4th INTERNATIONAL CONFERENCE ON BUSINESS & SOCIAL SCIENCES
BUSINESS REVIVAL THROUGH DIGITAL TECHNOLOGY TRANSFORMATION
e-ISSN 2746-5667

IMPACT OF E-COMMERCE AND INTERNET USERS ON INDONESIA'S ECONOMIC GROWTH

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Abstract: Economic growth refers to the expansion of economic activities that enhance the production of goods and services, ultimately improving societal welfare. It serves as a crucial indicator for analyzing a country's economic development, typically measured by the change in Gross Domestic Product (GDP) between consecutive years. Various indicators can assess Indonesia's economic condition, with national income being a significant metric supported by accurate GDP data, categorized into current and constant prices. Over time, developments have transformed the Indonesian economy, with electronic media becoming increasingly prevalent. The rise of electronic media has facilitated broader and more effective transactions through e-commerce. Identifying the impact of these transactions is essential to understand their relationship with economic growth, which is vital for enhancing the welfare of Indonesia's population. Additionally, the growth of internet users significantly influences the economy. As internet user numbers rise annually amid digitalization, the government is expected to promote wider internet access across the nation. The internet allows individuals to access vital information for business, education, and recreation, contributing to economic growth. Thus, this research analyzes the impact of e-commerce transaction value and internet users on Indonesia's economic growth from 2013 to 2023, using quantitative secondary data and multiple regression analysis.

Keywords: economic growth, gross domestic product, e-commerce, internet users

1. Introduction

As technology advances, the world has now entered the era of Society 5.0, which is characterized by the interconnection of devices with the internet and the presence of IoT networks that allow more people to access the internet. The integration of modern ideas including big data, social media, CSR, and E-commerce also plays an important role in accelerating the digitalization transition (Parishev et al., 2020). The number of internet users (5.16 billion in January 2023) is projected to grow significantly to 6 billion in 2027 as a result of internet expansion and rapid adoption of internet technology. The expansion of internet users not only has an impact on the growth of Society 5.0, but also leads to the release of a new economic model. Over the next few years, the development of digital transaction experiences and circular economies will determine how companies generate added value for customers. This economic transition will change people's perceptions of political economy, and is projected to have a significant impact on economic output and employment rates, which are key elements of the concept of political economy (Radjamin & Hermawan, 2024).

At this time, economic growth will not last if there is no continuous technological development. The economic growth of a country has three main factors that influence it, namely population growth, capital accumulation, and technological progress. This technological progress can open up business opportunities for entrepreneurs in a country, namely online-based businesses by controlling the internet network. Thus it can be said that technological developments will affect economic growth (Puji Lestari et al., 2021).

Rapid technological developments have penetrated all aspects of life, modern human life is dominated by technology. The shift in behavior from real-world interactions to the online

world has become a significant phenomenon in recent years. The Internet as the main online media has brought fundamental changes in the way people think, communicate, work, shop, and socialize (Kayyum et al., 2024). In this digital era, the internet has become an integral part of everyday life, allowing humans to connect with people around the world, access information quickly, and even participate in various online activities. This change not only affects the way we view the world, but also affects human behavior in changing the way businesses operate. Many businesses have shifted to online models to reach a wider market. This creates new opportunities, such as e-commerce and online services, which drive economic growth (Rochmahwati, 2023).
The following is data on internet users in Indonesia from 2018-2023:

