

# The Impact of Digital Technology Usage and Innovative Creativity on the Sustainability of SMEs

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**Abstrak**—This study aims to analyze the impact of digital technology (X1) and innovative creativity (X2) on the sustainability of small and medium enterprises (SMEs) (Purba 2024)(Y). Digital technology is considered to play an important role in improving operational efficiency, expanding market reach, and strengthening business competitiveness. Meanwhile, innovative creativity is a key factor in creating added value for products and adapting to the ever-changing market dynamics(Nazara et al., 2024). The research method used involves a quantitative approach using questionnaires for data collection with a Likert scale. Respondents were selected through purposive sampling, focusing on SMEs players in Palu City. Multiple linear regression analysis data were analyzed using SPSS. This study used a sampling technique, namely purposive sampling, because the selected respondents had to meet specific criteria, namely MSME actors who utilized digital technology and applied innovative creativity in their business activities. The results showed that variable X1 and variable X2 were related, where the use of digital technology (X1) and innovative creativity (X2) affected MSME sustainability (Y). The results of the study showed that X1 and X2 explained 78.8% of the variation in MSME sustainability, while only 21.2% was influenced by other factors outside the model.

**Keywords:** Digital Technology; Innovative Creativity; Sustainability; Competitiveness; Operational Efficiency

## 1. INTRODUCTION

Advances in digital technology have transformed many sectors of the economy, including micro, small, and medium enterprises (SMEs). Business processes, such as internal management and marketing, have been transformed by digitalization (Oktaviani & Prakoso, 2023). Digital technology is considered capable of improving efficiency, expanding market reach, and increasing competitiveness, especially for SMEs operating in an increasingly competitive business environment (Sugiyanti et al., n.d.). However, some SMEs are unable to make good use of digital technology because they may lack sufficient digital literacy, access to the right infrastructure, or adequate resources (Evangelista et al., 2023). This condition shows that utilizing digital technology is still a challenge, but it is also a great opportunity for SMEs to achieve business sustainability (Aini et al., 2024).

In addition, another problem that often arises is the limited human resources (HR) in SMEs (Alexandro, 2025). Many business owners do not have workers with the appropriate skills, whether in business management, digital marketing, or innovation management (Guzmán & Pimentel, 2024). The available HR generally works on multiple tasks without any specific expertise, resulting in slow technology adoption and creativity development (Ashwini Sonar & Dr. Rajesh Kumar Pandey, 2023). Lack of training, minimal work experience, and low motivation to adapt to change are significant obstacles to business development (Buckley & Castro Jorge, 2024). To overcome this problem, SMEs can optimize digital-based training, collaborate with government agencies or business communities, and take advantage of incubation and mentoring programs that help improve HR competencies gradually (Hendrawan et al., 2024a). In addition, the implementation of collaborative work systems, such as outsourcing or partnerships with experts—can be an alternative solution for MSMEs that are not yet able to recruit skilled HR permanently (Hendrawan et al., 2024b).

Interest in this issue, particularly in Palu City, has arisen because the region is still in the process of economic recovery and development, with SMEs playing a key role as the main drivers of the local economy (Hendrawan et al., 2024b). However, the reality on the ground shows that many SMEs players in Palu City are still not making optimal use of digital technology and are unable to develop their innovative creativity to the fullest (Hidayat et al., 2025). This condition creates a gap between the potential and actual capabilities of business actors, making it important to further examine how these obstacles affect the sustainability of SMEs in Palu City. Innovative creativity, in addition to technological advances, is very important for the sustainability of SMEs (Sulistiyani et al., 2025). Creativity is needed to create added value to products, adapt to changing consumer behavior, and develop more flexible business strategies (Awa & Palahudin, 2023). SMEs must continue to innovate to survive that requires collaboration between various parties in order to continue growing and remain competitive (Buntuang et al., 2024). However, several studies show that a lack of knowledge, lack of access to training, and an inability to turn ideas into economically profitable innovations often hinder the creativity of SMEs actors (Marshanda, 2024). This shows that innovation and digital technology are very important for the sustainability of SMEs (Arifin et al., 2025).

