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Analysis of Factors Affecting the Income of Dodol MSMEs After the Operation of the Toll Road: A Case Study in Bengkel Village, Perbaungan District, Serdang Bedagai Regency

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ABSTRACT

Dodol MSMEs are an important economic sector in the village, but they face challenges after the toll road began operating. This study aims to determine the factors that affect the income of dodol MSMEs after the toll road began operating. The indicators used in this study are labor, innovation, price, product promotion, business location, use of technology, impact of the toll road, service, and product quality. This study uses a quantitative method with purposive sampling technique. Data in this study were collected through questionnaires and analyzed using multiple linear regression analysis. The results of this study indicate that the variables of labor and business location have a positive and significant effect on the income of dodol MSMEs after the operation of the toll road in Bengkel Village, Perbaungan District, Serdang Bedagai Regency. The results of this study are expected to provide recommendations for the government and MSME actors to increase income and develop the dodol business in Bengkel Village, Perbaungan District, Serdang Bedagai Regency.

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1. INTRODUCTION

Micro, small, and medium enterprises (MSMEs) play an important role in the Indonesian economy, contributing 60% to the national gross domestic product (GDP) and employing around 97% of the workforce (Ministry of Cooperatives and SMEs, 2024). In North Sumatra, particularly in Serdang Bedagai Regency, dodol MSMEs are one of the leading sectors contributing to local economic development. Bengkel Village, Perbaungan District, is a dodol production center that has long been supported by a home industry with more than 150 business actors.

The operation of the Medan – Tebing Tinggi toll road, which was inaugurated in 2019, has brought changes to the economic dynamics in this area. The operation of the Medan – Tebing Tinggi toll road, which was expected to have a positive impact on economic growth and increase the income of Dodol Bengkel MSMEs, has instead had an unexpected impact on Dodol MSMEs in Bengkel Village. Many business owners in Bengkel Village have had to close their businesses due to the lack of passenger buses stopping to buy souvenirs from this area.

Table 1. Data on Dodol MSME Entrepreneurs in Bengkel Village

No	Village	2019	2024
1	**Bengkel**	158	95
2	Sei Sijenggi	25	15
3	Sei Buluh	10	5
4	Kota Galuh	9	6
5	Fortuna	6	3
	Total	**206**	**121**

Source: Serdang Bedagai Industry and Trade Office (2019–2024)

The table above shows that more than 30% of Dodol MSME shops in Bengkel Village have closed down. In 2019, there were 158 Dodol MSME shops, but this number has decreased to 95 Dodol MSME shops in 2024. With the construction of the toll road, Dodol MSMEs are facing tougher competition and changes in consumer behavior. The ability of Dodol MSMEs to promote their products to consumers through the use of technology, such as online sales, will affect the income of Dodol MSMEs, which will encourage a higher number of consumers. The more Dodol products are purchased, the greater the income generated.

In addition to online sales affecting the income of Dodol MSMEs, product price and quality will also affect MSME income. Dodol MSME shop owners who offer the most affordable prices are the most visited by consumers. Therefore, every Dodol MSME shop owner competes to offer the best prices for the products they sell compared to their competitors so that people will buy them.

The respondents to be studied by the author number 80 Dodol MSME actors in Bengkel Village, Perbaungan District, Serdang Bedagai Regency. This study aims to analyze the factors that most influence the income of Dodol MSMEs in Bengkel Village after the operation of the Medan - Tebing Tinggi toll road. The results of this study are expected to contribute to the development of Dodol MSMEs in this area and serve as a reference for the government in making policies that support local economic growth.

2. METHODS

The research design used in this study is quantitative research. This study aims to determine the relationship between variables by using numerical data to analyze the relationship between variables. The relationship between variables that this study seeks to determine is the factors that influence the income of Dodol MSMEs in Bengkel Village. This research was conducted by distributing questionnaires to MSME shop owners in Bengkel Village, Perbaungan District.