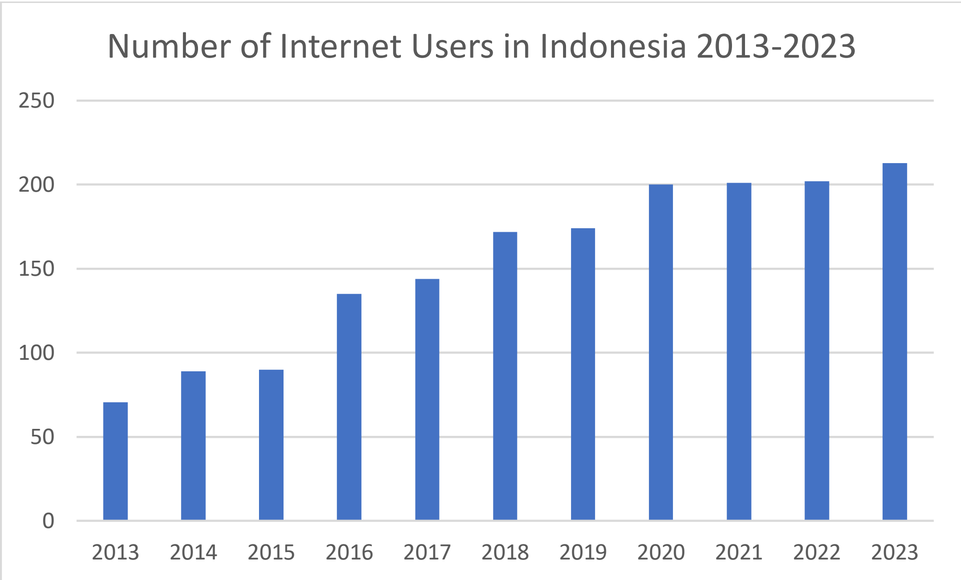

Figure 1: Number of Internet Users in Indonesia 2013-2023
Sources: BPS Data Processed 2024

Based on the data above, it can be seen that the number of internet users is increasing from year to year and will peak in 2023.This is also supported by the foundation of society in the future is this generation. Some might argue that the millennial generation was born in a post-emotional period of history. The quality that is emphasized is optimism towards unlimited possibilities, which gives rise to the motto of the millennial generation, namely passion. It is undeniable that Gen-Z and the millennial generation are not the same and should not be treated the same. These two generations are seen as different because they have the power to change the thinking and behavior of internet users because they were born in a time when technology was still developing, especially smartphones. Therefore, they are never free from the use of smartphones and internet access which seems to be a necessity.
According to (Nasution et al., 2020) the productive age population is the main driver of activity in the internet era, and this will drive the growth of e-Commerce in Indonesia, especially because this country is developing and has a Demographic Bonus of a society that is increasingly consumptive and driven by passion and desire, not need. People will have greater purchasing power due to this consumptive behavior, especially in areas that have facilities that make it easy to shop without hassle. Since the emergence of e-commerce, people have gradually begun to change the way they carry out economic activities by preferring online shopping, from food and clothing to household needs that are available through e-commerce. This is because online shopping offers more choices, saves time, and costs that are comparable

to those in stores. In addition, frequent transactions are another factor that attracts customers. Customers simply "click" to get what they want and make transactions with anyone without being limited by physical location or face-to-face communication. This is especially true with the proliferation of smartphone technology, which has become an important tool for those who do business online. e-commerce is a buying and selling website that offers customers a variety of shopping options.

The evolution of E-commerce is interesting to discuss because over time technology will continue to develop and this must of course be followed by adjustments to the digital economy. One of them is the development of payment instruments for non-monetary transactions that are growing rapidly and supporting the existence of e-commerce. The growth of E-commerce also indirectly increases the regional economy as reflected in the value of the regional gross domestic product, considering that the growth of economic activity will be directly proportional and in line with the growth of economic added value in the region (Lela et al., 2023). Meanwhile, the increase in the number of internet users shows that Indonesian people are starting to be open to technological developments and are starting to use technology wisely. The readiness of the community for the digital economy makes the role of the digital economy very potential for Indonesia to develop the e-commerce business. And when this wave of digitally connected young people and mobile users enter their working lives, they will naturally become part of the Internet economy, which will further drive its growth. The massive penetration of technology, especially internet services, is also occurring in Indonesia (Simangunsong & Rozaini, 2023).

