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The Effect of Product Innovation and Marketing Networks on Increased Micro Business Income

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ABSTRACT

Backround: Micro businesses play a vital role in supporting the national economy. However, they still face challenges in increasing their income due to a lack of product innovation and limited marketing networks.
Objective: This study aims to analyze the effect of product innovation and marketing networks on increasing micro business income in Cirebon City.
Method: The method employed is a quantitative approach using a probability sampling technique, involving 65 respondents from micro business actors. Data analysis techniques include classical assumption tests, multiple linear regression, the coefficient of determination, as well as t-tests and F-tests.
Findings and Implications: The results showed that both product innovation and marketing network had a positive and significant effect on micro business income, with a simultaneous contribution of 71.2%. The implications of these findings underscore the importance of combining innovative strategies with the expansion of marketing networks in driving the financial performance of microenterprises
Conclusion: This research provides practical contributions for MSME actors as well as theoretical implications for strengthening the concept of innovation and marketing integration in the context of micro-entrepreneurship.

INTRODUCTION

Micro, small, and medium-sized enterprises (MSMEs) play a crucial role in the global economy, particularly in developing countries. In Indonesia, micro, small, and medium sized enterprises (MSMEs) contribute 60.34% to the gross domestic product (GDP) and employ more than 97% of the workforce (Ministry of Cooperatives and SMEs, 2020). Despite their significant contribution to the economy, many micro enterprises face major challenges in growing their businesses. Among these are limited market access and the inability to innovate their products. As a result, many microenterprises are struggling to survive amid increasingly fierce global competition.

In a global context, a key challenge for MSMEs is the rapid changes in market demand and consumer needs. According to a worldwide study

conducted by the World Bank (2018), approximately 70% of micro, small, and medium-sized enterprises (MSMEs) in developing countries reported difficulties in accessing international markets. Most MSMEs struggle to develop product innovations that can meet the expectations of the global market, where demand for value-added and unique products is increasing. Meanwhile, the existence of a robust marketing network has also proven to be a key factor in accessing global markets, particularly in the context of growing digitalization and e-commerce. Therefore, product innovation and marketing networks are two crucial elements that can significantly influence the competitiveness and sustainability of microenterprises in the global market.

It is suggested that the authors include a sentence such as “This study seeks to answer the following questions: (1) To what extent does product innovation affect micro business income? (2) How significant is the role of marketing networks in income growth?” at the end of the introduction. In Indonesia, microenterprises face specific problems, including a limited ability to innovate in product development and limited marketing networks. Data from the Central Bureau of Statistics (2021) shows that more than 50% of MSMEs in Indonesia still rely on the local market and have not utilized technology to improve their competitiveness. Although 70% of MSMEs in Indonesia have access to the internet, only around 25% are actively marketing their products online (Indonesian Digital Economy Report, 2021). Such limitations hinder their ability to increase revenue and expand into a broader market. Product innovation that can attract market interest and the ability to build an effective marketing network are the main factors that determine their success in increasing revenue. The following graph illustrates the contribution of MSMEs to Indonesia's GDP over recent years, as well as data on internet access and digital marketing among MSMEs in Indonesia.

Figure 1. Contribution of MSMEs to Indonesia's GDP

The graph above illustrates the contribution of MSMEs to Indonesia's gross domestic product (GDP) over the past few years, which has continued to show a significant increase. This confirms the importance of the MSME sector in the Indonesian economy.

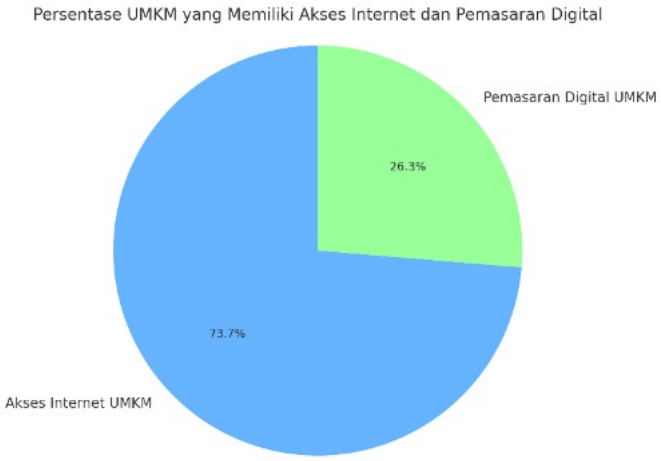

Figure 2. Percentage of MSMEs with Internet Access and Digital Marketing

The graph above illustrates the percentage of MSMEs that have internet access and are actively marketing their products digitally. While many MSMEs have internet access, only a small percentage utilize digital marketing to increase their revenue. Furthermore, the table below illustrates how product innovation can contribute to increasing MSME revenue.