This study was conducted using primary data sourced from questionnaires measured using a Likert scale and secondary data sourced from journals. The population in this study was the owners of Dodol MSME shops in Bengkel Village. The sampling technique used was purposive sampling conducted randomly. After the data was collected, it was processed using SPSS software and tested. The data testing conducted consisted of classical assumption testing, which included normality testing, multicollinearity testing, and heteroscedasticity testing. Multiple linear regression analysis, and the final step is to conduct hypothesis testing consisting of partial significance testing (T-test), simultaneous significance testing (F-test), and coefficient of determination testing (R2 test).

3. FINDINGS AND DISCUSSION

3.1. Classical Assumption Test

1. Data Normality Test

The Kolmogorov-Smirnov test is conducted to determine whether data is normally distributed or not. Data can be said to be normally distributed if the significance value obtained for the data is > 0.05. Conversely, if the significance value is < 0.05, then the data distribution is not normal. The following are the results of the Kolmogorov-Smirnov test obtained in this study.

Table 2. Data Normality Test Results

One-Sample Kolmogorov-Smirnov Test			
			Unstandardized Residual
N			80
Normal Parameters[a,b]	Mean		.0000000
	Std. Deviation		6.65188109
Most Extreme Differences	Absolute		.115
	Positive		.111
	Negative		-.115
Test Statistic			.115
Asymp. Sig. (2-tailed)[c]			.060
Monte Carlo Sig. (2-tailed)[d]	Sig.		.060
	99% Confidence Interval	Lower Bound	.068
		Upper Bound	.073

a. Test distribution is Normal.
b. Calculated from data.
c. Lilliefors Significance Correction.
d. Lilliefors' method based on 10000 Monte Carlo samples with starting seed 299883525.

Source: Results of Data Processing using SPSS Version 20

Based on the table above, the significance value in the Kolmogorov-Smirnov test is 0.60. Data can be said to be normally distributed if the significance value is greater than 0.05. Therefore, it can be concluded that the data distribution in this study is normally distributed.

2. Multicollinearity Test

Table 3. Multicollinearity Test Results

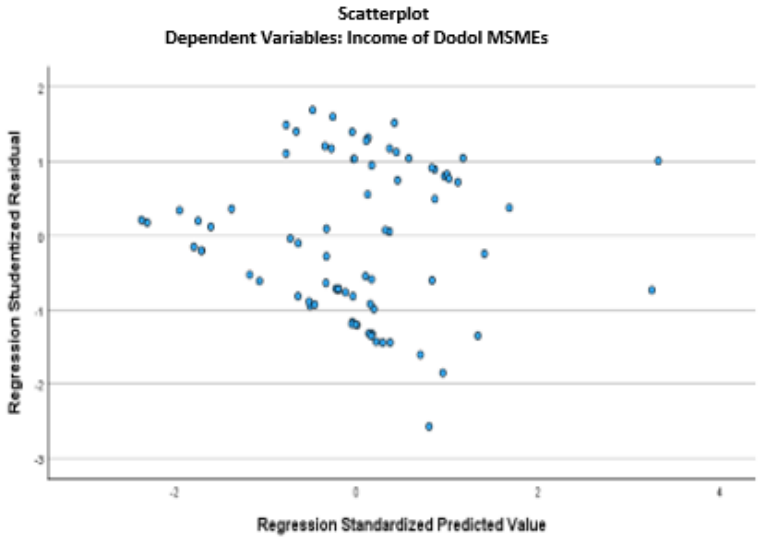
Coefficients[a]								
		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
Model		B	Std. Error	Beta	T	Sig.	Tolerance	VIF
1	(Constant)	22.298	5.187		4.299	<,001		
	Labor	.564	.170	.411	3.314	.001	.678	1.475
	Innovation	.013	.116	.018	.115	.909	.416	2.403
	Price	.131	.142	.144	.924	.359	.429	2.330
	Product Promotion	.075	.114	.183	.658	.513	.135	7.396
	Business Location	.301	.137	.304	2.206	.031	.550	1.819
	Use of Technology	.045	.100	.118	.445	.657	.149	6.707

	Highways	.136	.110	.139	1.239	.219	.824	1.214
	Customer Service	.059	.147	.056	.405	.687	.551	1.815
	Product Quality	.036	.094	.042	.379	.706	.849	1.178
a. Dependent Variable: Income of Dodol MSMEs								

Source: Results of Data Processing using SPSS Version 20

Based on the table above, it can be seen that the tolerance values for the variables (labor, innovation, price, product promotion, business location, use of technology, toll roads, customer service, and product quality) all meet the multicollinearity test requirement, which is < 0.10. The VIF (Variance Inflation Factor) value must be less than 10.0. It can be seen that the values for all variables (labor, innovation, price, product promotion, business location, use of technology, toll roads, customer service, and product quality) have met the multicollinearity test requirement, which is less than 0.10.