Indonesian people have started to follow this development by utilizing electronic money (e-money) such as OVO, GOPAY, Link Aja, and many others to carry out various non-cash transactions and invest in digital money. The development of internet users in Indonesia is growing very rapidly from various circles because with the internet, information is needed in very large quantities. The increasing number of internet users shows that Indonesian people are starting to be open to technological developments and are starting to use technology wisely. Indonesia's potential to build e-commerce companies is increasing along with the readiness of the community for the digital economy. The growth of online trading, or "E-commerce," is in line with the increasing number of internet users in Indonesia. In the business sector, e-commerce is a new system that has emerged along with the replacement of traditional trade through internet trading. People decide to shop from home because they cannot interact with other people directly, this attracts the attention of the Indonesian people to e-commerce. The value of e-commerce transactions is increasing along with the increasing number of e-commerce companies (Efendi et al., 2024).

This is proven by the growth value of e-commerce transactions which has continued to increase over the past 11 years. Based on the graph in the figure 2, it can be seen that there has been an increase in e-commerce transactions in Indonesia from 2013 to 2023. In 2022, it will be the highest figure worth 476 trillion transactions in Indonesia. The rapid development of information and communication technology in the current era of modern digitalization has caused changes in the basic structure of the global economy, which is also felt in Indonesia as a developing country with an open economic system. Technological developments can also provide opportunities for countries to improve their economies. Technological developments help the economy operate more efficiently, reduce input costs, and improve the quality and quantity of manufactured goods. This is certainly the economy in all factors of production. Economic growth is an important factor that has a general impact on the welfare of a society. People in different countries have different experiences with their standard of living because of differences in growth rates and growth patterns that are very different over time across economies.

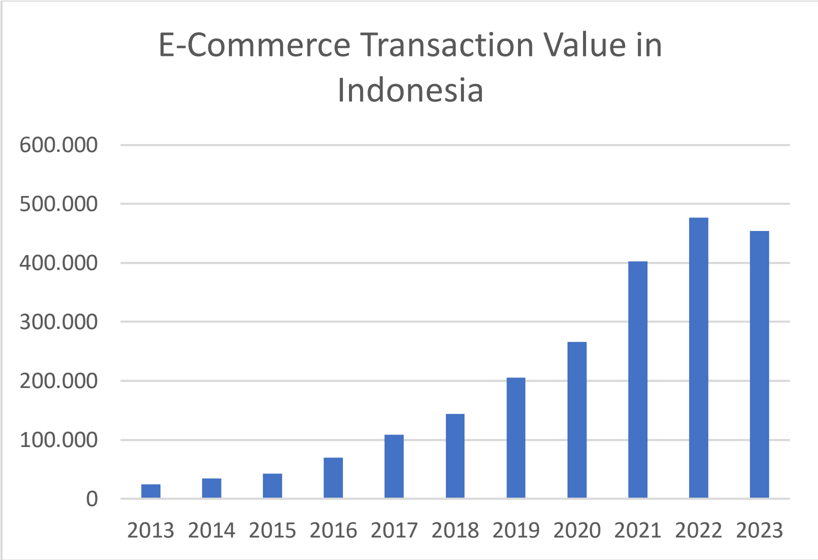

Figure 2: E-Commerce Transaction Value in Indonesia 2013-2023
Sources: Data Processed

According to research (Rochmahwati, 2023) e-commerce transaction value has a good and large influence on economic growth, and this influence depends on the variable of smartphone users. However, the number of people using the internet has a significant and negative impact on economic growth. Based on the findings of Dharma research (Budi Dharma et al., 2022) e-commerce will affect the expansion of the Indonesian economy. Research on the Number of e-Commerce Transaction Values and the Number of Internet Users has a positive impact on (Nasution et al., 2020) significant to economic growth in the digital era as well as to Indonesia's economic growth.

