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Analysis of Financial Inclusion and Sustainability of Women's MSMEs

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Abstract

The existence of women-owned MSMEs makes a significant contribution to improving the local economy and community welfare. However, in managing MSMEs, women entrepreneurs also face challenges in supporting business sustainability, both internal and external challenges. This study aims to analyze the relationship between financial inclusion and the sustainability of micro, small, and medium enterprises (MSMEs) managed by women in Pekanbaru City. This research was conducted using a quantitative approach by providing questionnaires to respondents. The sampling technique used purposive sampling. The data analysis technique used was Partial Least Square (PLS). The test results show that digital literacy has a direct influence on financial inclusion, while government support, financial literacy, and education have a direct influence on the sustainability of women's MSMEs in Pekanbaru City. Furthermore, it was also found that there was no indirect influence moderated by the financial inclusion variable. So financial inclusion is not a variable that is able to connect financial literacy, digital literacy, education and government support for the sustainability of women's MSMEs in Pekanbaru City.

INTRODUCTION

The existence of MSMEs is crucial to the Indonesian economy. This is because in 2024, MSMEs were able to absorb a workforce of 45,263,348 people. This shows that the existence of MSMEs has a significant contribution to improving the Indonesian economy. The development of MSMEs is inseparable from the role of entrepreneurs, there are as many as 29,089,562 MSME entrepreneurs in Indonesia with 30,178,617 business units (Kementerian UMKM Republik Indonesia, 2025). Furthermore, behind the development of MSMEs in Indonesia is also inseparable from the role of female entrepreneurs, namely Approximately 49.41% of female entrepreneurs are involved in the development of MSMEs in Indonesia (Kementerian UMKM Republik Indonesia, 2025) Therefore, women not only play a vital role in their families but also contribute to advancing the national economy.

The contribution of MSMEs to Indonesia's GDP reaches 60.5%, but on the other hand, in developing MSME businesses face limitations, both internal and external. Challenges to MSME development can include difficulties in financing, technological innovation, digital literacy, limited education, and difficulties in obtaining permits. These limitations are not only felt by male entrepreneurs; female entrepreneurs also face more complex challenges. Challenges faced by female entrepreneurs include difficulty in dividing time between household and business, lack of ability to access technology, low financial inclusion and literacy, lack of independence, and limited ownership of assets that can be used as collateral for financing.(Lisnawati, 2024).

Several studies have examined the role of women entrepreneurs in the sustainability of MSMEs. Research by (Puspitasari et al., 2024) found that financial literacy and financial inclusion influence the sustainability of women-owned MSMEs. However, research Hilmawati &

Kusumaningtias, (2021) found that financial inclusion had no impact on MSME performance and sustainability. Furthermore, Ariska N. & Rochmawati, (2023) found that women tend to experience difficulties in obtaining loan capital. This is a factor that limits women's ability to develop their businesses.

Financial inclusion is an effort made to facilitate the public in increasing access to financial services and eliminate all barriers to accessing these financial services (Diana & Bgs., 2018). Further research on financial inclusion has also been conducted Harefa et al., (2024) who emphasized the important role of financial inclusion in supporting the sustainability of MSMEs. Ease of financial access is fundamental to business development. Therefore, the government needs to strive for easily accessible financial access for all levels of society, including business actors (Azro'i et al., 2023). However, Fatmawati & Arka (2025) found that financial inclusion did not show a significant impact individually, although it remains important in the context of financial service accessibility.

Digital literacy is closely related to a person's ability to use computer hardware and software, access the internet, evaluate information found online, and understand the importance of maintaining privacy, security, and ethics in using digital technology. Good digital literacy will encourage MSMEs to increase revenue and expand their markets (Fedrick et al., 2024). Research on digital literacy has also been conducted by Pratiwi et al., (2024) who found that digital literacy influences MSME performance. However, Jihan & Lubis (2024) found that digital literacy does not directly affect MSME sustainability.

Research on government support for the sustainability of MSMEs was conducted byAdyatma & Ayudiati (2024), who found that government support is not a determining factor in MSME sustainability. The government can provide support to MSMEs in the form of fiscal incentives, low-interest financing, training and education, market access, and adequate infrastructure for MSME actors (Anggraeni et al., 2021). Meanwhile, research conducted by Khumairah et al., 2025) found that the government plays a very important role in MSME development through the provision of training, easy access to finance, and infrastructure development.

