years old	72	24.4
		284	100

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Individual Description		Total Respondent	%
Education	Elementary School	0	
	Junior High School	10	3.5
	Senior High School	178	62.7
	Diploma/Bachelor/Post Bachelor	96	33.8
		284	100
Duration of Business	3 - 5 years	73	25.7
	6 - 10 years	137	48.2
	>11 years	74	26.1
		284	100

Based on Table 1 above, it can be seen that the respondent's characteristics based on gender show that MSME actors in Agam Regency engaged in the industrial sector are dominated by women with ages above 30 years. Have a high school education and a Bachelor's degree, and have been trying for more than 6 years.

2. Results of Descriptive Analysis

Table 2. Results of descriptive analysis

Indicators	No	Means	Standard Deviation
Access	X1.1.1	4.39	0.756
	X1.1.2	4.43	0.682
	X1.1.3	4.40	0.539
Average Descriptive Access Indicator		4.41	0.659
Quality	X1.2.1	4.19	0.609
	X1.2.2	4.24	0.632
	X1.2.3	4.43	0.666
Average Descriptive Quality Indicator		4.29	0.636
Usability	X1.3.1	4.40	0.540
	X1.3.2	4.39	0.747
Average Descriptive Quality Indicator		4.40	0.644
Welfare	**X1.4.1**	4.21	0.610
	X1.4.2	4.22	0.659
Average Descriptive Quality Indicator		4.22	0.635
Average Description of Financial Inclusion Variables (X1)		4.33	0.643

Based on the survey results in Table 2, respondents generally feel that financial services provided by banks are very supportive of MSME activities, both in terms of accessibility, product quality, beneficial use, and welfare related to costs which have an average of 4.33, which can be categorized as very good. This implies that bank's financial services

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help increase working capital, provide access to advanced technology, and make bill payments easier. They also feel that the bank's savings and loan products are appropriate and safe, and the loan terms are favorable. In addition, the costs associated with banking services are considered affordable by MSME players in Agam Regency.

3. Descriptive of Financial Literacy Variables

Table 3. Descriptive financial literacy variables

Indicators	No	Means	Standard Deviation
Financial Management	Z1.1.1	4.35	0.528
	Z1.1.2	4.41	0.541
	Z1.1.3	4.43	0.544
	Z1.1.4	4.49	0.548
Average Descriptive Statistics of Financial Management Indicators		4.42	0.540
Working Capital	Z1.2.1	4.46	0.546
	Z1.2.2	4.42	0.638
	Z1.2.3	4.25	0.542
	Z1.2.4	4.43	0.587
	Z1.2.5	4.38	0.579
Average Descriptive Working Capital Indicator		4.39	0.578
Financial Reporting	Z1.3.1	4.41	0.541
	Z1.3.2	4.39	0.581
	Z1.3.3	4.38	0.664
	Z1.3.4	4.41	0.648
Descriptive Mean of Financial Reporting Indicators		4.40	0.609
Average Descriptive Variable Financial Literacy (Z)		4.40	0.576

Based on Table 3, overall, the descriptive average of financial literacy variables is 4.40 with a standard deviation of 0.576. That value indicates that respondents' level of financial literacy is generally at a pretty good level with moderate variation in answers. This means that in general, respondents feel quite capable in managing aspects of their financial management, have good competence in aspects of working capital, and have an understanding and skills in financial reporting.

4. Descriptive Variable: Financial Sustainability

Table 4. Descriptive Variable: Financial Sustainability

Indicators	No	Means	Standard Deviation
Liquidity	Y.1.1	4.56	0.544
	Y.1.2	4.36	0.672
	Y.1.3	4.48	0.547
	Y.1.4	4.37	0.533
	Y.1.5	4.56	0.545
	Y.1.6	4.53	0.547
Average Descriptive Liquidity Indicator		4.48	0.56
Solvability	Y.2.1	4.48	0.554
	Y.2.2	4.37	0.668
	Y.2.3	4.38	0.548

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Indicators	No	Means	Standard Deviation
	Y.2.4	4.55	0.546
	Y.2.5	4.52	0.547
Average Descriptive Solvency Indicator		4.46	0.57
Profitability	Y.3.1	4.55	0.546
	Y.3.2	4.54	0.547
	Y.3.3	4.40	0.657
	Y.3.4	4.54	0.546
	Y.3.5	4.39	0.538
	Y.3.6	4.55	0.546
	Y.3.7	4.54	0.547
Descriptive Average of Profitability Indicators		4.50	0.56
Average Descriptive Variable Financial Sustainability (Y)		4.48	0.57

Based on Table 4,, the overall average for all indicators (Liquidity, Solvency, and Profitability) is 4.48, with a Standard Deviation of 0.57. This indicates that the company has a very good level of financial sustainability overall. This means that the company feels quite stable in terms of its ability to pay obligations, manage debt, and generate profits.

