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Digital Marketing and Sustainability Accounting Literacy on Competitive Advantage and Fisheries MSMEs' Performance

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ABSTRACT

Fisheries micro, small, and medium enterprises (MSMEs) play a strategic role in the regional economy, particularly in Kupang City, which serves as one of the main centers of seafood processing in East Nusa Tenggara. However, limited market access, inadequate financial recording, and weak competitiveness remain major obstacles to improving business performance. This study aims to analyze the influence of digital marketing and sustainability accounting literacy on competitive advantage and fisheries MSMEs' performance, as well as to examine the mediating role of competitive advantage. A quantitative research approach was employed, with respondents consisting of fisheries MSME actors in Kupang City. Data were collected using questionnaires and analyzed through Partial Least Squares–Structural Equation Modeling (PLS-SEM) with the SmartPLS software. The results indicate that digital marketing and sustainability accounting literacy have significant positive effects on both competitive advantage and MSME performance. Competitive advantage also shows a significant positive effect on performance. Furthermore, competitive advantage mediates the relationship between digital marketing and sustainability accounting literacy with the performance of fisheries MSMEs. This study contributes theoretically to the development of marketing management and sustainability accounting literature, while also providing practical implications for fisheries MSME actors and local government in designing strategies to enhance competitiveness and business sustainability.

Keywords: Digital Marketing, Sustainability Accounting Literacy, Competitive Advantage, Fisheries MSME Performance

INTRODUCTION

Fisheries micro, small, and medium enterprises (MSMEs) play a strategic role in the regional economy, particularly in Kupang City, which is one of the centers of seafood processing in East Nusa Tenggara. The contribution of fisheries MSMEs is not only reflected in employment absorption but also in supporting food security and increasing the added value of local products. However, classical problems such as limited market access, inadequate financial recording, and weak competitiveness remain major obstacles to improving business performance.

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These conditions demand strategies that integrate modern marketing approaches with sustainable financial management practices.

Digital marketing has become one of the most relevant strategies for fisheries MSMEs. The use of social media, marketplaces, and digital platforms enables MSMEs to reach wider consumers, build stronger interactions, and strengthen their competitive position in the market. Previous studies have shown that digital marketing has a positive impact on MSME performance, particularly in increasing sales and expanding distribution networks (Chaffey & Smith, 2022; Kotler et al., 2021). More recent findings reaffirm the same pattern; Asikin, Zaenal, & Fadilah (2024) found that digital marketing significantly contributes to competitive advantage and MSME performance, while Sulistiyowati & Rahmawati (2024) demonstrated that the use of marketplaces and social media drives sales growth among MSMEs in Indonesia.

On the other hand, sustainability-based accounting literacy is an essential aspect often overlooked by MSME actors. Accounting literacy does not only involve simple financial recording in accordance with SAK EMKM but also includes an understanding of sustainability aspects encompassing economic, social, and environmental dimensions. Recent studies by Dewi & Purwantini (2023) concluded that financial literacy and accounting skills positively affect MSME sustainability. Nugroho et al. (2023) further emphasized that financial literacy and financial inclusion contribute to improving MSME performance and sustainability. Thus, sustainability accounting literacy can serve as a crucial foundation for fisheries MSMEs to maintain long-term competitiveness.

The performance of fisheries MSMEs is influenced not only by internal factors such as marketing strategies and financial recording but also by the extent to which business actors can build competitive advantage. Competitive advantage may take the form of product differentiation, cost efficiency, or the ability to respond to market needs more quickly than competitors. Several studies have shown that competitive advantage can serve as a mediating variable explaining the relationship between marketing strategies, accounting literacy, and business performance (Barney, 2019; Porter, 2020). More recent studies reveal a similar pattern: Setyaningsih et al. (2024) demonstrated that digital marketing and product innovation indirectly improve business performance through competitive advantage as an intervening variable.

