

Determination of Online Training in Increasing Productivity for Sustainable SMEs in Southwest Papua Province

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ABSTRAK

Penelitian ini bertujuan untuk menganalisis determinan pelatihan online dalam meningkatkan produktivitas dan dampaknya terhadap keberlanjutan (sustainability) Usaha Kecil dan Menengah (UKM) di Provinsi Papua Barat Daya. Fokus penelitian diarahkan pada pengaruh langsung pelatihan online terhadap keberlanjutan UKM serta pengaruh tidak langsung melalui produktivitas sebagai variabel intervening. Metode penelitian menggunakan pendekatan kuantitatif dengan desain eksplanatori. Populasi penelitian adalah pelaku UKM di Provinsi Papua Barat Daya, yang telah mengikuti pelatihan online dengan sampel penelitian ditentukan secara purposive sampling yang berjumlah 100 responden. Instrumen penelitian berupa kuesioner dengan skala Likert yang diuji validitas dan reliabilitasnya. Analisis data dilakukan dengan Structural Equation Modeling (SEM-PLS) untuk menguji hubungan antar variabel serta peran mediasi produktivitas. Hasil penelitian menunjukkan bahwa pelatihan online berpengaruh positif signifikan terhadap keberlanjutan UKM. Pelatihan online juga berpengaruh signifikan terhadap peningkatan produktivitas, dan produktivitas terbukti berpengaruh positif terhadap keberlanjutan UKM. Selain itu, produktivitas berperan sebagai variabel mediasi parsial dalam hubungan antara pelatihan online dan keberlanjutan UKM. Temuan ini menegaskan bahwa pelatihan online akan lebih efektif jika hasil pembelajaran diimplementasikan dalam peningkatan produktivitas, sehingga mampu memperkuat keberlanjutan UKM di daerah dengan keterbatasan infrastruktur seperti Kota Sorong.

Kata Kunci: pelatihan online, produktivitas, keberlanjutan, UKM

ABSTRACT

This study aims to analyze the determinants of online training in increasing productivity and its impact on the sustainability of Small and Medium Enterprises (SMEs) in Southwest Papua Province. The focus of the study is directed at the direct effect of online training on SME sustainability and the indirect effect through productivity as an intervening variable. The research method uses a quantitative approach with an explanatory design. The study population is SMEs in Southwest Papua Province, who have participated in online training. The research sample was determined by purposive sampling, totaling 100 respondents. The research instrument was a questionnaire with a Likert scale that was tested for validity and reliability. Data analysis was conducted using Structural Equation Modeling (SEM-PLS) to examine the relationship between variables and the mediating role of productivity. The results show that online training has a significant positive effect on SME sustainability. Online training also has a significant effect on increasing productivity, and productivity has been shown to have a positive effect on SME sustainability. In addition, productivity plays a role as a partial mediating variable in the relationship between online training and SME sustainability. These findings confirm that online training will be more effective if the learning outcomes are



implemented in increasing productivity, thereby strengthening the sustainability of SMEs in areas with limited infrastructure such as Sorong City.

Keywords: *online training, productivity, sustainability, SMEs*

INTRODUCTION

Southwest Papua Province is one of Indonesia's youngest provinces and boasts significant economic potential, particularly in the trade, services, and creative industries sectors based on local resources. With Sorong City as the center of economic growth, the province serves as a major gateway for business and logistics activities in eastern Indonesia. However, geographical challenges, including its archipelagic region and limited transportation and digital infrastructure, continue to hinder equitable economic access and human resource training. This situation directly impacts the development of Small and Medium Enterprises (SMEs). Despite their strategic role in community empowerment and employment absorption, they still face gaps in access to information, technology, and competency-based training.