5. Structural Equation Model Partial Least Squares Analysis Outer Model Measurement Model Analysis

Outer model testing checks primary data validity. Validity is test accuracy (Karakaya-Ozyer, 2018). and dependability needs. Convergent and Discriminant Validity results are used for validity assessment. The latent variable loading factor with indicators determines convergent validity. Expect outer loading > 0.5.

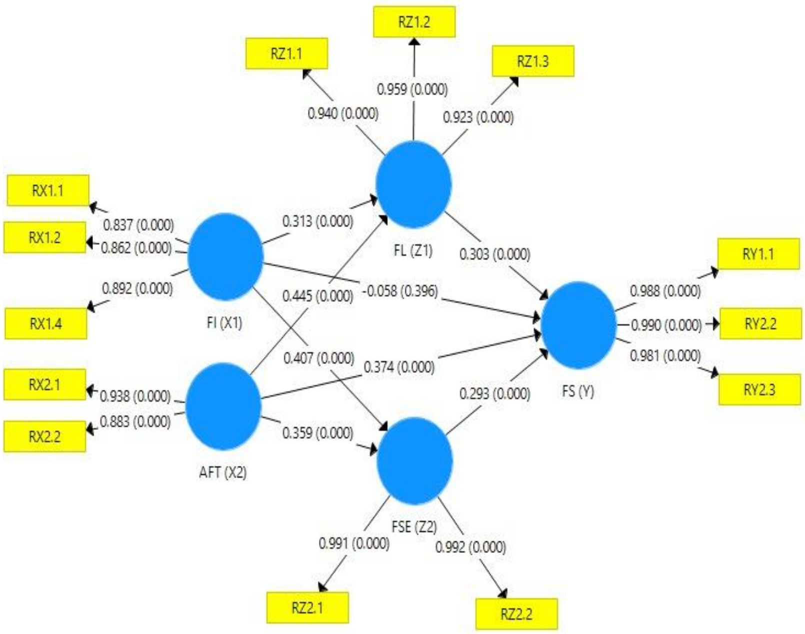

Figure 2. Outer Loading

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Table 5. Outer Loading – Model 1

Indicator	FI (X)	FL (Z)	FS (Y)
X.1	0.820		
X.2	0.855		
X.3	**0.276**		
X.4	0.888		
Y.1			0.988
Y.2			0.990
Y.3			0.981
Z.1		0.939	
Z.2		0.960	
Z.3		0.924	

The second model is evaluated after indicators with loading factors less than 0.5 are eliminated. The second model assessment test results for outside loading are shown in Table 6.

Table 6. Outer Loading - Model 2

Indicator	FI (X)	FL (Z)	FS (Y)
X.1	0.842		
X.2	0.857		
X.4	0.889		
Y.1			0.988
Y.2			0.990
Y.3			0.981
Z.1		0.939	
Z.2		0.959	
Z.3		0.924	

Based on the outer loading table of the second model evaluation above, convergent validity has been fulfilled in this study. The second model is evaluated after indicators with loading factors less than 0.5 are eliminated. The second model assessment test results for outside loading are shown in Table 7.

Table 7. Discriminant Validity (Fornell-Larcker Criterion)

Variables	FI (X)	FL (Z)	FS (Y)
FI (X)	0.863		
FL (Z)	0.701	0.941	
FS (Y)	0.692	0.794	0.986

Average Variant Extracted (AVE) values provide discriminant validity test results. Good measurement models have latent construct values with AVE values > 0.5. Table 8 shows the AVE value:

Table 8. Average Variant Extracted (AVE)

Variables	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
FI (X)	0.833	0.861	0.897	**0.745**
FL (Z)	0.935	0.936	0.959	**0.886**
FS (Y)	0.986	0.987	0.991	**0.973**

The HTMT value also shows the discriminant validity test results. Good data validity is achieved when the HTMT value of all variables is < 0.90, indicating construct validity. Table 9 shows the HTMT value:

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Table 9. Heterotrait-Monotrait-Ratio (HTMT)

Variable	FI (X)	FL (Z)	FS (Y)
FI (X)			
FL (Z)	**0.768**		
FS (Y)	0.729	0.827	

If the indicators and variables are legitimate, reliability testing follows. High reliability is indicated by a composite reliability rating > 0.8 and Cronbach's alpha > 0.7 for all latent variables. Table 10 shows reliability test results:

Table 10. Composite Reliability and Cronbach's Alpha

Variables	Cronbach's Alpha	Composite Reliability
FI (X)	0.833	0.897
FL (Z)	0.935	0.959
FS (Y)	0.986	0.991

Table 10 shows that the three research variables have a composite reliability value of> 0.7 and a Cronbach's alpha value of> 0.7, indicating strong reliability (Sarstedt et al., 2011) and meeting the reliability test.

After analysing the measurement model, test the inner model's goodness of fit. Consider the R-Square, Effect Size (F^2), and Stone-Geisser (Q^2) values to evaluate an inner model. Research uses R^2 testing to assess the extent to which external variables explain endogenous variable variability. When R^2 reaches 1, prediction accuracy is considered flawless. Otherwise, it applies.

Table 11. R^2 Test

Variables	R Square	R Square Adjusted
FL (Z)	**0.492**	0.490
FS (Y)	**0.666**	0.664

Table 11 shows that the endogenous variable, financial literacy (Z1), has an R-squared value of 0.537. This shows financial inclusion and fintech adoption predict 53.7% of financial literacy variation, while other variables explain 42.3%. Financial inclusion and fintech adoption predict 54.8% of financial self-efficacy (Z2), leaving 42.3% to exogenous factors. Financial sustainability (Y) has an R-square of 71.2%, meaning that financial inclusion, fintech adoption, financial literacy, and financial self-efficacy explain over three-quarters of its variation, with the remaining 30.8% coming from unspecified external sources.

In addition, an effect size analysis (F2) was performed as indicated to measure how much an exogenous variable with a substantial construct changes an endogenous variable. According to their concept, F2 values over 0.02 indicate a modest effect, above 0.15 a moderate effect, and above 0.35 a substantial structural influence. Table 12 shows the effect size (F2) test findings from this investigation.

Tabel 12. F2 Test

Variables	FI (X)	FL (Z)	FS (Y)
FI (X)		0.969	0.107
FL (Z)			**0.564**
FS (Y)			

Table 12 displays the exogenous contribution test results with the f^2 value. With a score of 0.105, fintech adoption strongly influences financial literacy. Financial inclusion, with 0.090, has a substantial structural influence on financial self-efficacy. Fintech adoption has a moderate structural influence on financial sustainability, with a score of 0.109.

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The goodness of fit model can be quantified using R-Square, effect size analysis (f^2), and Q-Square predictive relevance (Q^2). The Stone-Geisser study evaluates a model's prediction abilities by analysing its Q^2 value. In this Stone-Geisser test, the ability's relevance value must be greater than zero.

Table 13. Stone-Geisser (Q^2) Test

Variables	SSO	SSE	Q^2 (=1-SSE/SSO)
FI (X)	852.000	852.000	
FL (Z)	852.000	483.008	0.433
FS (Y)	852.000	303.190	0.644

Table 13 indicates that all variables have a Q^2 value greater than 0. Thus, the study model is suitable.

6. Analysis Test Results

This study tests hypotheses using significance testing of direct and indirect effects to address problems and objectives. The significance of the t-value of 124 statistics and path coefficient analysis construct can help determine if a hypothesis is accepted or rejected. See Table 14 below for details on how this study answered its hypotheses.

Table 14. Direct Effect Test

Effect		Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
Direct Effect Test	**FI (X) -> FL (Z)**	0.701	0.702	0.037	18.807	**0.000**
	FI (X) -> FS (Y)	0.265	0.269	0.048	5.547	**0.000**
	FL (Z) -> FS (Y)	0.609	0.604	0.050	12.065	**0.000**
Indirect Effect Test	**FI (X) -> FL (Z)**					
	FI (X) -> FS (Y)	0.427	0.424	0.042	10.108	**0.000**
	FL (Z) -> FS (Y)					
Total Effect Test	**FI (X) -> FL (Z)**	0.701	0.702	0.037	18.807	**0.000**
	FI (X) -> FS (Y)	0.692	0.693	0.038	18.040	**0.000**
	FL (Z) -> FS (Y)	0.609	0.604	0.050	12.065	**0.000**