2. Literature Review

Economic growth

Technological Economic Growth is elastic and depends on influence or endogeneity. The spread of knowledge and inspiration is one of the factors that influence economic progress. Data is now a fundamental component of economic activity, and the internet makes it easy to share it. However, according to the philosophy of endogenous development, the basis of economic development is the increasing supply of fresh information and inspiration in the economy, which encourages the expansion of initiative, production, and creative energy and is manifested in new and useful activities (Budi Dharma et al., 2022).
According to (Ayu Dewati, 2023) the economic conditions in Indonesia can be said to be good or not seen from several indicators that affect the economy itself, as one of the indicators that supports the economy is from national income in this case there is accurate data related to Gross Domestic Product (GDP), GDP itself is divided into on the basis of current and on the basis of constant prices. Gross Domestic Product (GDP) is the added value of goods and services produced in a country's territory in a certain period related to various types of production units. The economy in Indonesia itself continues to experience changes that are influenced by the development of the times, currently the most popular is electronic media. With the existence of electronic media, people's transactions are becoming more diverse and easier and more efficient through e-commerce transactions. This is also supported by the increasing

sophistication of technology and people who are increasingly literate about technology, making internet users increasingly.

E-commerce Transaction Value

One of the impacts of globalization is the rapid advancement of technology, especially when technology begins to penetrate all aspects of life. One of the most important things to examine is how technology is used economically, in addition to the ease of use in today's era when developers are able to create businesses that can be tried even remotely. Electronic commerce, sometimes known as e-commerce, is the buying and selling of goods using electronic channels (Hall & Suharto, 2021).

Technological advances drive the economy to become more advanced with new business models and markets such as e-commerce. E-commerce is the process of buying and selling products, as well as providing services for electronic networks with the internet and the world wide web. E-commerce users in Indonesia have increased over the past 10 years, so that as one of the sectors driving the growth of electronic commerce which has a role in improving the economy (Ni Made Yulia Dewati Ayu, 2023).

The growth of e-commerce has a major impact on Indonesia's economic growth. In this case, the increasing number of industry players who act as producers and drive product sales in the e-commerce industry. The number of businesses involved in e-commerce is increasing, which in turn increases the volume of goods and services exchanged online. As a result, the number of companies that want to be established continues to increase. In Indonesia, e-commerce platforms such as Shopee, Tokopedia, Bukalapak, Lazada, and so on are examples. Furthermore, according to Bank Indonesia, the monthly income generated by e-commerce companies in 2019 ranged from IDR 11 trillion to IDR 13 trillion. With this capacity, the e-commerce sector offers a lot of potential and can help the growth of the Indonesian economy (Budi Dharma et al., 2022).

Number of Internet User

The term “number of internet users” refers to the proportion or total number of individuals in a population who use the internet. This indicates the widespread use of information and communication technology in society, which has an impact on employment and economic expansion. The increase in internet users is often associated with an increase in GDP per capita and other forms of economic activity (Radjamin & Hermawan, 2024). In addition, the growing economy experienced its reliance on the Internet presents a bright future with quick, easy, and limitless access that enables customers to easily obtain the goods they want. Manufacturers and retailers alike take advantage of the chance to advertise their goods online. Over half of purchases at stores are thought to use at the moment. This is a result of the growing number of people accessing the internet through restrictions.

3. Method

The dependent or independent variable is economic growth; the independent or independent variables are e-commerce transactions and the number of internet users. Time series data, one type of secondary data, is used in this quantitative research. This research will use Microsoft Excel and E-views 10 for data processing. The purpose of this study is to determine, partially and simultaneously, how internet user behavior and e-commerce transaction values in Indonesia affect the country's economic growth. The scope of this study is limited to 2013-2023, due to data limitations. Additional data sources that can assist this research include

e-ISSN 2746-5667

Statista, the Indonesian Internet Service Providers Association (APJII), and the Central Statistics Agency.

