

Analysis of Factors Affecting Growth E-Commerce in Indonesia

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Abstract

This research aims to analyze the influence of internet user levels, population and infrastructure on e-commerce growth. Multiple linear regression analysis was used to test the research hypothesis. The F test results show that simultaneously, the three independent variables have a significant effect on e-commerce growth ($0.000 < 0.05$ and $f \text{ count } 305,926 > f \text{ table } 9.28$). The partial t test shows that population and infrastructure have a positive and significant influence on e-commerce growth, while the level of internet users does not show a significant influence. The coefficient of determination (R-squared) value of 99.8% indicates that the regression model is able to explain almost all variations in e-commerce growth.

Keywords: E-commerce Growth, Internet User Level, Population, Infrastructure, Digital Economy.

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Introduction

The advancement of internet technology is developing rapidly and has had an impact on the rise of digital business trends called online businesses, one of which is through *e-commerce*. (Mutia 2019) . *E-commerce* is often referred to as one of the drivers of economic growth in Indonesia. This is not without reason because with a rapidly growing population and internet penetration, Indonesia is one of the potential markets for *e-commerce*. (Hanum and Sinarasri 2017) . The great potential of *e-commerce* cannot be separated from the development of internet users in Indonesia. In recent year e-commerce has grown rapidly, in the midst of this rapid growth it is very important to understand the factors that influence and drive the development of *e-commerce*.

According to research conducted by the Indonesia E-commerce Association (IDEA), Indonesia is a market with attractive *e-commerce growth from year to year*. Based on (Trade 2024) the number of *e-commerce* users in Indonesia continues to increase since 2020, until in 2023 the number of *e-commerce users* in Indonesia is 58.63 million users. Currently, the number of e-commerce users in Indonesia is expected to continue to increase until 2029 reaching 99.1 million users.

e-commerce users in Indonesia is certainly caused by several factors. Factors underlying this significant development include the increasing level of internet users, increasing population growth, and the development of adequate infrastructure. The emergence of *E-commerce activities* must be anticipated properly and well so as not to lose the opportunity to seize opportunities in the era of globalization, especially in the economic sector (Yulimar and Setiawan 2006) .

Table 1. Number of E-Commerce Users in Indonesia 2017-2023

Year	Percentage
2017	52.5%
2018	57.6%
2019	62.2%
2020	66.3%
2021	69.9%
2022	72.9%
2023	75.3%

Source: (Statista 2020)

We can see in the table above, the number of *e-commerce users* in Indonesia increases every year. The percentage rose to 22.8% from 2017 to 2023. Indonesia is also predicted to be the country with the highest e-commerce growth in the world in 2024, which is 30.5%. The growth of *e-commerce* in Indonesia continues to grow rapidly, supported by increasingly widespread internet access and high mobile phone usage.

Based on the description that has been explained above, the author is interested in knowing the supporting and inhibiting factors of *e-commerce growth* in Indonesia. Therefore, the researcher limits this research to only discuss how much influence the level of internet users, population and infrastructure can affect the growth of *e-commerce* in Indonesia. The results of this study are expected to provide a positive influence on increasing the growth of *e-commerce* in Indonesia.

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Literature Review

E-commerce

According to (Baum 1999) *E-commerce* is a business process that connects companies, consumers and society through electronic transactions and the exchange of electronic goods, services and information with a series of dynamic technologies and applications. Then according to (Schneider 2002) *E-commerce* is the application of new technologies, especially Internet and Web technologies, to help individuals, businesses, and other organizations do business better. *E-commerce* is a trade transaction contact between sellers and buyers using electronic media.

Internet User Level

The use of the internet in community life is closely related to economic activities, transactions carried out using the internet will create new opportunities for business actors in the form of business models that are different from traditional business models (Affan 2022) . This change is marked by the emergence and development of *e-commerce* as a new business marketing medium that can provide equal opportunities and opportunities for business actors to be able to compete in a wider market (Affan 2022) . The rapid increase in internet users worldwide has become one of the main drivers of *e-commerce growth*. The more people who are connected to the internet, the greater the market potential for online businesses.