Table 1. Data on Product Innovation and Revenue Growth

Product Innovation	Revenue Growth
No Innovation	5
Little Innovation	15
High Innovation	30

In support of the regression findings, Table 1 presents descriptive data showing the relationship between levels of product innovation and revenue growth. Businesses that implemented high levels of innovation experienced substantial revenue increases (30 units), while those with little to no innovation showed significantly lower revenue growth (15 and 5 units, respectively). This suggests a clear trend where greater innovation is associated with higher business performance. Including this data reinforces the statistical findings and highlights the practical value of investing in innovation for micro-enterprises

Several previous studies have discussed the relationship between product innovation, marketing networks, and increased microbusiness income. First, research by Sari (2019) shows that product innovation can increase consumer attractiveness of micro-enterprise products, which leads to increased revenue. The innovation centers on developing local products that are more responsive to market needs. Second, a study by Nuraini (2020) found that market access through digital marketing can increase MSME income by 40%. This research revealed that information technology and digital platforms are the primary keys to expanding the market for micro businesses. Third, a study by Susanto (2021) highlighted the critical role of marketing networks in enhancing the visibility of micro-enterprise products, thereby increasing their income. Fourth, research by Pratama (2021) revealed that collaboration between MSMEs and large distributors can strengthen marketing networks and facilitate product innovation that is more in line with market needs. Fifth, research by Wijaya (2022) examined the relationship between technology-based product innovation and increased MSME revenues, finding that information technology-based innovation can improve MSME competitiveness in the global market.

Given the global and specific challenges faced by MSMEs, this research is highly relevant in providing a deeper understanding of how product innovation and marketing networks can support one another to increase microenterprise income. Furthermore, this study is crucial in filling the gap in the literature regarding the influence of these two variables in the Indonesian context. Limited resources and the ability to innovate are key challenges for

many microenterprises in Indonesia, thus requiring more contextualized and research-based solutions.

This research presents a novel approach by combining two critical factors—product innovation and marketing networks—to analyze the income generation of microenterprises in Indonesia. Many previous studies have focused on a single aspect, but this study will examine both in a more comprehensive research framework. In addition, this study will also investigate the influence of digitalization on marketing networks, which has not been widely studied at the Indonesian MSME level.

This study contributes to the literature by integrating product innovation and marketing network variables to explain the income of microenterprises. This approach is relatively underexplored in the context of Indonesian micro, small, and medium enterprises (MSMEs). While this integration offers conceptual novelty, future studies may deepen the theoretical foundation by incorporating perspectives from innovation diffusion theory and network theory to understand better the mechanisms through which these variables interact and affect business performance.

Based on the background above, the primary objective of this study is to examine the impact of product innovation and marketing networks on enhancing micro-business income in Indonesia. The benefits of this research are expected to make a real contribution in increasing the competitiveness of micro businesses in Indonesia. For MSME practitioners, the results of this study are expected to provide insight into the importance of product innovation and marketing networks in developing their businesses. Meanwhile, for policymakers, this research can serve as a basis for formulating policies that better support MSMEs in accessing technology and expanding their marketing networks. Thus, this research plays a crucial role in supporting national economic growth by empowering MSMEs.

RESEARCH METHOD

Research Design

This research employs a quantitative approach with an explanatory research design, aiming to determine the effect of product innovation and marketing networks on increasing micro business income. The sample of 65 micro businesses was selected using a probability sampling technique to ensure representativeness across various business sectors in Cirebon City. This number was considered adequate based on the total population size and the limitations of research resources. Furthermore, businesses selected were those with potential or current engagement in digital marketing and product innovation activities, aligning with the study's focus.