DISCUSSION

1. Financial Inclusion does not affect the Financial Sustainability of MSMEs in Agam Regency

The results of the findings illustrate that MSME actors in Agam district have a good level of business liquidity, where most of them sell their products in cash, and an increasing level of profitability, so that they have sufficient funds to ensure the sustainability of their business. Solvency levels of MSME participants in Agam Regency are likewise rather good. Supporting the growth of MSMEs requires financial inclusion (Lakuma et al., 2019). If MSMEs have easy access to financing, they can grow and innovate (Hamdana et al., 2021). Access, quality, and affordability of services do not appear to substantially affect the financial sustainability of MSMEs within the setting of this study. Other factors may be more dominant in influencing the economic sustainability of MSMEs, such as financial management, marketing capabilities, or local market conditions(Sari et al., 2023). If MSMEs do not have good management strategies, even if access to finance is available, it will not contribute to liquidity, solvency, or profitability.

2. Fintech Adoption Has a Positive and Significant Effect on the Financial Sustainability of MSMEs in Agam Regency

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The results showed that fintech adoption plays an important role in the financial sustainability of MSMEs in Agam Regency. The ease of use of fintech can encourage MSMEs to learn and adapt to new technologies. This can strengthen their managerial capabilities, which are essential for maintaining long-term liquidity and solvency. This helps to reduce operating costs and increase profits. For example, fast payment processing can improve cash flow. In addition, MSMEs benefit from adopting fintech in terms of automatically documenting their sales transactions, generating periodic sales reports, and viewing their overall business performance (Lontchi et al., 2023). This study shows that it corroborates those of Siddik et al. (2023) and Lontchi et al. (2023), respectively, which indicated that MSMEs' performance is enhanced when they have access to digital financing and that fintech adopters significantly impact company sustainability performance.

3. **Financial Literacy Has a Positive and Significant Effect on the Financial Sustainability of MSMEs in Agam Regency**

The findings of the research results illustrate that MSMEs in the Agam district have good financial literacy. Studies suggest that greater financial literacy enables business owners to make these decisions, manage resources, and devise tactics that enhance the sustainability of a business over time. According to research, a high degree of financial literacy improves company performance and makes decision-making easier for owners and managers (Eniola, 2020). According to similar research by Bojuwon et al. (2023), financial literacy enhances MSMEs' financial circumstances and performance. Financial literacy influences the growth and development of entrepreneurs, impacting the progress and expansion of entrepreneurial endeavours. In addition, Ye and Kulathunga (2019 discovered that financial literacy can assist in predicting financial access, which can then be utilised to mediate the connection between financial literacy and the sustainability of MSME.

4. **Financial self-efficacy has a positive and significant effect on the financial sustainability of MSMEs in Agam Regency**

The results showed that the independence of Agam district MSME players in budgeting allows MSMEs to develop budgets that are realistic and by market conditions. With a reasonable budget, they can control expenses and maximize the use of resources, which contributes to solvency. The term "efficacy" describes how confident a person is in their abilities to do a given activity or reach a desired outcome. Budgeting, expense control, and debt management are all components of sound financial management that firm owners are more likely to implement when they believe in their abilities. In agreement with this finding is the finding from VESELINOVIC et al. (2022) that the profitability of SMEs is significantly affected by the level of confidence their entrepreneurs have in their financial strengths. This study found that entrepreneurs' ability to manage their finances has a bearing on microbusinesses' profitability, growth, and happiness. Supporting the findings of Sabri et al. (2020) and Xu & Loang (2024), who found a positive direct effect of financial self-efficacy on the success MSMEs, we can say MSME success and growth are achieved through improved financial planning, analysis, and control, as well as working capital management and access to financial resources.

5. **Financial Inclusion Has a Positive and Significant Relationship with Financial Literacy of MSMEs in Agam Regency, MSMEs**

Access, quality, and price of services are indicators of financial inclusion, and the results demonstrate a robust and positive relationship between the two. Banks and financing services also help Agam district's (MSMEs) better manage their finances and prepare for the future. According to the study's findings, Financial literacy, including awareness of money and capital management and how to interpret financial records, is highly regarded by MSME actors in Agam Regency. According to Khan et al. (2022b). According to studies, the two are positively related and have a direct, significant association. Where business owners possess financial literacy, there is a direct and substantial correlation to financial inclusion (Bire et al., 2019). In line with earlier studies, this one finds a positive correlation between financial literacy and financial inclusion (Bojuwon et al., 2023).