The ability to maintain operations and the ability to grow, develop, and increase business value are all aspects of sustainability (Asikin et al., 2024), (Novita et al., 2024). It is believed that innovative creativity and the use of digital technology play an important role in supporting sustainability (Junaedi & Rojali, 2024). However, the relationship

between these two components has not been fully understood empirically, especially in the context of SMEs in certain regions such as Palu City (Fardha, n.d.). Based on this background, the purpose of this study is to evaluate the impact of digital technology (X1) and innovative creativity (X2) on the sustainability of micro, small, and medium enterprises (SMEs) (Y). This study also seeks to determine the extent to which digital technology can improve operational efficiency, expand market reach, and increase business competitiveness. In addition, the purpose of this study is to examine how innovative creativity contributes to the creation of added value in products and helps SMEs adapt to market changes.

## 2. RESEARCH METHODS

### 2.1 Basic Research Framework

This study uses a quantitative method with a survey to collect primary data. The researcher asked questions in the form of statements that had been prepared for the purposes of the study. In this study, the use of digital technology and innovative creativity were independent variables, while the sustainability of SMEs was the dependent variable that was influenced. To obtain data, questionnaires were distributed to respondents and contained several questions designed in accordance with the objectives of the study. The analysis used was simple linear regression to determine the extent of the influence of the use of digital technology and innovative creativity on the level of SMEs sustainability. Simple linear regression was chosen because it only involved one independent variable tested against one dependent variable in each test. This study focused on how the use of digital technology and innovative creativity can shape and improve SMEs sustainability.

The research data was obtained by distributing questionnaires to 30 respondents selected as research samples. This study uses a quantitative method with a survey approach to collect primary data, which allows the researcher to obtain direct responses from participants according to the conditions being studied. The quantitative approach was selected because it provides a systematic, objective, and measurable way to analyze the relationship between the variables involved. Through this method, the researcher aimed to obtain accurate numerical data that could be processed statistically to identify patterns, tendencies, and the strength of relationships among the variables of digital technology use, innovative creativity, and MSME sustainability. To gather the necessary data, the researcher asked respondents a series of structured questions in the form of statements that had been carefully prepared based on the objectives of the study. Each statement was designed to measure specific indicators related to the use of digital technology, the level of innovative creativity among SMEs actors, and their overall business sustainability. In this study, the use of digital technology and innovative creativity served as independent variables, while the sustainability of SMEs was positioned as the dependent variable that was influenced by both of these factors.

The structure of the questionnaire ensured that the data collected reflected the real conditions of SMEs development, especially in the context of technological adoption and creative innovation in business operations. The questionnaires were distributed directly to respondents who fit the sample criteria established for this research. Each questionnaire contained several questions carefully aligned with the conceptual framework and research objectives. Respondents were required to provide answers that reflected their experiences, perceptions, and practices related to digital technology usage and the application of creative innovations within their business activities. The clarity of the questionnaire items and the simplicity of the answer scale were intended to help respondents complete the survey easily and provide consistent, valid responses.

The analysis used in this study was simple linear regression, applied separately for each independent variable to determine the extent of the influence of digital technology use and innovative creativity on the level of MSME sustainability. Simple linear regression was chosen because it only involved one independent variable tested against one dependent variable in each analytical test, thus allowing the researcher to observe the direct effect of each factor individually. This approach helped to clarify how each independent variable contributed to shaping and improving SMEs sustainability without the interference of other variables in the model. This study also focused on understanding the mechanisms through which digital technology and innovative creativity can support SMEs sustainability. The use of digital technology is believed to play a crucial role in improving business efficiency, expanding market access, and facilitating better management processes. Meanwhile, innovative creativity enables SMEs to produce unique products, offer new solutions, and adapt more quickly to changing market demands. The research data was obtained by distributing questionnaires to 30 respondents selected as the research sample. These respondents were SMEs actors who met the predetermined criteria, ensuring that the data collected truly represented the context of SMEs that utilize digital technology and engage in innovative creative practices. The number of respondents was considered adequate for an exploratory quantitative study, providing sufficient information for statistical analysis and interpretation.