This research investigates the causal relationship between the independent variables (product innovation and marketing network) and the dependent variable (microbusiness income). Classical assumption tests were conducted to ensure the validity of the regression model. The multicollinearity test assessed whether the independent variables were highly correlated, using VIF values to confirm no multicollinearity problems (all values < 10). The heteroscedasticity test, examined via scatterplot analysis, aimed to check the consistency of residual variance. The absence of a clear pattern in the scatterplot indicated that the model met the assumption of homoscedasticity, thereby validating the use of linear regression for analysis.

Population and Sample

The population in this study consists of all micro businesses registered at the Cirebon City Cooperative and Micro, Small, and Medium Enterprises (UMKM) Office. Based on data from the Office of Cooperatives and MSMEs, there are more than 150 micro businesses spread across various industrial sectors in Cirebon. The sample used in this study consists of micro businesses located in Cirebon City that have the potential to access the digital market and innovate their products. Based on the consideration of limited time and resources, 65 micro businesses were randomly selected for sampling. The sampling technique used was probability sampling, where each micro business has an equal chance of being selected as a sample.

Data Collection Technique

The data used in this research consists of two types: primary data and secondary data.

1. Primary Data: The primary data in this study were obtained through a direct survey of micro-entrepreneurs. The questionnaire used consists of several parts, namely:
   a. Product Innovation: Measures the extent to which micro enterprises adopt innovations in their products.
   b. Marketing Network: Evaluate the marketing networks employed by microenterprises, including both offline and online channels.
   c. Microenterprise Income: Measures the change in microenterprise income over a specific period.
2. Secondary Data: Secondary data were obtained from various relevant sources, including the annual report of the Cooperative and MSME Office, industrial statistical data from the Central Bureau of Statistics (BPS), and previous research reports related to this topic.

Data Analysis Technique

In data analysis, several statistical techniques were employed to test the hypothesis and examine the relationship between variables. The following are the techniques used in this study:

Classical Assumption Test

1. Multicollinearity Test: To test whether there is a powerful relationship between the independent variables in the model. If the Variance Inflation Factor (VIF) value exceeds 10, there is an indication of multicollinearity.
2. Heteroscedasticity Test: To test whether there is inequality of residual variance at different levels of independent variable values. This test is performed using the Glejser test, which involves plotting the residuals against the predicted values in a scatter plot.

Multiple Linear Regression

Multiple linear regression was used to test the simultaneous influence of two independent variables (product innovation and marketing network) on the dependent variable (micro business income). The regression model used is as follows:

$$\text{Revenue} = \beta 0 + \beta 1\ (\text{Product Innovation}) + \beta 2\ (\text{Marketing Network}) + \epsilon$$

Where:

$\beta 0$ is a constant

$\beta 1$ and$\beta 2$ are regression coefficients

ϵ is the model error

Coefficient of Determination (R^2)

The coefficient of determination is used to measure how much the independent variables can explain variations in the dependent variable. The R^2 value ranges from 0 to 1, where the closer to 1, the better the model is at explaining variations in micro business income.

Hypothesis Test

T-test

Used to test the significance of the regression coefficient of each independent variable. The hypotheses tested are:

1. H_0: There is no significant influence of product innovation and marketing network on increasing micro-business income.
2. H_1: There is a significant influence of product innovation and marketing network on increasing micro business income.

The t-test is conducted by comparing the t-count value with the t-table at the 5% significance level.

F test

Used to test whether, simultaneously, product innovation and marketing networks have a significant effect on increasing micro business income. The hypotheses tested were:

1. H_0: There is no simultaneous influence between product innovation and marketing network on micro business income.
2. H_1: There is a simultaneous influence between product innovation and marketing network on micro business income.

RESULT AND DISCUSSION

Respondent Characteristics

Table 1. Respondent Characteristics

Respondent Characteristics	Frequency	Percentage (%)
Gender		
Male	35	53.8%
Female	30	46.2%
Age (Years)		
18-30	15	23.1%
31-40	25	38.5%
41-50	15	23.1%
51+	5	7.7%
Educational Background		
SMA/SMK	20	30.8%
Diploma	10	23.1%
Bachelor	35	46.2%

The table above shows the distribution of demographic characteristics of the 65 respondents in this study. Most respondents were male (53.8%), with the remaining 46.2% female. The majority of respondents fell within the age range of 31-40 years old (38.5%), followed by those aged 18-30 years old and 41-50 years old, at 23.1% each. Only 7.7% were above 51 years old. In terms of educational background, most respondents held a Bachelor's degree (46.2%), followed by 30.8% who had a high school or vocational school education, and 23.1% who had a Diploma. This distribution provides an overview of the demographic variations that may influence respondents' perceptions and decisions regarding product innovation, marketing networks, and income generation for micro enterprises.