Based on the above discussion, this study has two main objectives. First, to analyze the effect of digital marketing and sustainability accounting literacy on competitive advantage. Second, to examine the direct and indirect effects of digital marketing and sustainability accounting literacy on the performance of fisheries MSMEs through competitive advantage. By employing a quantitative approach, this study is expected to provide theoretical contributions to the development of marketing management and sustainability accounting studies, as well as practical contributions for fisheries MSMEs in Kupang City in their efforts to enhance competitiveness and business sustainability.

Digital marketing in the context of MSMEs is considered capable of enhancing consumer interaction, expanding market share, and creating added value that contributes to improving competitive advantage. The better the utilization of digital marketing, the greater the opportunity for MSMEs to build

differentiation and enhance business performance (Asikin et al., 2024; Sulistiyowati & Rahmawat, 2024). Therefore, the following hypotheses are proposed:

H1: Digital marketing has a positive effect on competitive advantage.

H2: Digital marketing has a positive effect on fisheries MSME performance**.**

Sustainability accounting literacy reflects the ability of MSME actors to manage accountable financial recording while also considering social and environmental aspects. This literacy is expected to improve decision-making, enhance transparency, and strengthen MSME competitiveness. Several studies have shown that financial and accounting literacy significantly affect business sustainability (Ardi Nugroho, 2023; Dewi & Purwantini, 2023). Therefore, the following hypotheses are proposed:

H3: Sustainability accounting literacy has a positive effect on competitive advantage.

H4: Sustainability accounting literacy has a positive effect on fisheries MSME performance.

Competitive advantage is considered a key factor that bridges the influence of marketing strategies and accounting literacy on MSME performance. The stronger the product differentiation, cost efficiency, and market responsiveness, the greater the potential for business performance improvement. Setyaningsih et al. (2024) confirmed that competitive advantage serves as a significant mediator. Based on this, the fifth hypothesis is proposed:

H5: Competitive advantage mediates the effect of digital marketing and sustainability accounting literacy on the performance of fisheries MSMEs.

METHOD

This study employs a quantitative approach with an associative research design, aiming to examine the relationships among independent variables, the intervening variable, and the dependent variable. The independent variables are Digital Marketing (X1) and Sustainability Accounting Literacy (X2), the intervening variable is Competitive Advantage (Z), and the dependent variable is Fisheries MSME Performance (Y).

The population of this study consists of fisheries MSMEs engaged in fish processing in Kupang City. The sampling technique employed purposive sampling with the following criteria: (1) the MSME has been operating for at least two years, (2) actively utilizes digital platforms for marketing or promotion, and (3) maintains simple financial records. The targeted sample size is 100–150 respondents, in accordance with the minimum sample size requirements for multiple regression analysis (Hair et al., 2019).

Operational Definition of Variables

Table 1. Operational Definition of Research Variables

Variable	Operational Definition	Indicators	Scale
Digital Marketing (X1)	The utilization of digital platforms in marketing activities to expand markets and enhance consumer	1) Online promotion 2) Use of marketplaces	Likert 1–5