GDP is the best indicator of economic conditions. In this study, the data analysis technique used is ordinary least squares multiple linear regression (OLS), which is commonly used to estimate out-of-sample regression functions. Multiple regression tests and tests. The ordinary least squares (OLS) method is a model that minimizes the deviation (regression) of the calculated results from reality. Conventional Linear Regression is a simple method compared to other methods that can be used to model linear regression. To perform accurate calculations while minimizing human error, a computer program specifically designed to assist statistical processing, Eviews software, is used with a 95% confidence level or α = 0.05. This study also uses classical assumption tests such as normality, heteroscedasticity, multicollinearity, and autocorrelation.

The following is a table of research data used:

Table 1. Research Data

Year	E-Commerce Transaction Value (Trillion Rupiah)	Number of Internet Users in Indonesia MILLION	Gross Domestic Product at Constant Prices (Trillion Rupiah)
2013	25,000	70.5	8,156.49
2014	34,900	88.9	8,564.86
2015	42,504	89.9	8,982.51
2016	69,828	135	9,434.61
2017	108,372	144	9,912.92
2018	144,144	172	10,425.85
2019	205,500	174	10,949.15
2020	266,300	200	10,722.99
2021	403,000	201	11,120.07
2022	476,300	202	11,710.24
2023	453,750	213	12,301.39

Sources: BPS Processed Data, 2024

4. Results and Discussion

Economic growth

Based on the figure 3, it can be seen that Indonesia's economic growth from 2013 to 2023 experienced quite significant growth with the lowest value in 2013 is 8,156.49 and the largest value in 2023 is 12,301.39.

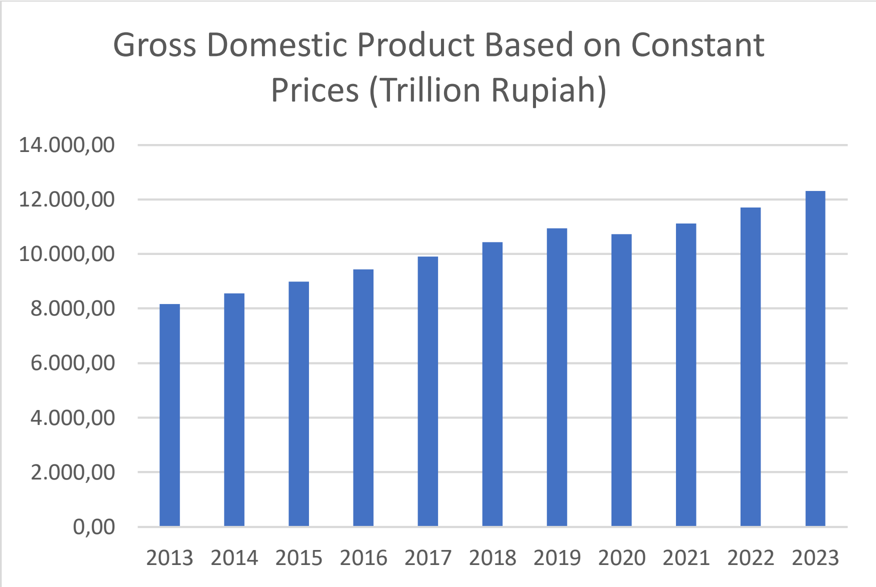

Figure 3: Gross Domestic Product Based on Constant Prices (Trillion Rupiah) 2013-2023
Sources: Data Processed