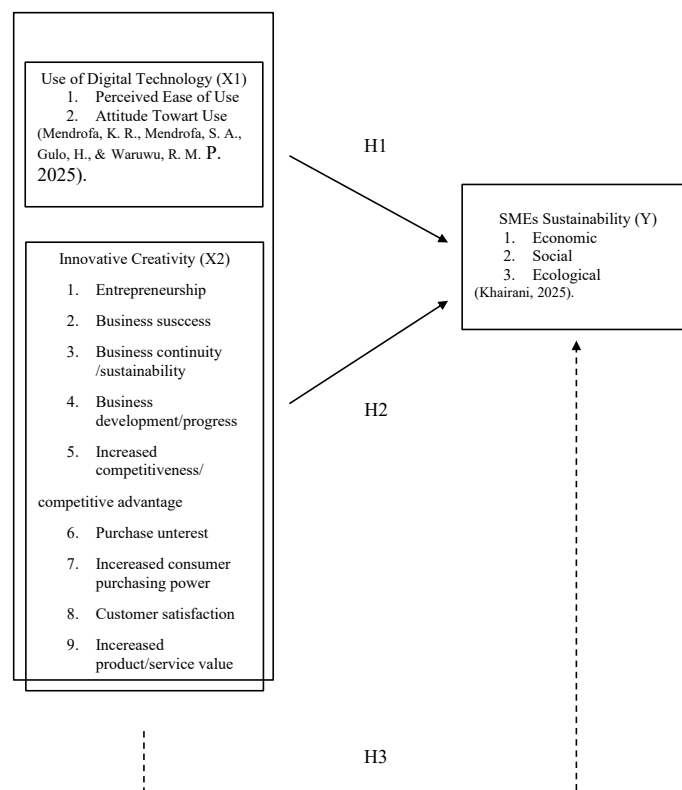


Figure 1. Conceptual framework

H1: The use of digital technology has a positive and significant impact on the sustainability of SMEs.

H2: Innovative creativity has a positive and significant effect on the sustainability of SMEs.

H3: The use of digital technology and innovative creativity has a positive effect on the sustainability of SMEs.

### 3. RESULT AND DISCUSSION

#### 3.1 Result

Table 1. Descriptive Statistics Use of Digital Technology (X1)

Indicators	N	Mean	Std.Deviation
Experience when using technology (X1.1)	30	4.50	.630
Ease of use of technology (X1.2)	30	4.10	.772
Valid N (based on list)	30		

The use of digital technology in SMEs refers to the adoption of ICT (Information and Communication Technology) tools such as e-commerce, social media, payment applications, and digital management systems to manage business operations, marketing, and finance (Febriani & Nasution, 2025). The objectives are to improve operational efficiency, expand market reach, strengthen customer interactions, and optimize financial recording and reporting (Damayanti et al., 2025). Literature studies show that digital technology enables SMEs to compete more aggressively in the digital era with limited capital, but the main problems faced are low digital literacy, infrastructure limitations (such as internet access), and resistance to change from traditional to digital methods (Damayanti et al., 2025).

Based on Table 1, indicator X1.1, “Experience when using technology,” has the highest mean value of 4.50, indicating that respondents rate the experience aspect of using digital technology most positively. Meanwhile, indicator X1.2, “Ease of use of technology,” has the lowest mean of 4.10, making it the lowest-rated aspect compared to other indicators. Overall, both indicators still show positive perceptions, but the experience of using technology is the most dominant factor in the variable of digital technology use (X1).

Table 2. Descriptive Statistics Innovative Creativity (X2)

Indicators	N	Mean	Std.Deviation
Benefit product(x2.19)	30	4.07	.753
Achievement of sales targets (x2.24)	30	3.45	.910

Indicators	N	Mean	Std.Deviation
Valid N (based on list)	30		

Innovative creativity is defined as the ability of business actors to generate new ideas and transform them into various products, services, or business models with added value (Evangeulista et al., 2023). The goal is to encourage sustainable innovation, which will enable SMEs to maintain their competitiveness and better adapt to market dynamics (Triwijayati et al., 2023). In general, the problems that arise include limited resources (capital and human resources), a lack of innovation culture, and a lack of access to innovative training or mentoring (Triwijayati et al., 2023). As a result, many SMEs fail to commercialize their creativity. For example, in a community service study in Sidoarjo, digital innovation has been found to be the key to the sustainability of SMEs (Khairunnisa et al., n.d.).