In this context, online training is a strategic alternative for SMEs in Southwest Papua to increase their capacity and productivity without the constraints of distance and time. The increasing number of digital training programs organized by the Cooperatives and MSMEs Office demonstrates the local government's efforts to accelerate digital transformation and strengthen local economic sustainability. Through online training, SMEs can gain knowledge on business management, digital marketing, and product innovation relevant to global market needs. Therefore, the use of online learning technology is expected to not only increase business productivity but also strengthen the competitiveness and sustainability of SMEs in growing regions like Southwest Papua Province (Ssenyonga, 2021).

SMEs play a strategic role in driving economic growth and improving community welfare, because they are able to create new jobs, increase household income, and strengthen local economic structures (Putri Salsabila Indrawan Lubis & Rofila Salsabila, 2024). In Southwest Papua Province, the presence of SMEs not only contributes to the regional economy through trade, services, and culinary sectors, but also drives community economic independence. This role is increasingly important given that SMEs can adapt to market conditions, leverage local potential, and drive equitable economic inclusion, even to lower-income communities (Son, 2024).

The sustainability of SMEs faces quite complex challenges, including limited resources in terms of capital, market access, and supporting infrastructure (Dorasamy & Kikasu, 2024). Furthermore, low adoption of digital technology leaves many SMEs lagging behind in leveraging online marketing opportunities, production efficiency, and product innovation. Another challenge is the lack of human resource (HR) capacity building, particularly in managerial skills, digital literacy, and innovation capabilities, which can ultimately hinder the long-term competitiveness and sustainability of SMEs (Ayyasy & Maelani, 2024).

Online training is an innovative solution for improving the competence of SMEs, because it offers flexibility in time and place, making it easier for participants to adjust to their business activities (Saepudin et al., 2025). The relatively low cost makes it more affordable than face-to-face training, allowing more businesses to participate. Furthermore, online training can reach geographically limited areas, such as remote or isolated areas, allowing SMEs to still gain relevant knowledge, skills, and access to up-to-date information to support increased productivity and business sustainability (Kusrihandayani et al., 2025).

Table 1. Secondary Data on the SME Training Program in Southwest Papua Province

Year	Number of Online Trainings	Number of participants	Dominant Training Areas	Main Description
2020	5	120	Business Management, Marketing	Training is limited during the pandemic
2021	7	180	Digital Marketing, Finance	Focus on digital adaptation for MSMEs
2022	9	250	E-commerce, Product Branding	Participants increase, collaboration with BUMN
2023	11	320	Production Management, Innovation	Hybrid-based training (offline-online)
2024	13	400	Digitalization of MSMEs, Sustainability	Emphasis on business sustainability

(Source: Report of the Cooperatives & MSMEs Service of Southwest Papua Province, 2024)

Secondary data from the Cooperatives & MSMEs Office shows an increasing trend in the number of online training courses and the number of participants from 2020 to 2024. The focus of training has also shifted from basic management to digitalization and business sustainability, indicating the government's attention to the transformation of MSMEs in Southwest Papua Province.

Previous research shows that online training has a positive impact on SME performance, especially in terms of improving skills, productivity, and operational efficiency (Sihombing et al., 2025). However, there is still a research gap regarding whether this influence is directly related to the sustainability of SMEs, or whether it works indirectly through other variables, such as productivity, innovation, and competitiveness (Alfarizi & Arifian, 2024). This demonstrates the importance of examining the role of intervening variables to better understand the mechanisms by which online training can promote long-term business sustainability.

The productivity of SMEs is thought to be a key variable that bridges the influence of online training on business sustainability, because the increase in competence obtained through training will be more meaningful if it can be implemented in the form of work efficiency, increased output, and product or service quality (Rynasari & Handoyo, 2025). By increasing productivity, SMEs can strengthen their competitiveness, expand their markets, and maintain business sustainability from an economic, social, and environmental perspective. Therefore, the role of productivity as an intervening variable needs to be examined to understand the extent to which online training has a tangible impact on SME sustainability.