Total population

Population is an important element in economic activities as well as labor, experts, company leaders, and entrepreneurs in creating economic activities (Nugroho 2018) . The population has a very strong correlation with the development of *e-commerce*. The larger the population, the greater the potential for the *e-commerce market*. With an increasing population, the potential for consumers for products and services offered through *e-commerce* is also increasing. The increasing population also increases the diversity of needs and creates wider demand for various types of products and services that can be met through *e-commerce*.

Infrastructure

According to the Big Indonesian Dictionary (KBBI) Infrastructure can be interpreted as public facilities and infrastructure. According to Fingar, Peter, Harsha Kumar (2000), quoted by (Indrajit 2002) in principle *e-commerce* provides infrastructure for companies to expand internal business processes to the external environment without having to face time and space barriers which have been the main issues. According to Antonelli, Greenstein and Spiller quoted by (Aini 2020) revealed that the development of telecommunications infrastructure has an impact on economic growth both directly and indirectly. the use of efficient telecommunications infrastructure has a direct impact on reducing transaction costs and better marketing information, and indirect benefits are the creation of accelerated information dissemination.

Research Methods

This research was conducted in Indonesia during the period 2017 to 2023, covering a total of seven years. The data analysis method used is the Multiple Linear Regression method. This research was conducted to analyze the influence of variables that are factors in influencing the growth of *e-commerce* in Indonesia.

Multiple Linear Regression Method Test

Multiple linear regression is intended to test the effect of two or more independent variables on one dependent variable. This model assumes a linear relationship between the dependent variable and each of its predictors. From this relationship, the formula formed is:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon_i$$

Where:

Y = E-commerce

α = Constant

$\beta_1 - \beta_3$ = Regression coefficient of independent variables

X_1 = Internet user rate

X_2 = Number of residents

X_3 = Infrastructure

By testing the T Test, F Test and Determination Test as follows:

- The T-test aims to determine whether or not there is a partial (own) influence given by the independent variable (X) on the dependent variable (Y).
- The F test aims to determine whether or not there is a simultaneous (joint) influence given by the independent variable (X) on the dependent variable (Y).
- The determination test is used to determine the percentage of influence of the independent variable (X) simultaneously on the dependent variable (Y).

Results and Discussion

The multiple linear regression analysis test aims to determine whether or not there is an influence of 2 or more independent variables on the dependent variable (Y). In the multiple linear regression test, researchers test the T Test, F Test and Determination Test.

1. T-test

The test aims to determine whether or not there is a partial (own) influence given by the independent variable (X) to the dependent variable (Y). with a confidence level of 95%, $\alpha = 0.05$, which is stipulated that:

- If the sig value < 0.05 or t count $> t$ table, then there is an influence of variable X on variable Y.
- If the sig value > 0.05 or t count $< t$ table, then there is no influence of variable X on variable Y.

To find out the t table, you can search using the formula:

T table = t ($\alpha / 2$; nk-1) = t (0.05/2; 6-3-1) = 0.025; 2, where k is the number of independent variables and n is the number of respondents. By looking at the t table distribution, a value of 4.303 is found, which is the t table value to determine whether or not there is an influence on the independent variable on the dependent variable. The following are the output results of the multiple regression analysis test which will be interpreted by looking at the table below.

Tabel 2. Results of The Multiple Regression Analysis

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3,042	7,684		.396	.719

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Internet User Rate (X1)	-1.952	.676	-.555	-2,890	.063
Population (X2)	12,754	2,095	1,047	6,087	.009
Infrastructure (X3)	3.262	.366	.562	8.903	.003

a. Dependent Variable: E-commerce (X4)

Source: Results of SPSS Processing Version 25.0

1. From the data above, it can be seen that the significance value for the influence of X1 on Y is $0.063 > 0.05$ and the calculated t is $-2.890 < t$ table 4.303 so it can be concluded that there is no influence of variable X1 (Internet User Level) on Y (E-commerce), because the significance value is greater than 0.05 and the calculated t is smaller than the t table.
2. From the data above, it can be seen that the significant value for the influence of X2 on Y is $0.009 < 0.05$ and the calculated t is $6.087 > 4.303$ so it can be concluded that there is an influence of the variable X2 (Number of Population) on Y (E-commerce), because the significant value is smaller than 0.05 and the calculated t value is greater than the t table.
3. From the data above, it can be seen that the significant value for the influence of X3 on Y is $0.003 < 0.05$ and the calculated t is $8.903 > t$ table 4.303, so it can be concluded that there is an influence of the variable X3 (Infrastructure) on Y (E-commerce), because the significant value is smaller than 0.05 and the calculated t value is greater than the t table.