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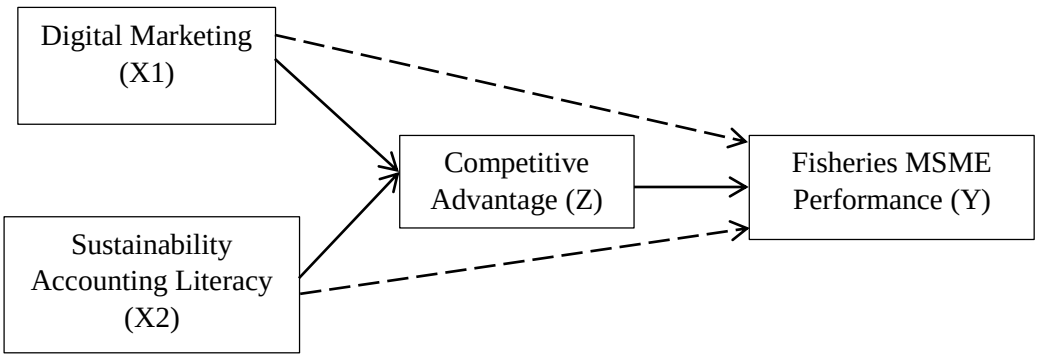
	interaction	3) Interaction through social media 4) Digital advertising	
Sustainability Accounting Literacy (X2)	Knowledge and skills in financial recording in accordance with SAK EMKM, as well as understanding sustainability aspects (economic, social, environmental)	1) Basic financial recording 2) Understanding of economic accountability 3) Understanding of social accountability 4) Understanding of environmental accountability	Likert 1–5
Competitive Advantage (Z)	The ability of MSMEs to create differentiation and efficiency to outperform competitors	1) Product uniqueness 2) Responsiveness to market 3) Cost efficiency	Likert 1–5
Fisheries MSME Performance (Y)	The achievement of business objectives both financially and non-financially	1) Sales growth 2) Profitability 3) Customer satisfaction 4) Market expansion 5) Business sustainability	Likert 1–5

Each indicator was measured using a five-point Likert scale (1 = strongly disagree to 5 = strongly agree). The research instrument was adapted from previous studies (Asikin et al., 2024; Dewi & Purwantini, 2023; Setyaningsih et al., 2024).



Primary data were obtained through the distribution of structured questionnaires to MSME owners or managers who met the sampling criteria. Secondary data, such as MSME profiles and reports from the Cooperative and MSME Office of Kupang City, were used as complementary information.

The collected data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with the assistance of SmartPLS software. The analysis stages were carried out as follows:

1. **Outer Model (Measurement Model) Assessment:**
    1) Convergent Validity Test: examining loading factor values (>0.70) and Average Variance Extracted (AVE > 0.50).
    2) Discriminant Validity Test: using the Fornell-Larcker Criterion and the Heterotrait-Monotrait Ratio (HTMT < 0.90).
    3) Reliability Test: using Cronbach's Alpha and Composite Reliability (CR > 0.70).
2. **Inner Model (Structural Model) Assessment:**
    1) Evaluating the R^2 values of endogenous variables.
    2) Path coefficient testing to assess the relationships among variables.
    3) Effect size (f^2) and predictive relevance (Q^2) testing.
    4) Model Goodness-of-Fit evaluation.
3. **Hypothesis Testing:**
    1) Using the bootstrapping method to obtain T-statistics and p-values.
    2) A hypothesis is considered significant if the T-statistics > 1.96 and p-value < 0.05 at a 5% significance level.

Through this approach, the study examines both the direct and indirect (mediating) effects of digital marketing and sustainability accounting literacy on fisheries MSME performance through competitive advantage.

RESULTS AND DISCUSSION

Outer Model Test

To assess convergent validity, the outer loadings of each indicator were examined. An indicator is considered valid if it has a loading factor greater than 0.70 (Hair et al., 2019). The test results are presented in Table 2.

Table 2. Convergent Validity Test Results (Outer Loadings)

Construct	Indicator	Loading Factor
Digital Marketing (X1)	DM1	0.852
	DM2	0.862
	DM3	0.873
	DM4	0.859
Sustainability Accounting Literacy (X2)	LAK1	0.861
	LAK2	0.885
	LAK3	0.902
	LAK4	0.919
Competitive Advantage (Z)	KB1	0.854
	KB2	0.899
	KB3	0.918
Fisheries MSME Performance (Y)	KUP1	0.897
	KUP2	0.897
	KUP3	0.851
	KUP4	0.860

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	KUP5	0.850

Source: Primary data processed with SmartPLS (2025).

Based on Table 2, all indicators have loading factor values greater than 0.70. Thus, it can be concluded that all indicators are valid in measuring their respective constructs, thereby fulfilling the criteria of convergent validity.