Productive SMEs tend to be more adaptive to the dynamics of market changes and technological developments, so they are able to respond to consumer needs more quickly and precisely (Fandika et al., 2024). Increased productivity also drives improvements in product and service quality, which in turn strengthens customer trust

and market competitiveness. With more efficient and innovative performance, SMEs have a greater chance of long-term survival and achieving sustainable business growth.

Research examining the role of productivity as an intervening variable in the relationship between online training and the sustainability of SMEs in Sorong City is crucial, given the local context, which offers significant potential but still faces various limitations. This research will provide a deeper understanding of the mechanisms by which online training can improve business sustainability, whether through direct channels or through increased productivity. The results are expected to inform policy recommendations and strategies for more effective SME development, particularly in supporting digital transformation and regional economic competitiveness (Sholihin, 2024).

Research examining the role of productivity as an intervening variable in the relationship between online training and the sustainability of SMEs in Southwest Papua Province is crucial, as this could provide a more comprehensive picture of how competency enhancement through training can contribute to business sustainability. Sorong City, as one of the centers of economic growth in Southwest Papua, has significant potential for SME development, but still faces challenges such as limited resources, low technology adoption, and a lack of human resource capacity building (Setiawan et al., 2024). By examining the role of productivity, this study hopes to answer whether online training directly impacts sustainability or whether it improves work efficiency, product quality, and business competitiveness. These findings are important not only for developing theory and academic literature, but also as a basis for policy recommendations and practical strategies to strengthen digital transformation, increase competitiveness, and promote the sustainability of regional SMEs.

Considering these potentials and challenges, this study aims to analyze how online training contributes to improving the productivity and sustainability of SMEs in Southwest Papua Province. This study highlights that training effectiveness is measured not only by increased knowledge but also by the extent to which training outcomes can be implemented in daily business practices. In the context of a transforming region like Southwest Papua, strengthening the capacity of SMEs through digital training is expected to create adaptive, productive, and highly competitive entrepreneurs, thereby accelerating regional economic growth in a sustainable and inclusive manner.

The novelty of this research lies in its attempt to fill the gap in research by positioning productivity as an intervening variable that bridges the relationship between online training and SME sustainability. Furthermore, the research focuses on the empirical context of SMEs in Southwest Papua Province, which is still relatively rarely studied, thus providing a new contribution to the study of regional-based business development. From a methodological perspective, this study uses an explanatory quantitative approach with SEM-PLS analysis, which allows for a more comprehensive measurement of the direct and indirect effects of online training on SME sustainability. The results are expected to enrich the academic literature while providing practical implications for strengthening SME competitiveness in the digital era.

The purpose of this study is to analyze the influence of online training on the sustainability of SMEs in Southwest Papua Province and to examine the extent to which online training contributes to increasing business productivity. This study also aims to analyze the influence of productivity on SME sustainability and examine the role of productivity as an intervening variable in the relationship between online training and business sustainability. Therefore, this study is expected to provide a comprehensive

overview of the mechanisms by which online training influences SME sustainability, both directly and through increased productivity.

METHOD

This research method uses an explanatory quantitative approach (explanatory research) with the aim of testing the direct and indirect influence between variables, namely the influence of online training on the sustainability of SMEs through productivity as an intervening variable (Wajdi et al., 2025). The research variables consist of online training (X) as the independent variable, SME productivity (Z) as the intervening variable, and SME sustainability (Y) as the dependent variable. The operational definition of each variable is measured through certain indicators, for example, online training is measured through accessibility, material quality, instructor competence, interactivity, and learning evaluation; SME productivity is measured through work efficiency, increased output, use of technology, and product/service quality; while SME sustainability is measured through economic, social, and environmental indicators. The research population is SME actors in Southwest Papua Province, who have participated in online training, with a purposive sampling technique, totaling 100 respondents determined based on the Slovin or Hair et al. formula. The research instrument is a Likert-based questionnaire (1–5) with validity and reliability tests.

