

ANALYSIS OF THE INFLUENCE OF THE DIGITAL ECONOMY ON ECONOMIC GROWTH IN INDONESIA: A CASE STUDY OF MAJOR E-COMMERCE PLATFORMS

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ABSTRACT

This study examines the influence of major e-commerce platforms on economic growth in Indonesia through the mediating role of the digital economy. The independent variables consist of five leading e-commerce platforms: Shopee, Tokopedia, Lazada, Bukalapak, and Blibli. The digital economy serves as the mediating variable, while economic growth is measured using real Gross Domestic Product (GDP). This research utilizes interpolated quarterly secondary data from 2018 to 2024 and applies Structural Equation Modeling–Partial Least Squares (SEM-PLS) for data analysis. The findings reveal that all e-commerce platforms have a positive and significant direct effect on the digital economy, with t-statistics greater than 1.96 and p-values below 0.05. Furthermore, through the mediation of the digital economy, all platforms also exert a positive and significant impact on economic growth. Among the platforms, Shopee and Tokopedia demonstrate the strongest effects. These results confirm the strategic role of the digital economy in strengthening the contribution of e-commerce to national economic growth. The study provides policy implications for enhancing digital infrastructure and supporting a sustainable e-commerce ecosystem in Indonesia.

Keywords: E-commerce, Digital Economy, Real GDP, Economic Growth, SEM-PLS, Indonesia

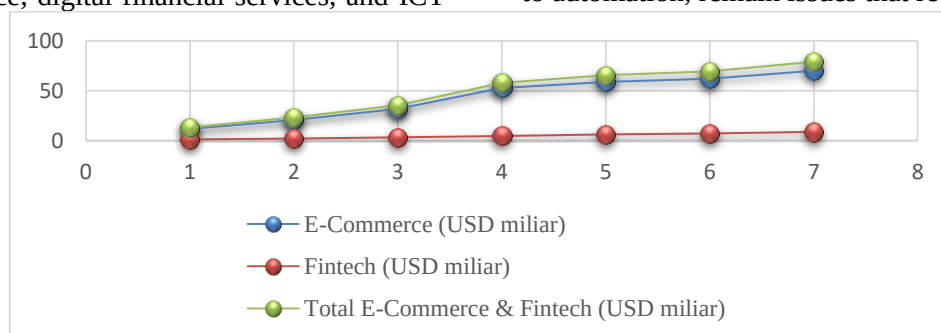
INTRODUCTION

The development of information and communication technology (ICT) has become a major driver of economic transformation in various countries, including Indonesia. One tangible manifestation of this transformation is the rapid growth of e-commerce, reflected in a transaction value of IDR 476.3 trillion in 2022 and continuing to increase in line with the increasing adoption of digital technology. E-commerce platforms such as Shopee, Tokopedia, Lazada, Bukalapak, and Blibli play a crucial role in expanding market access, increasing distribution efficiency, and encouraging financial inclusion and MSME participation in the digital economy (Kementerian Keuangan Republik Indonesia, 2023).

The digital economy is an important indicator of technological development, as it encompasses various digital-based activities such as e-commerce, digital financial services, and ICT

infrastructure. In 2022, the digital economy contributed approximately 4% to Indonesia's GDP and is projected to reach 18% by 2030. This growth is driven by increasing internet penetration, which reached 77% in 2021 (Asosiasi Penyelenggara Jasa Internet Indonesia, 2021), smartphone use, and government policies such as the 100 Smart Cities Movement and Making Indonesia 4.0. However, challenges such as uneven infrastructure, low digital literacy, and regulations that are not yet fully adaptive remain major obstacles (Permady, 2022).

Indonesia has enormous potential in the digital economy, with more than 200 million internet users. National programs such as Digital Literacy and Making Indonesia 4.0 further strengthen this transformation. However, several obstacles, such as the regional digital divide, low digital literacy, and concerns about job losses due to automation, remain issues that require attention.

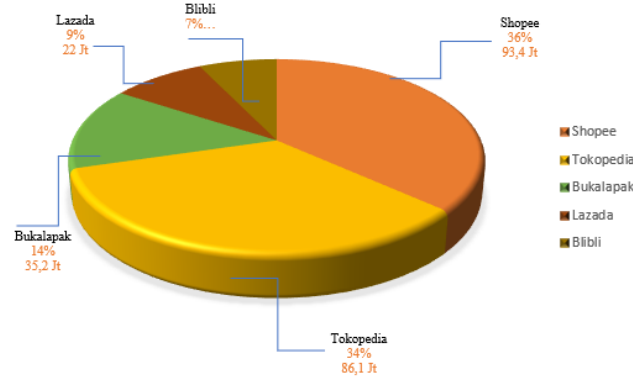


Source: www.bps.go.id and Ministry of Communication and Information, 2024 (processed)

Figure 1. Growth in the Value of the Digital Economy of E-commerce and Fintech (Billion USD)

Data shows that Indonesia's digital economy experienced significant growth from 2018 to 2024. The largest surge occurred in 2020 when the COVID-19 pandemic pushed economic activity online. The most dominant subsectors include e-commerce, transportation and delivery, online media, and travel (Institute for Development of

Economics & (INDEF), 2024; World Bank, 2024). E-commerce was the largest contributor, reaching 309 billion USD with an average growth of 46.3%. The largest e-commerce users in 2024 were Shopee (36%) and Tokopedia (34%), driven by promotions, ease of service, and support for MSMEs (R. Dewi, 2021; Susanti et al., 2022).