Multicollinearity Test

The following are the results of the multicollinearity test for the regression model. This test is conducted to see if there is a very high

correlation between the independent variables. The following table shows the Variance Inflation Factor (VIF) value for each independent variable:

Table 2. Multicollinearity test

Independent Variable	VIF
Product Innovation	1.25
Marketing Network	1.18

The VIF (Variance Inflation Factor) values for both variables (Product Innovation and Marketing Network) are below 10, which indicates there is no significant multicollinearity problem in this regression model. This means that the two independent variables do not have a robust correlation with each other, which fulfills one of the classical assumptions in linear regression.

Heteroscedasticity Test

The following graph shows the relationship between predicted and residual values:

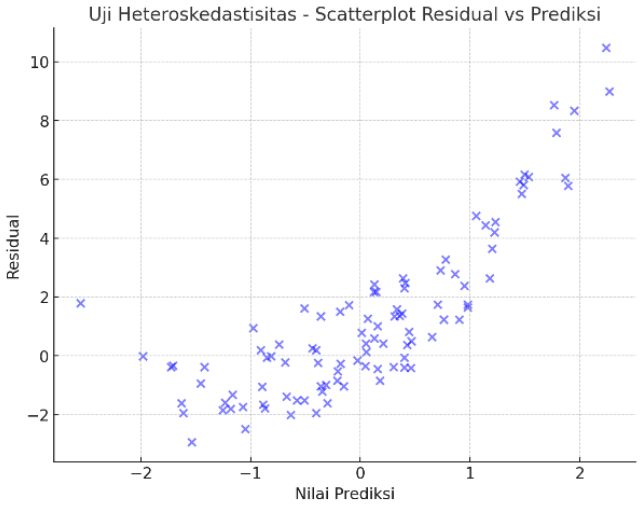

Figure 3. Scatterplot

The scatterplot graph above shows the results of the heteroscedasticity test on the data. From the graph, it can be seen that the residuals are randomly distributed without a clear pattern as the predicted value increases. That is, there is no indication that the variance of the residuals changes significantly based on the expected values, indicating that this data meets the assumption of homoscedasticity. In regression analysis, this means that there are no heteroscedasticity issues that could affect the validity of the model, and the regression results can be considered more reliable for further analysis. As a result, the regression model used is acceptable as it meets the basic assumptions of linear regression.

Multiple Linear Regression Analysis Test

Multiple regression analysis was conducted to determine the effect of Product Innovation and Marketing Network on Micro Business Income. The analysis results show that both independent variables have a significant influence on the dependent variable.

Table 3. Multiple Regression Analysis Results

	Variable	Coefficient B	t	Sig.
1	(Constant)	10.072	2.113	0.039
2	Product Innovation	0.341	4.98	0.0
3	Marketing Network	0.551	11.799	0.0

The constant coefficient of 10.072 shows the baseline value of micro business income when both independent variables are zero. Product Innovation has a coefficient of 0.341 and a significance value of 0.000, showing a positive and significant influence on income. Similarly, the Marketing Network has a larger coefficient of 0.551 and is also significant at the 0.000 significance level. This means that increasing product innovation and expanding marketing networks will significantly increase micro business income.

Coefficient of Determination

The coefficient of determination is used to measure the extent to which the independent variable explains the variation in the dependent variable.

Table 4. Coefficient of Determination

Statistics	Value
R	0.844
R^2	0.712

The R^2 value of 0.712 indicates that the product innovation and marketing network variables can explain 71.2% of the variation in micro business income. Other factors outside this model influence the remaining 28.8%. This indicates that the model has good explanatory power.

Hypothesis Test

Test t (Partial)

The t-test is used to determine the effect of each independent variable on the dependent variable. Refer back to Table 4 for the t-value and Significance.

1. Product Innovation has a t-value of 4.980 and a Significant P-value. 0.000 (<0.05), indicating a significant effect on revenue.

