



Analysis of Digital Transformation Strategies and Product Innovation to Enhance Competitive Advantage in Fisheries MSMEs to Support the Blue Economy in Kendal Regency

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Abstract: This study aims to analyze the influence of digital transformation and product innovation on the competitive advantage of fish processing MSMEs in Kendal Regency to support the Blue Economy. Kendal has significant potential in aquaculture, particularly milkfish, but faces challenges such as marketing, technology adoption, and business management. A deductive approach with a survey method was employed to collect primary data through questionnaires distributed to 278 MSME actors. Data analysis was conducted using Structural Equation Modeling (SEM) based on Partial Least Square (PLS). The results indicate that product innovation significantly influences competitive advantage with a coefficient of 0.831 ($p < 0.05$), and digital transformation also has a significant influence with a coefficient of 0.060 ($p < 0.05$). Together, product innovation and digital transformation explain 74.6% of the variability in competitive advantage. Therefore, it is recommended that MSMEs enhance their product innovation capacity through diversification and added value development, as well as leverage digital transformation using e-commerce platforms and social media to expand market access. This study contributes to the development of strategies for Kendal's fishery MSMEs to support the Blue Economy and achieve sustainable competitive advantage.

Keywords: Digital Transformation, Product Innovation, Competitive Advantage, Blue Economy

INTRODUCTION

Blue Economy is a government initiative aimed at accelerating sustainable economic growth in the marine sector (Kadin, 2024). The implementation of the Blue Economy concept in coastal areas is expected to provide additional benefits and have a significant impact on national development (Prayuda, 2020). This Blue Economy business approach can be adopted by Indonesians who depend on the fisheries and marine sector as their main livelihood. It not only involves fishermen but also entrepreneurs focused on developing processed products from the fisheries and marine sectors (Sadri et al., 2023).

The Ministry of Marine Affairs and Fisheries (KKP) has designated the coastal area of Kendal as a focus area based on several factors, such as vulnerability to disasters and climate change, and the low economic condition of coastal communities, despite having good potential (Karolina, 2020). Kendal is renowned as a primary producer of aquaculture products, especially milkfish. Milkfish production from aquaculture in this region reaches 4,000 tons per year, with the potential to develop up to 10,000 tons per year. The cultivation sites are widely spread across seven districts, covering an area of 3,400 hectares. However, only about 10% is utilized by the local milkfish processing industry operated by entrepreneurs in Kendal Regency (Indriastuti, 2023).

The Director General of Strengthening the Competitiveness of Marine and Fisheries Products emphasizes the importance of MSMEs, including those engaged in the marine and fisheries sectors, as a main pillar of the national economy. However, the marine and fisheries MSME sector often faces five main problems: difficulties in marketing, lack of capital, insufficient human resource competencies, limited technological mastery, and suboptimal management (PDSPKP, 2024).

The development of the Blue Economy can be accelerated by adopting digital economic transformation. Digital transformation is a key factor in increasing competitiveness globally and enabling communities to access new markets more effectively (Qur'ani & Anshar, 2023). Competitive advantage means providing added value to consumers so that companies and stakeholders gain higher profits (Yanti & Astuti, 2023). Digitalization has become a major force changing the economy in various industrial sectors, providing benefits not only to MSMEs but also to consumers in various aspects (Utami & Prasetyo, 2023).

The ability of entrepreneurs to create innovative products or processes not only provides a competitive advantage but also involves two important aspects: differentiating their products from competitors and reducing production costs so that their selling prices are lower than competitors (Yanti & Astuti, 2023). Therefore, to maintain a leading position in competition, companies must commit to continuous innovation (Indriastuti, 2023). However, a study on manufacturing companies in China found that although digital transformation in various fields increases competitive advantage, digital transformation in sales did not show a significant impact. This indicates that the benefits of digital transformation can vary greatly depending on the specific business functions targeted (Xue & Anwar, 2024). A study discussing the role of innovation in competitive advantage emphasizes that the relationship is complex and context-dependent. The mere presence of innovation does not guarantee a competitive advantage unless the innovation aligns with organizational capabilities and other market conditions (Chatzoglou & Chatzoudes, 2018).