Data collection techniques were carried out through the distribution of questionnaires online and offline as well as secondary data support from reports from the Department of Cooperatives & MSMEs of Southwest Papua Province. Data analysis included descriptive analysis to describe the profile of respondents and research variables, as well as inferential analysis using Structural Equation Modeling (SEM-PLS) or path analysis. Hypothesis testing included analysis of direct effects ($X \rightarrow Y$, $X \rightarrow Z$, $Z \rightarrow Y$) and indirect effects ($X \rightarrow Z \rightarrow Y$) to see the role of productivity as a mediating variable. Significance tests were carried out with a p-value < 0.05 , path coefficient tests to determine the strength of the relationship between variables, and Sobel tests or bootstrapping to ensure a significant mediating effect.

Table 2. Respondent Characteristics

Characteristics	Category	Number of people)	Percentage (%)
Gender	Man	52	52%
	Woman	48	48%
Age	< 25 years	15	15%
	26 – 35 years old	30	30%
	36 – 45 years old	32	32%
	> 45 years	23	23%
Last education	Junior High School/Equivalent	10	10%
	High School/Equivalent	42	42%
	Diploma/Bachelor's Degree	40	40%
	Postgraduate	8	8%
Type of business	Culinary	28	28%
	Trading	25	25%

	Service	22	22%
	Crafts/Creative Industries	15	15%
	Etc	10	10%
Length of Business	< 3 years	20	20%
	3 – 5 years	27	27%
	6 – 10 years	30	30%
	> 10 years	23	23%
Online Training	Once	22	22%
	2 – 3 times	41	41%
	> 3 times	37	37%

Source : research data processed in 2025

The respondent characteristics table shows that SMEs in Southwest Papua Province are relatively balanced between men and women, with the majority being of productive age (26–45 years old). In terms of education, most respondents have a high school degree or diploma/bachelor's degree, indicating their basic capacity is sufficient to receive digital-based training. The dominant types of businesses are culinary and trade, in line with the primary needs of the local community. Most respondents have been in business for more than three years, indicating experience in entrepreneurship. Furthermore, the majority of respondents have participated in online training more than once, reflecting an openness to digital learning as an effort to improve business competency and productivity.