Furthermore, research on financial literacy was also conducted by Chaidir et al., (2025) who found that financial literacy plays a crucial role in increasing the resilience and competitiveness of MSMEs. Meanwhile, research by Irdawati & Nurlia, (2025) found that financial literacy did not significantly influence MSME sustainability. This is due to limited understanding of financial literacy and the continued use of informal financial institutions by many MSMEs.

The various differences in research findings on MSME sustainability are one factor that necessitates further research on MSME sustainability, especially since previous research has not focused on women entrepreneurs as the research object. Therefore, research is needed to analyze the financial inclusion and sustainability of women-owned MSMEs in Pekanbaru City.

METHODS

This study used primary and secondary data. Primary data were obtained by distributing questionnaires to respondents. Secondary data were obtained through literature review and documentation. Secondary data were obtained through a review of journals, books, and other information related to the research issues. Purposive sampling was used for sampling, with a sample size of 100 respondents. The sample selection criteria included the following: MSMEs owned or managed by women, still active in Pekanbaru City, and having been operating for at east six months.

The questionnaires were distributed face-to-face and included structured statements measuring financial inclusion, financial literacy, digital literacy, government support, and business sustainability. Each statement was assessed using a five-point Likert scale ranging from "strongly disagree" (1) to "strongly agree" (5). The questionnaire was developed based on theoretical foundations and referenced previous studies. Its reliability was measured statistically to assess the consistency of respondents' responses.

The data obtained were analyzed using Structural Equation Modeling (SEM) with the partial least squares (PLS) technique using SmartPLS 4 software. SEM-PLS analysis was used because the dependent variable in this study was multiple and used reflective indicators. Furthermore, PLS can also be applied to studies with relatively small to moderate sample sizes. This research was conducted in several stages, starting with determining the research design, determining the research sample, developing the instruments, collecting data, and conducting data analysis.

RESULTS AND DISCUSSION

Convergent Validity

Convergent Validity aims to determine the validity of each relationship between an indicator and its construct or latent variable. Convergent Validity can be seen from the construct score (loading factor), with the criteria for each instrument's loading factor must meet a value of >0.5. According to Chin (2000), measuring a loading value of 0.5 to 0.6 is considered sufficient. In this study, a loading factor limit of 0.5 will be used. In the initial analysis, several questionnaire instruments had loading factor values <0.5, so these questionnaire instruments were removed from the model. The following are the loading factor values for each instrument in the validated research model:

Table 1. Loading Factor

X1	Loading Factor (LF) X1	X2	LF X2	X3	LF X3	X4	LF X4	Y	LF Y	Z	LF Z
X1.6	0.724	X2.1	0.914	X3.1	0.812	X4.1	0.882	Y.1	0.813	Z.1	0.805
X1.1	0.760	X2.2	0.926	X3.2	0.917	X4.2	0.937	Y.2	0.829	Z.10	0.724
X1.10	0.638	X2.3	0.942	X3.3	0.835	X4.3	0.950	Y.3	0.800	Z.2	0.818
X1.11	0.786	X2.4	0.870	X3.4	0.786	X4.4	0.925	Y.4	0.879	Z.3	0.809
X1.12	0.805			X3.5	0.880	X4.5	0.911	Y.5	0.808	Z.4	0.787

X1.13	0.658					Y.6	0.852	Z.5	0.762
X1.2	0.796					Y.7	0.873	Z.6	0.791
X1.3	0.801					Y.8	0.865	Z.7	0.680
X1.5	0.531							Z.8	0.811
X1.7	0.734							Z.9	0.703
X1.8	0.793								
X1.9	0.699								

Reliability Test

A construct is considered reliable if its composite reliability and Cronbach's alpha values are greater than 0.70. The composite reliability and Cronbach's alpha values for all constructs are greater than 0.70. This indicates that the reliability of all constructs in this study is good and demonstrates conformity based on the established criteria.

Table 2. Reliability Test

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
Financial Literacy	0.919	0.926	0.932	0.535
Digital Literacy	0.933	0.937	0.953	0.834
Education	0.902	0.919	0.927	0.718
Gov Support	0.955	0.958	0.966	0.849
Financial inclusion	0.941	0.946	0.951	0.706
Sustainability support	0.923	0.927	0.936	0.594

Model Fit

Model fit can be determined by the NFI value. The NFI value ranges from 0 to 1 and is derived from a comparison between the hypothesized model and a specific independent model. A model is considered fit if its NFI value is greater than 0.5 and has a good fit if its value approaches 1.