Normality Test

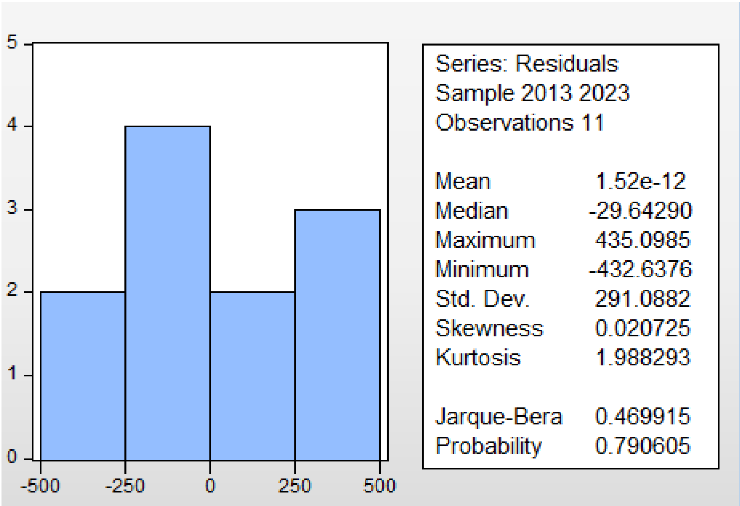

Figure 4: Normality Test Results
Sources: Data Processed Eviews 2024

Based on the figure 4, the results of the normality test obtained by the Jarque-Bera test (JB Test) show that the probability value is 0.790605 > 0.05. So it can be concluded that the data used in this study is normally distributed.

Multicollinearity Test
From the centralized VIF data, it shows that none of the VIF values above are above 10 (the VIF values range from4.632878so that there are no symptoms of multicollinearity in the model.

Table 2. Multicollinearity Test

Variance Inflation Factors
Date: 10/8/24 Time: 06:22
Sample: 1 11
Included observations: 11

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	208547.9	21.65904	NA
NILAI_TRANSAKSI_E...	1.65E-06	11.67203	4.632878
JUMLAH_PENGGUN...	18.43823	49.84915	4.632878

Sources: Data Processed Eviews 2024

Heteroscedasticity Test

Table 3. Heteroscedasticity Test

Heteroskedasticity Test: Glejser

F-statistic	0.784629	Prob. F(2,8)	0.4885
Obs*R-squared	1.803885	Prob. Chi-Square(2)	0.4058
Scaled explained SS	1.089501	Prob. Chi-Square(2)	0.5800

Sources: Data Processed Eviews 2024

Based on the table of results of the heteroscedasticity test using the Glejser test method, the value obtained is Obs*R-squared 1.803885 and the probability value of 0.4058 is greater than $\alpha = 0.05$, which means that the residual homodextosis is accepted, so that there is no residual homodextosis in the model.heterodactyly. In addition, the value of each variable shows a probability > 0.05 so it can be concluded that there are no symptoms in the model.heterodactyly.

Autocorrelation Test

Table 4. Autocorrelation Test

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.361029	Prob. F(2,6)	0.3255
Obs*R-squared	3.432979	Prob. Chi-Square(2)	0.1797

Sources: Data Processed Eviews 2024

Based on the table above, the results of the autocorrelation test using the LM (Breusch-godrey) test above show the prob value. The chi-square value shows the p value =0.1797> 0.05, indicating that there is no autocorrelation in the regression model.

Regression Test

Table 5 Regression Test

Dependent Variable: PERTUMBUHAN_EKONOMI
Method: Least Squares
Date: 10/08/24 Time: 06:33
Sample: 2013 2023
Included observations: 11

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	7084.340	456.6704	15.51303	0.0000
NILAI_TRANSAKSI_ECOMMERCE	0.002622	0.001284	2.041020	0.0756
JUMLAH_PENGGUNA_INTERN...	16.86585	4.293976	3.927794	0.0044

R-squared	0.951383	Mean dependent var	10207.37
Adjusted R-squared	0.939229	S.D. dependent var	1320.170
S.E. of regression	325.4465	Akaike info criterion	14.63527
Sum squared resid	847323.6	Schwarz criterion	14.74379
Log likelihood	-77.49401	Hannan-Quinn criter.	14.56687
F-statistic	78.27545	Durbin-Watson stat	1.767101
Prob(F-statistic)	0.000006		

Sources: Data Processed Eviews 2024

Based on the equation above, the regression equation:
Y=7084.340+0.002622+16.86585

From the equation above, the following partial results can be concluded:

The analysis of the results of the panel data regression equation above is as follows:

1. If the constant value is equal to 7084.340 then it shows that the independent variable has a fixed or constant value, then the level economic growth variablesworth7084.340
2. Coefficient (X1) as big as 0.002622 which means if economic transaction value increases1 unit will be followed by an increase variable Y as big as 0.002622
3. Coefficient (X2) as big as 16.86585 which means if number of internet users increasing by 1 unit will be followed by an increase variable Y as big as 16.86585

T Hypothesis Test

The e-commerce transaction value variable has a p-value of 0.0756> 0.05. This shows that the e-commerce transaction value variable has no effect on economic growth and its coefficient value is0.002622shows a positive direction. Thus, it can be concluded that the e-commerce transaction value variable does not have a positive effect on economic growth.
The variable number of internet users has a p-value of 0.0044 < 0.05. This shows that the variable number of internet users has an effect on economic growth and its coefficient value is16.86585shows a positive direction. Thus, it can be concluded that the variable number of internet users has a positive effect on economic growth.

F Model Accuracy Test

Based on the table above, it shows the value of the prob f-statistic of 0.000006 < 0.05. It can be concluded that the independent variables of the value of e-commerce transactions and the number of internet users simultaneously or together have an effect on the variable *economic growth.*

e-ISSN 2746-5667

R Square Test

The determination coefficient (R^2) test was conducted with the aim of measuring the magnitude of the influence of the model's ability to explain the variation of the dependent variable. Based on the table, the R-squared value is0.951383This shows that 95.13% of the variables *economic growth* influenced by the variables of e-commerce transaction value and the number of internet users. The remaining 4.87% is influenced by other variables.

Discussion

The Influence of E-commerce Transaction Value on Economic Growth

The results of the study show that the relationship between transaction value and e-commerce to economic growth is not significantly positive. This clarifies the dynamics in the online business sector and is evidence that the prerequisites needed to ensure the sustainability of e-commerce business operations in the long term have not been met. According to (Hall & Suharto, 2021) requirements that guarantee the continuity of e-commerce business operations during the research period have not been met. The trust and loyalty that customers can provide are very important for the continuity of e-commerce, as with business concepts in general. Cybercrime, especially fraud, is still a problem for online businesses in Indonesia and undermines customer confidence in conducting safe transactions. Those who are accustomed to the traditional retail environment play an important role in fostering consumer trust that is needed for online transactions. In addition to the interactions that occur between producers and consumers, the continuity of e-commerce business activities also depends on a supportive environment

The Influence of the Number of Internet Users on Economic Growth

The results of the study show that although the number of internet users has a positive and statistically significant impact. The number of internet users is an indication of the development of e-commerce which has the greatest impact on domestic products, because the research findings show how important the market or demand is in driving the contribution of e-commerce to GDP. The number of internet users shows the great potential of the e-commerce business.

5. Conclusions

The conclusion of this study is that the variable number of internet users has a positive and significant effect on economic growth, while the variable value of e-commerce transactions does not show a significant positive effect. Although the number of internet users is increasing, customer trust and loyalty are still challenges for the sustainability of e-commerce businesses in Indonesia. Overall, 95.13% of economic growth is influenced by the number of internet users and the value of e-commerce transactions.

The implications of this study indicate that increasing the number of internet users can drive economic growth through the development of e-commerce. However, to ensure the sustainability of e-commerce businesses, it is important to build customer trust and loyalty, as well as address online transaction security issues. In addition, stakeholders need to create a supportive environment to facilitate better e-commerce growth.

The limitations of this study include a limited focus on the variables of e-commerce transaction value and the number of internet users, without considering other factors that may affect economic growth. In addition, this study is only from 2013 to 2023. Suggestions for further research are to explore other variables that may affect economic growth, such as digital infrastructure, government policies, and consumer behavior, and conduct studies with a wider scope to obtain more comprehensive results.

Acknowledgements
The author would like to express his gratitude for the assistance or encouragement from colleagues and all parties who contributed to this research.

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