Next, discriminant validity was tested using the Fornell-Larcker criterion. Discriminant validity is achieved when the square root of AVE (Average Variance Extracted) on the diagonal is greater than the correlations among constructs in the same column (Fornell & Larcker, 1981). The results are presented in Table 3.

Table 3. Discriminant Validity Test Results (Fornell-Larcker Criterion)

Construct	Digital Marketing	Competitive Advantage	Fisheries MSME Performance	Sustainability Accounting Literacy
Digital Marketing	**0.861**			
Competitive Advantage	0.867	**0.891**		
Fisheries MSME Performance	0.874	0.904	**0.871**	
Sustainability Accounting Literacy	0.830	0.852	0.883	**0.892**

Source: Primary data processed with SmartPLS (2025).

The results in Table 3 show that the square root of AVE values on the diagonal (bolded) are higher than the correlations among constructs in the same column. Therefore, all constructs meet the discriminant validity criteria and can be used for further analysis.

In addition to convergent and discriminant validity, construct reliability was tested using Cronbach's Alpha, Composite Reliability (CR), and Average Variance Extracted (AVE). According to Hair et al. (2019), a construct is considered reliable if Cronbach's Alpha and CR are greater than 0.70, while an AVE value greater than 0.50 indicates that convergent validity has been met. The results are presented in Table 4.

Table 4. Reliability and Construct Validity Test Results

Construct	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Digital Marketing	0.884	0.886	0.920	0.742
Competitive Advantage	0.869	0.872	0.920	0.793
Fisheries MSME Performance	0.920	0.921	0.940	0.759
Sustainability Accounting Literacy	0.914	0.915	0.940	0.796

Source: Primary data processed with SmartPLS (2025).

Based on Table 4, all constructs have Cronbach's Alpha and Composite Reliability values greater than 0.70, as well as AVE values above 0.50. Therefore, all constructs in this study can be declared reliable and fulfill convergent validity.

Inner Model Test

Coefficient of Determination (R^2)

The coefficient of determination (R^2) is used to explain the extent to which endogenous variables can be explained by exogenous variables. R^2 values of 0.67, 0.33, and 0.19 indicate strong, moderate, and weak categories, respectively (Chin, 1998). The test results are presented in Table 5.

Table 5. R^2 Test Results

Endogenous Construct	R Square	R Square Adjusted
Competitive Advantage	0.808	0.806
Fisheries MSME Performance	0.876	0.874

Source: Primary data processed with SmartPLS (2025).

Based on Table 5, the R^2 value for Competitive Advantage is 0.808, indicating that 80.8% of its variance can be explained by Digital Marketing and Sustainability Accounting Literacy. Meanwhile, the R^2 value for Fisheries MSME Performance is 0.876, meaning that 87.6% of its variance can be explained by Digital Marketing, Sustainability Accounting Literacy, and Competitive Advantage. Both values fall into the strong category, indicating that the research model has a high explanatory power.

Effect Size (f^2)

The f^2 test is used to assess the effect size of exogenous variables on endogenous variables. f^2 values of 0.02, 0.15, and 0.35 represent small, medium, and large categories, respectively (Cohen, 1988). The test results are shown in Table 6.

Table 6. f^2 Test Results

Variable	Competitive Advantage	Fisheries MSME Performance
Digital Marketing	0.429 (large)	0.103 (small)
Sustainability Accounting Literacy	0.295 (medium–large)	0.213 (medium)
Competitive Advantage	–	0.263 (medium–large)

Source: Primary data processed with SmartPLS (2025).

The results in Table 6 indicate that the effect of Digital Marketing on Competitive Advantage is in the large category (0.429), while its direct effect on Fisheries MSME Performance is small (0.103). Sustainability Accounting

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Literacy has a moderately strong effect on Competitive Advantage (0.295) and a medium effect on MSME Performance (0.213). Meanwhile, Competitive Advantage shows a moderately strong effect on MSME Performance (0.263).