Table 3 . Model Fit

	Saturated model	Estimated model
NFI	0.582	0.582

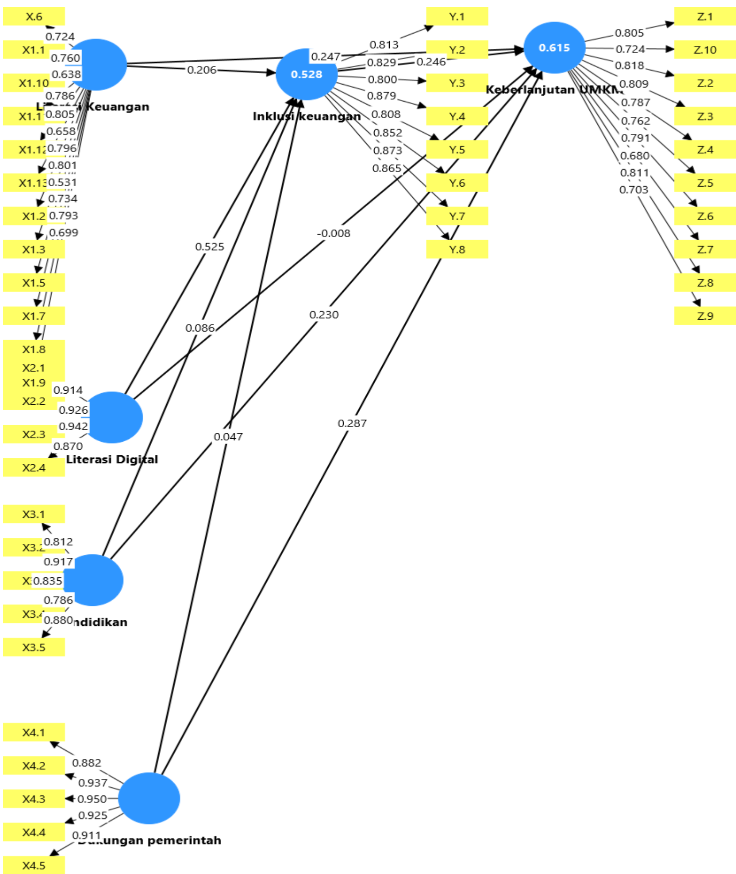
Based on Table 3 above, the NFI value for financial inclusion and sustainability of women-owned MSMEs in Pekanbaru City is 0.582, which is above 0.5, indicating good model fit. The structural model was evaluated using R-squared for the dependent construct. The R^2 value can be used to assess the presence or absence of a significant influence between certain endogenous variables and exogenous variables.

Tabel 4. R Square Inklusi keuangan dan Keberlanjutan UMKM

	R-square	R-square adjusted
Financial Inclusion	0.528	0.508
Sustainability of Women-Owned MSMEs	0.615	0.594

Based on Table 5 above, the R-square value for financial inclusion is 0.528, meaning that 52.8% of changes in financial inclusion in women's MSMEs can be explained by the variables of financial literacy, digital literacy, education, and government support. Meanwhile, 47.2% of changes in financial inclusion are explained by other variables outside the study. Meanwhile, changes in the sustainability variable for women's MSMEs can be explained by 61.5% by the variables of financial inclusion, financial literacy, digital literacy, education, and government support. Meanwhile, 38.5% is explained by other variables outside the study. Therefore, it can be said that the R-square for the financial inclusion and sustainability variables for women's MSMEs is moderate.

Figure 1. Evaluation of the Reflective Measurement Model



Hypothesis testing was conducted using the bootstrapping method. This method is used to assess path coefficients at a 5% significance level. If the P-value is <0.05, the hypothesis can be accepted. This study not only tested the direct influence of financial literacy, digital literacy, education, and government support on financial inclusion, but also examined the indirect influence of financial literacy, digital literacy, education, and government support on MSME sustainability, as moderated by financial inclusion.

Hypothesis Testing Results

Hypothesis testing was conducted using the bootstrapping method. This method is used to assess path coefficients at a 5% significance level. If the P-value is <0.05, the hypothesis can be accepted. This study not only tested the direct influence of financial literacy, digital literacy, education, and government support on financial inclusion, but also examined the indirect influence of financial literacy, digital literacy, education, and government support on MSME sustainability, as moderated by financial inclusion.