6. **Financial Inclusion Has a Positive and Significant Relationship with Financial Self-Efficacy of MSMEs in Agam Regency**

The financial self-efficacy of MSME business actors in Agam Regency is significantly influenced by financial inclusion in the context of MSMEs. Financial self-efficacy is high among MSME actors in the district, according to the results. Financial inclusion can happen when individuals have a good grasp of formal financial services (Widyastuti & Hermanto, 2022). Researchers found that MSME actors' financial self-efficacy positively affects the intensity of their credit decision-making (Bire et al., 2019). Conversely, people with a high sense of financial self-efficacy are more likely to actively seek out and use financial services. The results match the expectations of the theory. The study's findings corroborate those of Bojuwon et al. (2023), who also discovered a favourable, direct, and statistically significant correlation between financial inclusion and financial self-efficacy. This is in line with the study's findings by Soetjipto et al. (2023), which show that the capacity for innovation completely mediates the connection between knowledge management and the MSME.

7. Fintech Adoption is Positively Related to Financial Literacy of MSMEs in Agam Regency

This study's empirical results demonstrate that MSMEs in the Agam district's financial literacy is directly affected by the use of fintech. The results match the expectations of the theory. The study's findings corroborate those of Lontchi et al. (2023), who also discovered a favourable and statistically significant correlation between financial literacy and fintech, with more financial literacy significantly increasing people's knowledge of fintech products. According to Ferilli et al. (2024), fintech has affected financial literacy by making financial inclusion more accessible. Through the use of fintech, people who never had access to financial services can now do so because no bank would ever lend them money or provide their services. With this greater financial inclusion, more people can receive financial education and financial services previously beyond their understanding. As they eventually interact with financial services, they will learn basic concepts such as credit and debt, investing, and an overview of planning a basic budget (Lopus et al., 2019). A greater understanding of personal finance is mainly attributable to the fintech trend. Fintech has made it much easier for people to access money by increasing accessibility, transparency, education, and financial inclusion. They can make more sustainable financial decisions if they are intelligent and environmentally conscious.

8. Fintech Adoption is Positively Related to Financial Self-Efficacy of MSMEs in Agam Regency

Fintech adoption is directly influenced by the the financial self-efficacy of MSMEs, according to the research conducted on MSMEs in Agam regency. The findings of this research are consistent with the findings of research Lee (2021) that financial self-efficacy has a positive effect on the sustainability of fintech adoption. Fintech app provides analytical tools that help in facilitating financial planning, such as cash flow projections, budget analysis, and income projections in real time. Fintech (financial technology) adoption directly impacts financial self-efficacy, which refers to one's belief in how successfully or not one can manage personal finances (Hassan et al., 2024). Fintech can take the form of many applications and digital platforms that give users more control over everyday financial activities such as managing expenses, saving, investing, and accessing credit. This ease of access gives way to fintech that empowers individuals to take charge of their financial well-being, which leads to greater confidence in financial decision-making (Bhat et al., 2023). The adoption of fintech can potentially increase financial self-efficacy, mainly because fintech is accessible and provides easy-to-understand solutions. Most fintech apps come with an easy-to-use interface and provide automated tools such as payment reminders, spending analysis, and investment suggestions (Bhat et al., 2023).

9. Financial Literacy Mediates the Effect of Financial Inclusion on the Financial Sustainability of MSMEs in Agam Regency

This research indicates that financial literacy serves as a mediator between financial inclusion and the financial sustainability of MSMEs in the Agam district. This study is linear with those of Bojuwon et al. (2023), which indicates that financial literacy fully mediates the relationship between financial service availability and MSME performance. Financial inclusion in Agam Regency involves the IDF's efforts to enhance MSME access to financial services. Enhancing financial inclusion in Agam Regency is crucial for improving access to financial services for MSMEs. Assessing financial literacy enables SMEs to understand better how to utilise the financial services available to them, thereby improving their financial condition (Bojuwon et al., 2023). Access to financial services alone does not enhance the financial situation of MSMEs if they lack the financial literacy necessary to manage financial risk. Lack of awareness regarding dwelling products results in MSMEs' inability to make informed decisions. Poor financial literacy hinders effective debt management and capitalizing on investment opportunities.