Predictive Relevance (Q^2)

The Q^2 value is used to assess the predictive relevance of the model. A Q^2 value greater than 0 indicates that the model has predictive relevance (Hair et al., 2019). The results are presented in Table 7.

Table 7. Q^2 Test Results (Cross-validated Redundancy)

Construct	SSO	SSE	Q^2 (=1-SSE/SSO)
Competitive Advantage	450.000	164.564	0.634
Fisheries MSME Performance	750.000	261.895	0.651

Source: Primary data processed with SmartPLS (2025).

The results in Table 7 show that Competitive Advantage has a Q^2 value of 0.634, while Fisheries MSME Performance has a Q^2 value of 0.651. Both values are well above 0, indicating that the research model possesses excellent predictive capability.

Hypothesis Testing (Path Coefficients)

Hypothesis testing was carried out by examining the t-statistics and p-values from the SmartPLS bootstrapping results. A hypothesis is considered significant if the t-statistics > 1.96 and p-value < 0.05 (Hair et al., 2019). The results are presented in Table 8.

Table 8. Path Coefficients Test Results

Relationship	Original Sample (O)	T Statistics	P Values	Description
Digital Marketing → Competitive Advantage	0.514	6.207	0.000	Significant
Digital Marketing → Fisheries MSME Performance	0.242	3.383	0.001	Significant
Sustainability Accounting Literacy → Competitive Advantage	0.426	5.319	0.000	Significant
Sustainability Accounting Literacy → Fisheries MSME Performance	0.331	4.736	0.000	Significant
Competitive Advantage → Fisheries MSME Performance	0.412	5.288	0.000	Significant

Source: Primary data processed with SmartPLS (2025).

Interpretation:

1) Digital Marketing has a significant positive effect on Competitive Advantage ($\beta = 0.514$; $p < 0.001$) and Fisheries MSME Performance ($\beta = 0.242$; $p = 0.001$).

2) Sustainability Accounting Literacy also has a significant positive effect on Competitive Advantage (β = 0.426; p < 0.001) and MSME Performance (β = 0.331; p < 0.001).
3) Competitive Advantage significantly affects Fisheries MSME Performance (β = 0.412; p < 0.001).
Thus, all direct hypotheses (H1–H4) are supported.

Mediation Test (Specific Indirect Effects)

To examine the role of Competitive Advantage as an intervening variable, indirect effect values were analyzed. The results are shown in Table 9.

Table 9. Specific Indirect Effects Test Results

Mediation Relationship	Original Sample (O)	T Statistics	P Values	Description
Digital Marketing → Competitive Advantage → Fisheries MSME Performance	0.212	4.246	0.000	Significant
Sustainability Accounting Literacy → Competitive Advantage → Fisheries MSME Performance	0.175	3.466	0.001	Significant

Source: Primary data processed with SmartPLS (2025).

Interpretation:

1) Competitive Advantage significantly mediates the effect of Digital Marketing on Fisheries MSME Performance (p < 0.001).
2) Competitive Advantage also significantly mediates the effect of Sustainability Accounting Literacy on MSME Performance (p = 0.001).
Therefore, the mediation hypothesis (H5) is supported.

The results of this study confirm that Digital Marketing has a significant positive effect on Competitive Advantage and Fisheries MSME Performance. This finding is consistent with Porter's (2020) theory of differentiation strategy, which emphasizes that the use of digital technology enables businesses to reach broader markets, enhance consumer interaction, and strengthen brand image. The studies by Asikin, Zaenal, & Fadilah (2024) and Sulistiyowati & Rahmawati (2024) also support this result, showing that the use of social media and marketplaces improves MSMEs' competitiveness and sales. In the context of fisheries MSMEs in Kupang City, digital marketing serves as an important tool to expand the distribution of processed seafood products to regional and national markets.