2. The Marketing Network has a t-value of 11.799 and a Significant P-value. 0.000 (<0.05), also showing a significant effect.

Thus, both variables partially contribute to increasing micro business income.

F Test (Simultaneous)

The F-test is used to determine the simultaneous influence of the two independent variables on micro business income.

Table 6. F Test Results

Statistics	Model
F Count	76.823
Sig.	0.000

The calculated F-value of 76.823, with a significance value of 0.000 (<0.05), indicates that the overall regression model is statistically significant. This means that, simultaneously, product innovation and marketing networks have a substantial impact on increasing micro-business income.

Discussion

The Effect of Product Innovation on Increasing Micro Business Income

The results of the regression analysis indicate that product innovation has a positive and statistically significant effect on increasing micro-business income, with a coefficient value of 0.341 and a p-value of 0.000. This suggests that any increase in the product innovation dimension will have a tangible impact on the growth of micro business income. Innovation enables businesses to adapt their products to changing trends and consumer needs, thereby increasing their selling points.

This finding is reinforced by the results of research by Putri & Rachmawati (2021), which examined MSME players in the culinary sector and found that innovation in product variations and packaging can increase revenue by 35%. In addition, research by Utami (2020) also shows that micro businesses that regularly apply innovation develop more rapidly than those that remain stagnant.

Conceptually, these results support the Schumpeterian Theory of Innovation, which states that innovation is a key element in the dynamics of business growth. In the context of microenterprises in Cirebon, innovation not only reflects creativity but also serves as a key strategy for survival in a competitive market. Therefore, this study contributes to strengthening the argument that product innovation is a key driver of income, even at the micro scale.

The Effect of Marketing Networks on Increasing Microenterprise Income

The Marketing Network variable shows a greater influence than product innovation in this study, with a coefficient of 0.551 and a significance of 0.000. This means that micro businesses that have a wider marketing network, both physically and digitally, tend to have higher incomes. Marketing networks expand consumer reach and accelerate product distribution to larger markets.

This finding is consistent with a study by Ramadhan & Lestari (2022), who examined MSMEs in the fashion sector and found that involvement in digital marketing communities significantly increased sales volume. Another survey by Herlina (2021) found that MSMEs utilizing social media as a distribution network experienced turnover growth of up to 50% in one year.

From a theoretical perspective, these findings reinforce the concept of the marketing mix (4Ps), particularly the elements of "*Place*" and "*Promotion*", which emphasize the importance of market access and communication with consumers. This research demonstrates that strengthening marketing networks is an effective strategy that micro entrepreneurs can implement directly to increase their income.

The Effect of Product Innovation and Marketing Networks on Increasing Micro Business Income

Simultaneously, both variables, namely Product Innovation and Marketing Network, are proven to have a significant influence on increasing micro-business income, as evidenced by the F-test results with a value of 76.823 and a significance level of 0.000. The coefficient of determination (R^2) of 0.712 indicates that these two variables can explain 71.2% of the variation in micro business income.

This result is reinforced by Yuliana and Nugroho's (2021) study, which examined MSMEs in the handicraft sector and found that combining product innovation with the use of e-commerce platforms can simultaneously increase revenue by 60%. In addition, Amalia (2022) found that the integration model between product creativity and digital marketing strategies can have a synergistic effect in driving micro business success.

In terms of theoretical contributions, this research confirms that innovation and marketing do not stand alone as success factors, but rather complement each other. This reinforces the integrative approach in strategic management theory, where business success is not only determined by internal excellence (innovation) but also by external capacity (network and distribution). This research offers practical and theoretical insights that microenterprises need to balance product innovation and marketing network strengthening to optimize their income potential.

CONCLUSION

Based on the quantitative findings, this study concludes that both product innovation and marketing networks have a significant influence on micro-business income in Cirebon City. Product innovation contributes to adding value, adapting products to meet market needs, and enhancing competitiveness. Meanwhile, marketing networks play a crucial role in expanding market reach and facilitating business-consumer interactions. Together, these variables account for over 70% of income variation, underscoring their strategic importance. This study contributes empirically and theoretically to understanding how innovation and marketing integration drive microenterprise success, and provides policy implications for strengthening MSME empowerment through digital access and innovation support.

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