Based on the table, it can be seen that indicator X2.19, namely “Benefit (product),” has the highest mean value of 4.07, which indicates that product benefits are considered to be the most influential by respondents in supporting the variable of innovative creativity. Meanwhile, indicator X2.24, “Sales target achievement,” has the lowest mean of 3.45, indicating that sales target achievement is considered to have less influence on innovative creativity than other indicators.

**Table 3.** Descriptive Statistics SMEs Sustainability (Y)

Indicators	N	Mean	Std.Daviation	
Digital marketing (Y.3)	30	4.24	.951	High
Product innovatoin (Y.5)	30	3.66	.721	Low
Valid N (based on list)	30			

The ability of micro, small, and medium enterprises (SMEs) to survive and grow in the long term while considering economic, social, and sometimes environmental factors is called SMEs sustainability. This sustainability aims to build a business model that not only relies on short-term growth but also builds resilience through innovation, good financial management, and stakeholder participation. Limited capital, poor financial management, lack of business knowledge, market pressures, and external risks such as regulations or climate change are common problems faced by SMEs in achieving sustainability.

Based on Table 3, the Digital Marketing indicator (Y3) has the highest mean of 4.24, which shows that the use of digital marketing is considered to be the most influential in supporting the sustainability of SMEs, particularly in expanding markets and maintaining business competitiveness. Meanwhile, the Product Innovation indicator (Y5) has the lowest mean of 3.66, indicating that product innovation is perceived as having less of a dominant influence than digital marketing. With a total of 30 valid respondents, these results confirm that SMEs players feel the direct benefits of digital marketing on the sustainability of their businesses.

**Table 4.** Simultaneous Test Results (F)

		Anova				
Model		Sum of Squares	df	Mean square	F	Sig
1	Regression	647.345	2	10.997	8.139	.001
	Residual	174.122	28	1.351		
	Total	821.467	30			

a. Dependent Variabel: Perceptions of the efficiency of public budget management  
 b. Predictors: (constants), Understanding fiscal policy, Financial literacy

Based on Table 4, it can be seen that the calculated F value in the simultaneous test is 50.190, with a significance value (Sig.) of 0.000. Since the significance value is less than 0.050 ( $0.000 < 0.050$ ), it can be concluded that simultaneously, variables X1 and X2 have a significant effect on variable Y. This means that the two independent variables used in the model are able to explain the changes that occur in the dependent variable. In other words, the regression model used in this study is feasible and significant for use in measuring the effect of X1 and X2 on Y.

In addition, the Sum of Squares Regression of 647.345 and the Sum of Squares Residual of 174.122 indicate that most of the data variation can be explained by the regression model. This is in line with the high F value obtained. Thus, the regression model constructed has a strong ability to explain the relationship between variables X1 and X2 and variable Y.

**Table 5.** Partial Test Results (T)

		Coefficients				
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig
		B	Std. Error	Beta		
1	(Constant)	4.933	3.626		1.361	.185
	Use of Digital Technology	-.217	.332	-.065	-.654	.519
	Innovative Creativity	.359	.039	.915	9.216	.000

Based on the results of the analysis in Table 5, the variable Use of Digital Technology shows a regression coefficient value of  $-0.217$  with a significance value (Sig. =  $0.519$ ) and a t-value of  $-0.654$ . Since the significance value is well above  $0.05$ , it can be concluded that the use of digital technology does not have a significant effect on the dependent variable in this study. The negative coefficient value also indicates that an increase in the use of digital technology does not contribute positively to changes in the variable being studied, so its effect can be said to be weak and insignificant.

Meanwhile, the Innovative Creativity variable has a coefficient value of  $0.359$  with a significance value (Sig. =  $0.000$ ) and a t-value of  $9.216$ . The significance value, which is far below  $0.05$ , indicates that innovative creativity has a significant effect on the dependent variable. This positive coefficient value indicates that the higher the innovative creativity, the greater the increase in the variables studied. In addition, the Beta value of  $0.915$  shows that innovative creativity is the variable that has the most dominant influence in this regression model.