The purpose of this research is to analyze and determine "How to enhance the competitive advantage of fish processing MSMEs to support the Blue Economy in Kendal Regency." The benefits of this research can be used by marine and fisheries MSMEs, especially in Kendal Regency, to improve their competitive advantage, as well as by the government to formulate appropriate strategies to realize the Blue Economy in Kendal Regency.

Digital transformation is the utilization of technology with the intent to overall enhance a company's efficiency or scope (Sulaiman et al., 2021). According to Eman Sulaiman, digital transformation has a significant impact on achieving sustainable competitive advantage. Digital transformation can act as a bridge between concepts that enable MSMEs to maintain their competitive advantage (Sulaiman et al., 2021). By adopting digital transformation, MSMEs can be better prepared to face future competition and sustain their competitive advantage in the long term (Xue et al., 2022).

Verhoef et al. assert that digital technology plays a crucial role in a company's development strategy, while digital transformation is considered key to forming a competitive advantage (Aspara et al., 2021). They indicate that the main goal of digital transformation is to increase the company's value so that it can create a competitive advantage (Wroblewski, 2018). To achieve this competitive advantage, emphasis is placed on the necessity for companies to

implement digital transformation (Schwertner, 2017).

Product innovation refers to concepts, ideas, practices, or objects that are considered new entities by certain individuals or groups, which are then accepted and adopted with the aim of improving a product (Dahmiri et al., 2021). Innovation is an essential need for companies to survive or even become more competitive. Innovation provides advantages for companies in competition with their rivals, allowing them to offer better, more efficient, or more innovative products or services (Hamzah & Ariesta, 2022). Product innovation to achieve competitive advantage refers to efforts to develop or enhance products with the aim of providing competitive advantage for the company (Wiwoho, 2019). Based on the problem approach, the research conceptual framework is as follows:

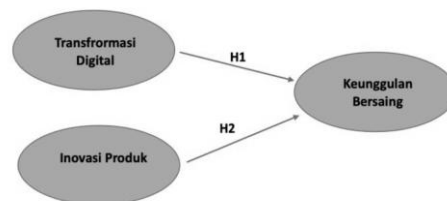


Figure 1. Conceptual Framework

METHOD

Research Variables

This study consists of independent and dependent variables. The independent variables are Digital Transformation and Product Innovation, while Competitive Advantage serves as the dependent variable in this study.

Research Approach

This study adopts a deductive approach, beginning with general theories and narrowing them into specific hypotheses. The research method used is a survey method, which is a system to collect information from or about individuals to describe, compare, or explain their knowledge, attitudes, and behaviors. The data used in this study is quantitative primary data obtained from questionnaires distributed to and completed by MSME milkfish processing entrepreneurs in Kendal Regency.

Population and Sample

The population of this study comprises all MSME milkfish processing entrepreneurs in Kendal Regency, whose total number is unknown. Therefore, the sample size is determined using the Lemeshow formula, resulting in 278 respondents. The sampling technique employed is non-probability sampling using convenience sampling.

Research Instrument Testing

The research instrument used in this study is a questionnaire developed by defining the operational definitions of each variable, followed by determining the dimensions or indicators for each variable. The measurement scale used in the questionnaire is a Likert scale ranging from 1 to 5. This study employs both semantic and statistical tests to examine the feasibility of the questionnaire. The results of these tests will demonstrate whether the questionnaire is valid and suitable for use.

Data Collection and Analysis Methods

After ensuring that the instrument is reliable and valid, the next step is data collection by distributing questionnaires to the respondents. The questionnaires will be available in two formats: physical handouts and Google Forms, allowing respondents to complete them either online or offline.

This study utilizes Structural Equation Modeling (SEM) as the data analysis method.

There are two types of SEM models: variance-based SEM and covariance-based SEM, known as Partial Least Squares (PLS), using the Linear Structure Relationship (LISREL) program.