2. F Test

The F test aims to see whether or not there is a simultaneous (joint) influence given by the independent variable (X) on the dependent variable (Y), with the provision that:

- a. If the sig value < 0.05 or f count $> f$ table, then there is a simultaneous influence of variable X on variable Y.
- b. If the sig value > 0.05 or f count $< f$ table, then there is no simultaneous influence of variable X on variable Y.

To find out the f table, you can search using the formula:

F table = f (k; nk) = f (3;3), where k is the number of independent variables and n is the number of respondents. By looking at the f table distribution table, the value of 9.28 is found, which is the value of the f table to determine whether or not there is a simultaneous influence of variable X on variable Y. The following are the output results of the multiple regression analysis test which will be interpreted by looking at the table below.

Table 3. Output Results of the Multiple Regression Analysis

ANOVA ^a						
	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	157,753	3	52,584	305,926	.000 ^b
	Residual	.516	3	.172		
	Total	158,269	6			

a. Dependent Variable: E-commerce (X4)

b. Predictors: (Constant), Infrastructure (X3), Population (X2), Internet Penetration Rate (X1)

Source: SPSS Processing Results version 25.0

Based on the output results above, it is known that the significant value for the influence of the variables Internet User Level (X1), Population (X2), Infrastructure (X3) simultaneously on E-commerce (Y) is $0.000 < 0.05$ and the calculated f is $305.926 > f$ table 9.28 so that it can be concluded that there is a simultaneous influence between the independent variables on the

dependent variable, because the significant value is smaller than 0.05 and the calculated f is greater than the f table.

3. Termination Coefficient Test

This test is used to determine the percentage of influence of the variables given by the independent variable (X) simultaneously on the dependent variable (Y). The following are the results of the multiple regression analysis output which will be interpreted in the table below to measure the coefficient of determination on the X variable against the Y variable.

Model Summary ^b					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.998 ^a	.997	.993	.41459	1,890
a. Predictors: (Constant), Infrastructure (X3), Population (X2), Internet Penetration Rate (X1)					
b. Dependent Variable: E-commerce (X4)					

Source: SPSS Data Processing Version 25.0

From the output results above, we can see that the R Square value is 0.997 or 99.7%. This means that the independent variables of Internet User Level (X1), Population (X2), Infrastructure (X3) can explain the dependent variable, namely E-commerce (Y). While the remaining 0.3% is explained by other factors outside the research model. The results of the determination coefficient test provide meaning that there are still other independent variables that affect E-commerce even though only 0.3%.

Conclusion and Suggestions

1. Conclusion

Based on the results of the research that has been conducted, the following conclusions can be drawn:

- a. The results of the T-Test processing partially state that the Internet User Level X1 gives negative results and there is no significant relationship to Y with a significance value of $0.063 > 0.05$ and a t-count value of $-2.890 < t \text{ table } 4.303$. While the Population (X2) and Infrastructure (X3) variables partially show positive results and are related to the significance value of X2 $0.009 < 0.05$ and t count $6.087 > t \text{ table } 4.303$ then X3 $0.003 < 0.05$ and t count $8.903 > 4.303$.
- b. The results of the F Test processing state that the Level of Internet Users (X1), Population (X2), Infrastructure (X3) simultaneously on E-commerce (Y) is $0.000 < 0.05$ and the calculated f is $305.926 > f \text{ table } 9.28$ so that it can be concluded that there is a simultaneous influence between the independent variables on the dependent variable, because the significant value is smaller than 0.05 and the calculated f is greater than the f table.
- c. The results of the Determination Coefficient Test processing state that the R Square value is 0.997 or 99.7%. This means that the independent variables of Internet User Level (X1), Population (X2), Infrastructure (X3) can explain the dependent variable, namely E-commerce (Y). While the remaining 0.3% is explained by other factors outside the research model. The results of the determination coefficient test provide meaning that there are still other independent variables that affect E-commerce even though only 0.3%.

2. Suggestion

Expansion of Research Variables, further research is suggested to consider other variables that may influence e-commerce, such as government policies, digital divide, economic growth to provide a more comprehensive picture.

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