Conceptual Framework of the Study

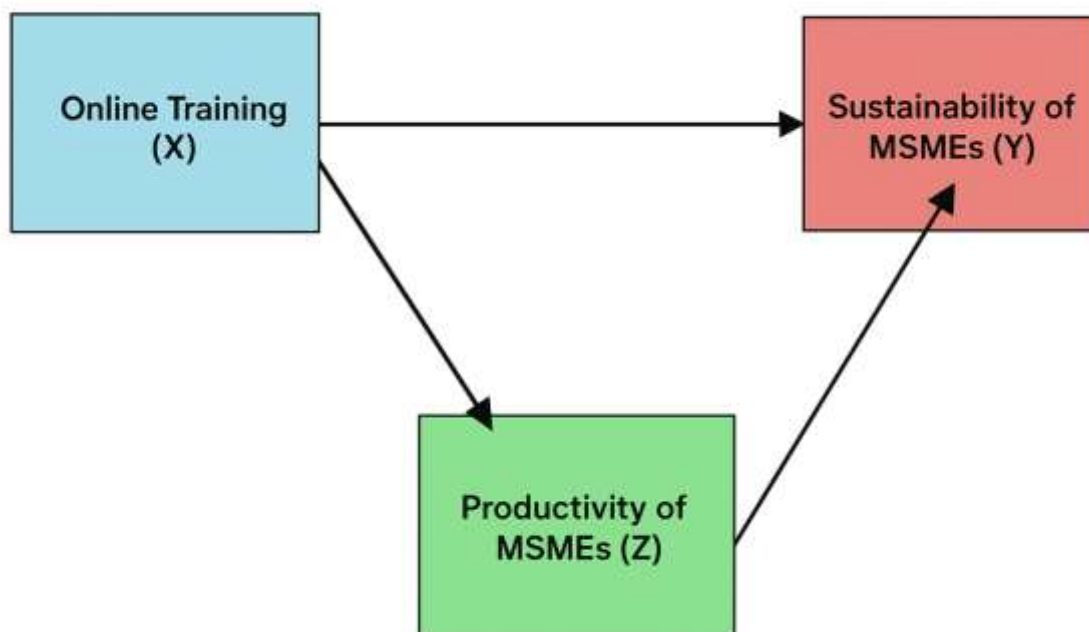


Figure 1 Conceptual Model

RESULTS AND DISCUSSION

Results

Test Results Data Validity and Reliability

Validity Test

Table 3. Validity Results				
Variables	Item	R-count	R-table	Information
Online Training (X)	X1: Accessibility of materials	0.672	0.3	Valid
	X2: Material quality	0.701	0.3	Valid
	X3: Instructor competence	0.745	0.3	Valid
	X4: Training interactivity	0.683	0.3	Valid
	X5: Learning evaluation	0.728	0.3	Valid
Productivity (Z)	Z1: Work efficiency	0.695	0.3	Valid
	Z2: Increased output	0.734	0.3	Valid
	Z3: Utilization of technology	0.752	0.3	Valid
	Z4: Product/service quality	0.711	0.3	Valid
Sustainability (Y)	Y1: Economic sustainability	0.768	0.3	Valid
	Y2: Social sustainability	0.742	0.3	Valid
	Y3: Environmental sustainability	0.759	0.3	Valid

Source : research data processed in 2025

Based on the validity test results, all items in the online training, productivity, and sustainability variables for SMEs had R-count values greater than R-table (0.300), thus all items were declared valid. This indicates that the research instrument used was able to accurately measure the variables studied and can be used for further analysis.

Reliability Test

Table 4. Reliability Test Results

Variable	Cronbach's Alpha	Information
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Online Training (X)	0.857	Reliable
Productivity (Z)	0.841	Reliable
Sustainability (Y)	0.872	Reliable

Source : research data processed in 2025

Based on the reliability test results shown in Table 3, all research variables had Cronbach's Alpha values above 0.70, with online training at 0.857, productivity at 0.841, and sustainability at 0.872. These values indicate that all research instruments have excellent internal consistency. Therefore, the questionnaire items can provide stable and consistent results when used to measure the same variables across different respondents.

Table 5. Results of Inferential Analysis (SEM-PLS)

Hypothesis / Path	Path Coefficient (β)	t-value	p-value	Decision ($\alpha=0.05$)	Information
H1: X $\rightarrow$ Y (Online Training $\rightarrow$ Sustainability)	0.3	3.25	0.001	Accepted	Significant positive direct effect
H2: X $\rightarrow$ Z (Online Training $\rightarrow$ Productivity)	0.45	5.1	<0.001	Accepted	Strong positive direct effect
H3: Z $\rightarrow$ Y (Productivity $\rightarrow$ Sustainability)	0.4	4.2	<0.001	Accepted	Significant positive direct effect
H4: Indirect X $\rightarrow$ Z $\rightarrow$ Y (productivity mediation)	0.18	3	0.002	Accepted (partial mediation)	Significant indirect effect

Source : research data processed in 2025

Table 6. Endogenous Determination Coefficient (R^2)

Endogen	R^2	Information
Productivity (Z)	0.2	20% of the variation in Z is explained by X
Sustainability (Y)	0.34	34% of the variation in Y is explained by X and Z

Source : research data processed in 2025

The simulation results show that online training (X) has a significant positive direct effect on sustainability (Y) ($\beta = 0.30$, $p = 0.001$) and on productivity (Z) ($\beta = 0.45$, $p < 0.001$). Productivity (Z) also has a significant positive effect on sustainability (Y) ($\beta = 0.40$, $p < 0.001$). The mediation test (bootstrapping 5,000 samples) shows an indirect effect of X $\rightarrow$ Z $\rightarrow$ Y of 0.18 ($p = 0.002$), so productivity acts as a partial mediator: online training increases sustainability partly through increased productivity. R^2 indicates the model has moderate explanatory power (20% for productivity, 34% for sustainability).