3. Heteroscedasticity Test



Source: Results of Data Processing using SPSS Version 20

Figure 1. Heteroscedasticity Test Results

Based on Figure 1 above, it can be seen that the scatterplot shows a pattern in which the data points are spread out evenly and do not form a specific pattern. The points in the data are also spread above and below zero (0), indicating that the data is randomly distributed, so it can be confirmed that the regression model used does not have a problem with heteroscedasticity.

3.2. Multiple Linear Regression Analysis

Table 4. Multiple Linear Regression Analysis Results

Coefficients[a]								
		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
Model		B	Std. Error	Beta	T	Sig.	Tolerance	VIF
1	(Constant)	22.298	5.187		4.299	<,001		
	Labor	.564	.170	.411	3.314	.001	.678	1.475
	Innovation	.013	.116	.018	.115	.909	.416	2.403
	Price	.131	.142	.144	.924	.359	.429	2.330

	Product Promotion	.075	.114	.183	.658	.513	.135	7.396
	Business Location	.301	.137	.304	2.206	.031	.550	1.819
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	Highways	.136	.110	.139	1.239	.219	.824	1.214
	Customer Service	.059	.147	.056	.405	.687	.551	1.815
	Product Quality	.036	.094	.042	.379	.706	.849	1.178
a. Dependent Variable: Income of Dodol MSMEs								

Source: Results of Data Processing using SPSS Version 20

Based on the table above, the results of multiple linear regression are as follows:

Y=a+b1.X1+b2.X2+b3.X3+b4.X4+b5.X5+b6.X6+b7.X7+b8.X8+b9.X9

From the multiple linear regression equation above, it can be explained as follows:

1. The constant value (a) has a positive value of 22.298. The positive sign indicates a direct relationship between the independent variables (labor, innovation, price, product promotion, business location, use of technology, toll roads, customer service, and product quality) and the dependent variable of Dodol MSME income. This indicates that if all independent variables are 0 percent or unchanged, the estimated income value would be 22.298.
2. The regression coefficient value for the labor variable is positive at 0.564. This indicates that if labor increases by 1%, income will increase by 0.564, assuming other independent variables remain constant. A positive sign indicates a direct relationship between the independent and dependent variables.
3. The regression coefficient value for the business location variable is positive at 0.301. This indicates that if the business location increases by 1%, income will increase by 0.301, assuming other independent variables remain constant. A positive sign indicates a direct relationship between the independent and dependent variables.

3.3. Hypothesis Testing Results

1. Partial Significance Test (T-test)

The T-test was conducted to determine whether the variables of labor, innovation, price, product promotion, business location, use of technology, toll roads, customer service, and product quality had a significant effect on the income of dodol MSMEs. The significance level used was 0.05 with a degree of freedom df = n-k = 80 -10 = 70, resulting in a t-table value of 1.667. The following are the results of the T-test in this study.

Table 5. Partial Test Results (T-test)

Coefficients[a]								
		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
Model		B	Std. Error	Beta	T	Sig.	Tolerance	VIF
1	(Constant)	22.298	5.187		4.299	<,001		
	Labor	.564	.170	.411	3.314	.001	.678	1.475
	Innovation	.013	.116	.018	.115	.909	.416	2.403
	Price	.131	.142	.144	.924	.359	.429	2.330
	Product Promotion	.075	.114	.183	.658	.513	.135	7.396
	Business Location	.301	.137	.304	2.206	.031	.550	1.819
	Use of Technology	.045	.100	.118	.445	.657	.149	6.707
	Highways	.136	.110	.139	1.239	.219	.824	1.214
	Costumer Service	.059	.147	.056	.405	.687	.551	1.815