Outer Model

The outer model test aims to specify the relationship between latent variables and their indicators. This test uses the PLS procedure. The analysis stages in the outer model are measured through validity and reliability tests. The outer measurement (outer model) in PLS-SEM is assessed using two types: reflective and formative measurement models.

Inner Model

The structural model, or inner model, is evaluated using the R-square value for endogenous variables. In evaluating the model using Partial Least Squares (PLS), the R-square for each latent endogenous variable is examined first. Its interpretation is similar to that of regression analysis. Changes in R-square values can be used to evaluate the specific influence of exogenous latent variables on endogenous variables.

Hypothesis Testing

The T-statistical test examines the hypothesized relationships between latent variables. Parameter estimation is crucial as it provides valuable information about the relationships between the research variables.

RESULTS AND DISCUSSION

Table 1. Validity Testing

Variable	Question Items	Loading Factor	AVE
Product Innovation	IP	0.989	0.938
	1		
	IP	0.987	
	2		
	IP	0.990	
	3		
Competitive Advantage	IP	0.989	0.813
	4		
	IP	0.990	
	5		
	IP	0.858	
	6		
Digital Transformation	KB1	0.847	0.741
	KB2	0.896	
	KB3	0.952	
	KB4	0.952	
	KB5	0.859	
	KB6	0.901	
Digital Transformation	TD1	0.760	0.741
	TD2	0.918	
	TD3	0.918	
	TD4	0.930	
	TD5	0.854	
	TD6	0.769	

Source: Processed data, 2024

Convergent validity testing considers factor loading values exceeding 0.70, AVE values above 0.50, and cumulative values above 0.50 (Ghozali, 2012). The validity test results demonstrate that all outer loading factors are above 0.7 and AVE values for all variables are

above 0.5, confirming the validity of all variables in this study.

Table 2. Reliability Testing

Variable	Cronbach's Alpha	Composite Reliability	Result
Product Innovation	0.986	0.986	Reliable
Competitive Advantage	0.954	0.954	Reliable
Digital Transformation	0.929	0.936	Reliable

Source: Processed data, 2024

The reliability test criteria use Cronbach's Alpha values greater than 0.7. Internal consistency reliability is assessed using composite reliability. Based on the table above, all variables exceed the threshold of 0.7, indicating that all variables are reliable.

Table 3. Structural Model Testing

Structure	R-Square	R-Square Adjusted
Competitive Advantage	0.746	0.744

Source: Processed data, 2024

The coefficient of determination test results reveal that Product Innovation and Digital Transformation collectively influence Competitive Advantage by 74.6%.

Table 4. Hypothesis Testing

Influence				Coefficient	T Statistics	P Values
Product Advantage	Innovation	→	Competitive	0.831	29.324	0.000
Digital Advantage	Digital Transformation	→	Competitive	0.060	1.797	0.036

T-table = 1.650

Source: Processed data, 2024

Findings:

H1: Digital Transformation has a positive influence on Competitive Advantage (Accepted).

H2: Product Innovation has a positive influence on Competitive Advantage (Accepted).

CONCLUSION

The T-statistic for Product Innovation is 29.324, and the P-value is 0.000. These values indicate that the T-statistic exceeds the T-table (1.650) and the P-value is less than 0.05. Thus, Product Innovation has a significant positive impact on Competitive Advantage. This aligns with previous studies asserting that Product Innovation supports the achievement of long-term competitive advantage.

The T-statistic for Digital Transformation is 1.797, and the P-value is 0.036. Similarly, the T-statistic exceeds the T-table (1.650), and the P-value is less than 0.05. Thus, Digital Transformation also has a significant positive impact on Competitive Advantage. This supports previous findings that Digital Transformation fosters long-term competitive advantages.

The combined influence of Product Innovation and Digital Transformation on Competitive Advantage is 74.6%.

Milkfish processing MSMEs in Kendal Regency should enhance product innovation capacities, such as creating product variations or adding value to existing products to achieve competitive advantages in the market. Recognizing the importance of Digital Transformation, MSMEs should utilize e-commerce platforms, social media, and digital marketing applications

to expand market access and strengthen competitive advantage.

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