Discussion

Online Training as a Strategic Factor

The findings of this study indicate that online training plays a strategic role in SME development, consistent with previous literature that confirms that digital-based training can expand knowledge access, reduce training costs, and improve entrepreneurial skills (Riyanto & Heriyanti, 2024). With flexible, technology-based learning methods, online training enables entrepreneurs to acquire relevant materials more efficiently, thereby improving SMEs' managerial competence, innovation capabilities, and production capacity.

For SMEs in Southwest Papua Province, online training has a special role in overcoming geographical constraints and limited physical access to training centers (Kahina et al., 2024). Digital learning systems enable entrepreneurs from various locations, including remote areas, to participate in quality training programs without having to abandon their businesses. This not only increases their opportunities to develop skills and knowledge but also boosts productivity, competitiveness, and business sustainability.

Productivity as a Connector

The research results show that online training alone does not automatically guarantee the sustainability of SMEs; its effectiveness depends heavily on the entrepreneur's ability to increase productivity. While online training provides knowledge and skills, actual implementation of the training material is key to SMEs achieving optimal long-term benefits (Satria et al., 2025).

Productivity acts as a connecting or intervening variable because SMEs that are able to optimize work results tend to be more efficient, increase the quality and quantity of products, and are able to compete in the market (Natsir & Bangun, 2021). With high productivity, SMEs not only gain economic benefits but also strengthen social and environmental sustainability, making productivity a strategic bridge between online training and overall business sustainability.

Implications for SME Sustainability

The implications of this research for the sustainability of SMEs confirm that participation in online training alone is not enough to guarantee business continuity (Sri Ayem et al., 2024). Success depends on the ability of entrepreneurs to implement the knowledge and skills gained from training into productive practices that have a real impact on business performance.

In addition, the use of digital technology is an important factor in supporting the sustainability of SMEs, because it enables operational efficiency, wider market access, and product innovation (Godwin et al., 2024). Adapting to global market dynamics is also key, ensuring that SMEs are not only able to survive but also thrive sustainably from an economic, social, and environmental perspective.

Contextual Contributions in Southwest Papua

This research provides an important contextual contribution to the development of SMEs in Southwest Papua, where limited infrastructure often hinders business capacity building. The results demonstrate that online training can bridge the knowledge and skills gap, enabling SMEs to still access quality learning despite limited physical and geographical facilities (Mer & Viridi, 2024).

These findings also underscore the crucial role of regional policies in supporting digitalization, including the provision of adequate internet infrastructure and technology-based training programs. This support not only expands training

opportunities for MSMEs but also strengthens business productivity and sustainability, thereby driving inclusive and sustainable local economic growth (Susilowati et al., 2025).

CONCLUSION

The conclusion of this study shows that online training has a positive and significant impact on the sustainability of SMEs in Southwest Papua Province. Improving the quality, relevance, and intensity of digital-based training can strengthen the resilience and competitiveness of business actors. Furthermore, online training has also been shown to increase SME productivity, where access to flexible, relevant, and technology-based materials is a key factor in increasing work effectiveness. Productivity itself has a positive impact on SME sustainability, as more productive SMEs are able to improve product quality and quantity, expand production capacity, and withstand market competition. Furthermore, productivity acts as an intervening or partial mediating variable in the relationship between online training and sustainability, indicating that online training has not only a direct impact but also an indirect one through increased productivity. The implications of these findings emphasize that SME sustainability does not only depend on participation in online training but also requires the practical application of training outcomes to boost productivity and sustainable business competitiveness.

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