Product Quality	.036	.094	.042	.379	.706	.849	1.178

a. Dependent Variable: Income of Dodol MSMEs

Source: Results of Data Processing using SPSS Version 20

Based on the T-test results table above, it can be concluded that:

1. The effect of labor on the income of Dodol MSMEs. The t-value is 3.314 and the significance value is 0.001. A t-value greater than the t-table (1.667) and a significance value less than 0.05 indicate that the Labor variable has a positive and significant effect on Dodol MSME Income. Therefore, H_a2 is accepted and H_02 is rejected.
2. The Effect of Business Location on the Income of Dodol MSMEs. The t-value is 2.206 and the significance value is 0.031. A t-value greater than the t-table (1.667) and a significance value less than 0.05 indicate that the Business Location variable has a positive and significant effect on Dodol MSME Income. Therefore, H_a2 is accepted and H_02 is rejected.

2. Simultaneous Significance Test (F-test)

A simultaneous test (F test) was conducted to determine the simultaneous effect of independent variables, namely labor, innovation, price, product promotion, business location, use of technology, toll roads, customer service, and product quality, on the dependent variable, namely Dodol MSME income. The values (df1) and (df2) used in this study are as follows:

df1 = k-1 = 10-1 = 9

df2 = n-k = 80-10 = 70

Based on the above conditions, the F-table value is 2.02.

Table 6. Simultaneous Test Results (F Test)

ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	206.385	9	22.932	2.889	.006[b]
	Residual	555.565	70	7.937		
	Total	761.950	79			

a. Dependent Variable: Income of Dodol MSMEs

b. Predictors: (Constant), Product Quality, Highways, Innovation, Labor, Use of Technology, Customer Service, Price, Product Promotion

Source: Results of Data Processing using SPSS Version 20

Based on the test results shown in Table 6, the calculated F-value is 2.889 and the significance value is 0.006. The F-table value is 2.02 and the significance value is less than 0.05, indicating that this multiple linear regression model is valid and can be used. This means that independent variables such as labor, innovation, price, product promotion, business location, technology use, toll roads, customer service, and product quality simultaneously have a positive and significant effect on the dependent variable, namely the income of Dodol MSMEs.

3. Testing the Coefficient of Determination (R2)

The R2 test is conducted to measure the ability of the regression model to explain the level of correlation between independent variables and dependent variables, as well as to explain the proportion of influence of all independent variables on dependent variables.

Table 7. Coefficient of Determination Test Results

Model Summary[b]				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.520[a]	.271	.177	2.817

a. Predictors: (Constant), Product Quality, Highways, Innovation, Labor, Use of Technology, Customer Service, Price, Product Promotion
b. Dependent Variable: Income of Dodol MSMEs

Source: Results of Data Processing using SPSS Version 20

Based on the results of data processing in the table above, it can be seen that the R value is 0.520, where this coefficient value indicates a fairly close relationship between (Labor, Innovation, Price, Product Promotion, Business Location, Use of Technology, Toll Roads, Customer Service, and Product Quality) because the closer the R value is to one, the better the model is used. The Adjusted R Square value or the coefficient of determination above shows a figure of 0.177, which indicates that the influence of the variables (Labor, Innovation, Price, Product Promotion, Business Location, Technology Use, Toll Roads, Customer Service, and Product Quality) can explain the Repurchase Intention variable by 17.7%, while the remaining 82.3% is influenced by other factors outside this study.

4. CONCLUSION

Based on the results of the research and discussion, the following conclusions were drawn:

1. Of the nine variables tested in the study, only two variables were found to influence the income of Dodol MSMEs, namely the variables of labor and business location.
2. The Labor and Business Location variables have a positive and significant effect on the income of Dodol MSMEs in Bengkel Village, Perbaungan District, Serdang Bedagai Regency.

Based on the conclusions that have been obtained and described, the researcher's recommendations are as follows:

1. Recommendations for the government and Dodol MSME actors in Bengkel Village, Perbaungan District, Serdang Bedagai Regency to increase their dodol MSME income by improving the quality and quantity of labor through training and skills development, thereby increasing business productivity and efficiency.
2. Expand the marketing network to increase the visibility of dodol products to consumers and promote products through social media, events, and collaborations with influencers to raise consumer awareness.

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