Furthermore, Sustainability Accounting Literacy has a significant positive effect on both Competitive Advantage and MSME Performance. This is in line with Dewi & Purwantini (2023) and Nugroho et al. (2023), who emphasize that proper financial recording with a sustainability orientation not only enhances accountability but also helps MSMEs access financing and maintain business sustainability. This study strengthens the argument that comprehensive accounting literacy—covering economic, social, and environmental dimensions—provides a

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stronger foundation for strategic decision-making, thereby improving the competitiveness of fisheries MSMEs.

Another important finding indicates that Competitive Advantage has a significant positive effect on Fisheries MSME Performance. This is consistent with the Resource-Based View theory (Barney, 2019), which asserts that unique resources and differentiation strategies can serve as sources of sustainable competitive advantage. The findings of Setyaningsih et al. (2024) also reinforce this result by showing that product innovation and digital marketing strategies improve business performance through competitive advantage. Thus, fisheries MSMEs that are able to create product differentiation, maintain cost efficiency, and respond quickly to market demands have greater opportunities to achieve long-term business success.

In addition to the direct effects, this study also demonstrates that Competitive Advantage serves as a mediating variable in the relationship between Digital Marketing and Sustainability Accounting Literacy on MSME Performance. This finding suggests that digital marketing strategies and accounting literacy not only directly improve performance but also strengthen MSMEs' competitive position, which in turn contributes more significantly to business outcomes. In other words, the improvement of fisheries MSME performance is not solely determined by the adoption of digital marketing and financial recording but also by the extent to which these practices foster competitive advantage.

From a practical perspective, the findings of this study provide implications for fisheries MSME actors in Kupang City to take a more serious approach in adopting digital marketing strategies and enhancing sustainability-oriented accounting literacy. For local governments and MSME support institutions, these findings form a basis for designing training programs in digital marketing and sustainability accounting education, thereby strengthening competitiveness and improving the performance of MSMEs in the fisheries sector.

CONCLUSION

This study aimed to analyze the effect of Digital Marketing and Sustainability Accounting Literacy on Competitive Advantage and Fisheries MSME Performance in Kupang City. Based on the analysis using SmartPLS, several conclusions can be drawn:

1. Digital Marketing has a significant positive effect on Competitive Advantage and Fisheries MSME Performance. This finding underscores the importance of utilizing social media, marketplaces, and digital platforms to enhance competitiveness and expand the market for processed fisheries products.
2. Sustainability Accounting Literacy has a significant positive effect on Competitive Advantage and Fisheries MSME Performance. Accountable and sustainability-oriented financial recording helps MSMEs improve accountability, ensure business continuity, and strengthen competitiveness.
3. Competitive Advantage has a significant positive effect on Fisheries MSME Performance. Product differentiation, cost efficiency, and

responsiveness to market demands are proven to be key factors in enhancing business performance.

4. Competitive Advantage mediates the effects of Digital Marketing and Sustainability Accounting Literacy on Fisheries MSME Performance. This indicates that performance improvement is not only achieved through digital marketing strategies and financial recording but also through the creation of sustainable competitive advantages.

Practical Implications

The findings of this study provide practical implications for fisheries MSME actors to increase the adoption of digital marketing and strengthen sustainability accounting literacy as strategies to enhance competitiveness. Local governments and MSME support institutions may use these findings as a basis for designing integrated training programs in digital marketing and sustainability accounting.

Theoretical Implications

This study contributes to the development of marketing management and sustainability accounting literature, particularly by highlighting the role of competitive advantage as a mediating variable in improving fisheries MSME performance.

Limitations and Suggestions for Future Research

This study is limited to fisheries MSMEs in Kupang City, thus the generalizability of the findings remains restricted. Future research is recommended to expand the sample to other MSME sectors and include external variables such as government policy support or technological innovation to provide a more comprehensive understanding.

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