**Table 6.** Coefficient of Determination Test Results

Model	R	Model Summary		
		R Square	Adjust R Square	Std. Error The Estimasi
1	.888 <sup>a</sup>	.788	.772	2.539

Based on Table 6, the R Square value of  $0.788$  indicates that the independent variables in the model are able to explain  $78.8\%$  of the variation in the dependent variable. This means that the contribution of the independent variables to the change in the dependent variable is very strong, because most of the changes in the dependent variable can be explained by the model. Furthermore, the Adjusted R Square value of  $0.772$  indicates that after adjusting for the number of variables and the number of samples, this research model is still able to explain  $77.2\%$  of the variation in the dependent variable. This value is generally considered more accurate for realistically assessing the model's capabilities, and the figure of  $0.772$  still indicates that the model has excellent explanatory power. In addition, the Standard Error of the Estimate value of  $2.339$  shows the magnitude of prediction error in the regression model. The smaller the standard error value, the better the model's ability to predict actual values. With a value of  $2.339$ , it can be said that the model has a fairly low level of prediction error, so the model can be considered to have good predictive ability.

### 3.2 Discussion

The use of Digital Technology (X1), Innovative Creativity (X2), and MSME Sustainability (Y) shows that each variable has indicators that are assessed positively by respondents. The indicator of experience in using technology (X1.1) obtained the highest mean of  $4.50$ , which shows that the aspect of experience is the most dominant factor in the use of digital technology. Conversely, ease of use of technology (X1.2) had a lower mean, but still remained in the high category. In the innovative creativity variable, product benefits (X2.19) were the strongest indicator influencing respondents' perceptions, with a mean value of  $4.07$ , while the aspect of achieving sales targets (X2.24) was rated lower. The same can be seen in the MSME sustainability variable, where digital marketing (Y3) is the most important indicator with a mean of  $4.24$ , indicating that the application of digital marketing has a major contribution to MSME sustainability, while product innovation (Y5) is considered to have a smaller influence.

Inferentially, the simultaneous test results (F) indicate that the Use of Digital Technology (X1) and Innovative Creativity (X2) together have a significant effect on the Sustainability of SMEs (Y), with a significance value of  $0.000 < 0.05$ . Meanwhile, the partial test results (t) show that the Innovative Creativity (X2) variable has the strongest and most significant effect on MSME Sustainability, as evidenced by a t-value of  $9.216$  and a significance level of  $0.000 < 0.05$ . Conversely, the use of digital technology (X1) does not show a significant partial effect, because the significance value is  $0.519 > 0.05$ . This indicates that although digital technology is important, innovative creativity is more dominant in improving business sustainability. The determination test result ( $R^2$ ) of  $0.788$  shows that  $78.8\%$  of the variation in MSME Sustainability can be explained by X1 and X2, while the remaining  $21.2\%$  is influenced by other variables outside this research model.

## 4. CONCLUSION

The results of this study show that respondents provide positive assessments for each research variable, although with different levels of influence. Digital Technology variable (X1), the indicator with the greatest influence is the experience when using technology (mean =  $4.50$ ), while the ease-of-use indicator has the lowest score (mean =  $4.10$ ). However, the partial test (t-test) results indicate that the use of digital technology does not significantly affect SMEs sustainability, as shown by a coefficient of  $-0.217$  and a significance value of  $0.519$ , which is above the  $0.05$  threshold. In contrast, Innovative Creativity (X2) proves to be the most influential variable in this study. The product benefit indicator (mean =  $4.07$ ) is the most dominant, while sales target achievement (mean =  $3.45$ ) is the weakest. The partial test results support this, showing that Innovative Creativity has a significant positive effect on SMEs sustainability, with a regression coefficient of  $0.359$ , t-value of  $9.216$ , and significance level of  $0.000$ . Meanwhile, for the Sustainability variable (Y), digital marketing (mean =  $4.24$ ) is the strongest indicator, and product innovation (mean =  $3.66$ ) is the lowest.

Furthermore, the simultaneous test (F-test) shows that Digital Technology and Innovative Creativity jointly influence SMEs Sustainability, evidenced by a significance value of 0.001. The coefficient of determination ( $R^2$ ) value of 0.788 indicates that 78.8% of the variation in SMEs Sustainability can be explained by both variables, while the remaining 21.2% is influenced by other factors outside this model. These results confirm that although digital technology is important, innovative creativity plays a far more dominant role in supporting the sustainability of SMEs in Palu City.

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