10. Financial Self-Efficacy Mediates the Effect of Financial Inclusion on the Financial Sustainability of MSMEs in Agam Regency

This financial self-efficacy of SME enterprises in Agam Regency partially mediates the relationship between financial inclusion and financial sustainability. The findings suggest that increased financial inclusion enhances financial self-efficacy, fostering long-term financial sustainability. This study demonstrates a correlation between small business owners' confidence in obtaining, utilising, and benefiting from financial inclusion program services and their level of financial self-efficacy. The impact of financial inclusion on the sustainability of small enterprises in Agam Regency is profoundly shaped by financial self-efficacy, which refers to an individual's belief in their ability to manage financial matters effectively. Sabri et al. (2020) discovered that financial self-efficacy partially mediates the relationship between social ties and subjective norms—elements of community capability—and financial inclusion. This indicates that financial self-efficacy serves a significant mediating function in elucidating individuals' financial inclusion. Moreover, small business owners exhibiting high financial self-efficacy are more likely to proactively seek additional support and resources (Paramasivam, 2024). They exhibit increased willingness to participate in training sessions, seek expert consultation, or utilise financial technology for financial management assistance. Financial inclusion facilitates access and fosters positive attitudes that contribute to long-term business sustainability (Khan et al., 2022a).

11. Financial Literacy Mediates the Effect of Fintech Adoption on the Financial Sustainability of MSMEs in Agam Regency

The research indicates that financial literacy functions as an intervening variable linking the adoption of fintech solutions to the financial sustainability of small businesses in the Agam region. The results align with the study conducted by Lontchi et al. (2023), which determined that financial acumen is an intermediary factor between fintech and the viability of small businesses. Lontchi et al. (2023) indicate that financial literacy is a significant mediator between the use of fintech and business performance. Firms with stronger financial acumen are better equipped to use fintech services optimally, thereby improving operational and fiscal outcomes. In support of this, Hermanto's (2022) research found that fintech's indirect impact on continuity has a definite positive effect through financial acumen, significantly promoting small business continuity.

Financial literacy also helps small business stakeholders understand the risks associated with using fintech products. With the proper understanding, they can identify threats and take the necessary steps to mitigate them. This contributes to improved financial stability and prevents over-indebtedness, which regularly results from a lack of awareness. Research on financial literacy and fintech in Vietnam (Iwashita, 2022) confirms these findings by demonstrating that elevated levels of financial literacy significantly and favourably influence individuals' comprehension of and engagement with fintech products.

12. Financial Self-Efficacy Mediates the Effect of Fintech Adoption on the Financial Sustainability of MSMEs in Agam Regency

Research findings indicated that MSMEs in the Agam district can, to some extent, ascribe the influence of fintech adoption on their financial sustainability to their financial self-efficacy. This study aligns with prior research by employing an expectation confirmation model that integrates self-efficacy theory factors that affect the intention to persist in utilising fintech (Ye & Kulathunga, 2019). The findings indicate that perceived usefulness is positively influenced by confirmation, financial self-efficacy, and technological self-efficacy. And there are additional dangers that MSME actors may not have encountered previously while adopting fintech. Their level of financial self-efficacy is insufficient to mitigate these risks at this time (Chong et al., 2021). Their trust may go down the drain if they don't know what they're doing regarding risk management and sound financial planning for the company's long-term viability. Dynamic market conditions also affect how fintech operates. The rapid adoption of fintech may not be matched by an increase in the skills and knowledge of MSME players (Akyuwen et al., 2022). In this case, even if the businesses feel confident, the lack of ability to adapt to changes may result in difficulties in optimally utilizing fintech services, ultimately affecting their financial sustainability.

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CONCLUSION

Through rigorous data analysis and thoughtful discourse, this study concludes that financial inclusion pertains to how individuals can access formal financial services, including banking, credit, insurance, and various other offerings. While financial inclusion is frequently regarded as crucial for promoting financial sustainability in MSMEs, this research reveals that mere access to formal financial services is insufficient to guarantee financial sustainability in Agam Regency. The realm of financial technology demonstrates that fintech integration positively impacts the financial sustainability of MSME enterprises in Agam Regency. The financial literacy of MSME actors, possessing a profound comprehension of financial products and effective money management, will significantly bolster the financial sustainability of their enterprises. Financial self-efficacy directly influences and serves as a mediator in the relationship between financial inclusion and fintech adoption concerning individual sustainability.

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