Table 4. Hypothesis Testing Results

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values	
X1-> Y	0.206	0.211	0.118	1.743	0.081	H_a Rejected
X2 -> Y	0.525	0.521	0.095	5.543	0.000	H_a Accepted
X3 -> Y	0.086	0.088	0.082	1.046	0.296	H_a Rejected
X4 -> Y	0.047	0.046	0.084	0.561	0.575	H_a Rejected
X1 -> Z	0.247	0.265	0.115	2.147	0.032	H_a Accepted
X2 -> Z	-0.008	-0.000	0.122	0.065	0.948	H_a Rejected
X3 -> Z	0.230	0.229	0.083	2.772	0.006	H_a Accepted
X4 -> Z	0.287	0.279	0.103	2.787	0.005	H_a Accepted
Y -> Z	0.246	0.233	0.149	1.647	0.100	H_a Rejected
X1 -> Y -> Z	0.051	0.049	0.045	1.128	0.259	H_a Rejected
X2 -> Y -> Z	0.129	0.118	0.079	1.631	0.103	H_a Rejected
X3 -> Y -> Z	0.021	0.021	0.027	0.789	0.430	H_a Rejected
X4 -> Y -> Z	0.012	0.009	0.023	0.501	0.617	H_a Rejected

DISCUSSION

The first hypothesis (H1) states that financial literacy has a direct effect on financial inclusion. The test results obtained a p-value of 0.081 (>0.05), with the original sample value of 0.206. This indicates that financial literacy does not have a significant effect on financial inclusion. The findings of this study are in line with research conducted by Jannah et al. (2023)). The reason of financial literacy does not have an influence on financial inclusion is because the financial knowledge possessed by female entrepreneurs is not yet optimal and shows that the role of financial institutions in educating about their products and services is still lacking.

The second hypothesis (H2) states that digital literacy has a direct effect on financial inclusion. The test results obtained a p-value of 0.000 (<0.05), with the original sample value of 0.525. This indicates that digital literacy has a significant effect on financial inclusion. Increasingly better digital literacy makes it easier for women entrepreneurs to obtain information by utilizing digital information media, so that ease of access to information influences ease of access to financial facilities.

The third hypothesis (H3) states that education has a direct effect on financial inclusion. The test results obtained a p-value of 0.296 (>0.05), with the original sample value of 0.086. This indicates that education does not have a significant effect on financial inclusion. This research is not in line with the research conducted by Andriani (2025). This is because the respondents in this study had an average education of only high school, so their understanding of financial inclusion was ineffective..

The fourth hypothesis (H4) states that government support has a direct effect on financial inclusion. The test results obtained a p-value of 0.575 (>0.05), with the original sample value of 0.047. This indicates that government support does not have a significant effect on financial inclusion. This is because, based on interviews with respondents, the government's role as a facilitator in improving financial literacy among women entrepreneurs remains very low. Furthermore, the government's role in facilitating financial access is also very minimal.

The fifth hypothesis (H5) states that financial literacy has a direct effect on the sustainability of MSMEs. The test results obtained a p-value of 0.032 (<0.05), with the original sample value of 0.247. This indicates that financial literacy influences the sustainability of MSMEs managed by women. These results align with the results of the previous research which is conducted by (Ayu & Dewi, 2021) which also found that financial literacy has a significant influence on the sustainability of MSMEs in Buleleng District.

The sixth hypothesis (H6) states that digital literacy has a direct effect on the sustainability of MSMEs. The test results obtained a p-value of 0.948 (>0.05), with the original sample value of -0.008. This indicates that digital literacy has no effect on the sustainability of MSMEs managed by women. The MSMEs targeted in this study generally still operate conventionally and have not yet utilized digital media in their product marketing processes. Therefore, MSME performance is not determined by the digital literacy level of their managers.

The seventh hypothesis (H7) states that education has a direct effect on the sustainability of MSMEs. The test results obtained a p-value of 0.006 (<0.05), with the original sample value of 0.230. This indicates that education influences the sustainability of MSMEs managed by women. This indicates that the higher the education level of managers and owners of MSMEs managed by women, the better their performance. This improvement occurs because higher education levels typically correspond to increased insight, skills, and innovation in improving MSME performance, ultimately impacting MSME sustainability.

The eighth hypothesis (H8) states that government support has a direct effect on the sustainability of MSMEs. The test results obtained a p-value of 0.005 (<0.05), with the original sample value of 0.287. This indicates that government support influences the sustainability of MSMEs managed by women. The results of this study are in line with research conducted by Nurhasana & Hadi (2025) which found that government support in the form of training, skills development, and policies that provide flexibility to MSMEs can make them more adaptive to market changes, thus influencing their sustainability.

The ninth hypothesis (H9) states that financial inclusion has a direct effect on the sustainability of MSMEs. The test results obtained a p-value of 0.100 (>0.05), with the original sample value of 0.246. This is because the businesses managed by the women entrepreneurs in this study are still conventional and do not involve financial institutions. Therefore, easy access to finance does not yet play a significant role in the sustainability of MSMEs. These findings align with research conducted by Purbadharmaja & Widanta (2023). Ease of financial access will make it easier for MSMEs to expand their businesses.

The tenth hypothesis (H10) states that financial literacy has an indirect effect on the sustainability of MSMEs, which is linked to financial inclusion. The test results obtained a p-value of 0.259 (>0.05), with the original sample value of 0.051. This indicates that there is no evidence of an indirect effect between financial literacy and the sustainability of MSMEs managed by women entrepreneurs, which is linked to financial inclusion. The lack of influence of financial literacy on the sustainability of MSMEs linked to financial inclusion occurs because the financial sector does not yet have an important role in MSME businesses because the businesses are still conventional and can be categorized as small so they do not require large business capital and do not yet require capital assistance from loans from financial institutions.

The eleventh hypothesis (H11) states that digital literacy has an indirect effect on the sustainability of MSMEs, which is linked to financial inclusion. The test results obtained a p-value of 0.103 (>0.05), with the original sample value of 0.129. This indicates that there is no evidence of an indirect effect between digital literacy and the sustainability of MSMEs managed by women entrepreneurs, which is linked to financial inclusion. The lack of influence of digital literacy on the sustainability of MSMEs linked to financial inclusion occurs because the financial sector does not yet have a significant role in MSME businesses and MSMEs have not yet used digital media in the transaction process.

The twelfth hypothesis (H12) states that education has an indirect effect on the sustainability of MSMEs, which is linked to financial inclusion. The test results obtained a p-value of 0.430 (>0.05), with the original sample value of 0.021. This indicates that there is no evidence of an indirect effect between education and the sustainability of MSMEs managed by women entrepreneurs, which is linked to financial inclusion. The lack of influence of education on the sustainability of MSMEs linked to financial inclusion occurs because the financial sector does not yet have an important role in MSME businesses even though the existence of education plays an important role in the sustainability of MSMEs.

The thirteenth hypothesis (H13) states that government support has an indirect effect on the sustainability of MSMEs, which is linked to financial inclusion. The test results obtained a p-value of 0.617 (>0.05), with the original sample value of 0.012. This indicates that there is no evidence of an indirect effect between government support and the sustainability of MSMEs managed by women entrepreneurs, which is linked to financial inclusion. The lack of influence of government support on the sustainability of MSMEs linked to financial inclusion occurs because the financial sector does not yet have an important role in MSME businesses even though government policies and support are greatly needed for the sustainability of MSMEs.

CONCLUSION

This study highlights the influence of financial literacy, digital literacy, education, and government support on the sustainability of MSMEs, moderated by financial inclusion. The results of the study found that digital literacy directly influences financial inclusion. This indicates that increasing MSME digital knowledge is directly proportional to ease of access to financial institution facilities and ease of access to financial information. Furthermore, MSME sustainability is directly influenced by financial literacy, education, and government support. This indicates that MSME sustainability is determined by the management skills of MSMEs and is supported by external factors such as ease of financial access and government support, such as government policies that provide MSMEs with facilities such as training facilities and subsidies. Furthermore, this study also found that financial inclusion is unable to moderate the influence of financial literacy, digital literacy, education, and government support on MSME sustainability. This is because ease of financial access is indeed important for MSME sustainability, but the MSMEs that are the objects of this study are still classified as conventional MSMEs with small businesses, so MSMEs still use their own capital to develop their businesses.

The results of this study indicate that it is crucial for MSMEs to have adequate knowledge regarding the business they intend to undertake, as well as an understanding of financial management during its operation. Once adequate internal factors are in place, external factors, such as government support, are needed. This will create a positive synergy that enhances MSME sustainability.

RECOMMENDATION

These findings indicate that education, financial literacy, and government support play a crucial role in the sustainability of women-owned MSMEs in Pekanbaru City. Therefore, the easiest way to improve the economy is to focus on education, both in the form of skills development and financial literacy. Improving education and financial literacy can be done not only by the government but also by the family.

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