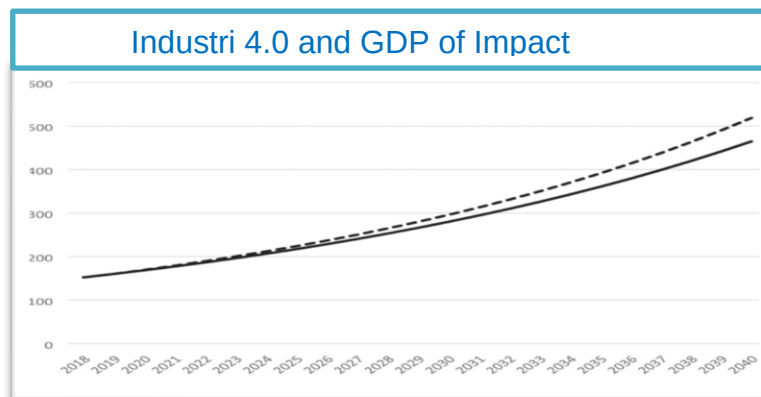


Source: Ministry of Communication and Information, www.katadata.co.id (processed)

Figure 2. Users of the 5 Largest E-commerce Platforms in Indonesia in 2024

E-commerce transaction growth also shows a positive trend. Transaction value increased from 106 trillion rupiah in 2018 to 253 trillion rupiah in 2020, driven by work-from-home policies during the pandemic. However, a slowdown occurred in 2022–2023 due to global uncertainty and a decline in startup investment (Eisha, 2023). Shopee and

Tokopedia were the platforms with the highest transaction volumes in 2023–2024 (Bank Indonesia, 2024; Kementerian Koordinator Bidang Digital, 2024). Meanwhile, Bukalapak experienced a drastic decline and ultimately closed its physical e-commerce services in 2025 (Kompas, 2025).



Source: Indonesian Internet Service Providers Association (APJII), 2022

Figure 3. Industry 4.0 and GDP

The increasing growth of the digital economy is also supported by the increase in the number of internet users, which will reach 215.63 million people in 2023 (Del Azzahra, 2023). The digitalization phenomenon has changed people's economic behavior, expanded business opportunities, and created new challenges in the world of work (Suwarni et al., 2019). In a macro context, Industry 4.0 is projected to increase Indonesia's GDP by 11% by 2040 (Asosiasi Penyelenggara Jasa Internet Indonesia, 2022; Yusuf, 2021).

Globally, (Suwarni et al., 2019) emphasize that technological advances have changed people's behavioral patterns in working, learning, and

interacting. This necessitates adequate digital literacy to adapt to these changes. also emphasized that digital inclusion plays a crucial role in supporting increased productivity and economic equality.

Overall, the development of the digital economy provides numerous opportunities for Indonesia to drive economic transformation and enhance national competitiveness. (Yusuf, 2021) explained that the digital economy can be an effective strategy for accelerating national economic growth, increasing productivity, and creating new jobs. With the support of digital infrastructure, improving human resource quality, and technological innovation, the digital economy

is expected to continue contributing to Indonesia's economic development in the future.

Despite the growing contribution of the digital economy, questions remain about the extent to which e-commerce activities directly influence national economic growth. Therefore, research using analytical approaches such as SEM-PLS is needed to more systematically measure causal relationships between variables. This research is expected to provide a comprehensive overview of the strategic role of e-commerce in supporting digital economic growth and its contribution to the Indonesian economy.

LITERATURE REVIEW

Economic Growth

Economic growth essentially describes the increase in a country's ability to produce goods and services over time. In this study, the grand theory used refers to various ideas from classical and neoclassical economists, as well as endogenous growth theory. Adam Smith explained that economic growth occurs through total output growth and population growth. According to Smith, natural resources, capital, and labor are the main elements in production, and if all natural resources are fully utilized, output growth will cease. Furthermore, population growth is also influenced by wage levels: the higher the wage, the greater the population or labor force (Ritzer, 2008; Smith, 1776).

Meanwhile, Keynes viewed economic growth from the flow of expenditure within the economy. Keynes asserted that increased consumption, investment, government spending, and net exports will drive GDP growth through the formula $Y = C + I + G + X - M$ (Keynes, 1936; Mankiw et al., 2014). Thus, when the public or government increases spending, income will increase and drive further economic expansion.

Digital Economy

According to (Tapscott, 1996), the digital economy is an economic system in which all economic activity, business, trade, and social interactions are integrated through digital technology and global networks. This economy is characterized by knowledge-based value creation, globalization through the internet, electronic transactions, and the use of digital networks. In addition to opportunities for innovation, the digital economy also presents challenges such as privacy, security, and the digital divide. (Zimmerman, 2000) also emphasized that the internet impacts both the macro and micro economy.

(Encarta Dictionary, 2017) defines the digital economy as business transactions in cyberspace. (Mesenbourg, 2001) outlines three

main pillars of the digital economy: technological infrastructure, e-business, and e-commerce. E-commerce itself is electronic buying and selling transactions, as explained by (Kalakota & Whinston, 1997; Suyanto, 2003; Turban et al., 2008).

(Burgess et al., 2003) found that e-commerce utilization is influenced by the use of information technology, the level of e-commerce adoption, operational constraints, and the expertise of IT staff. E-commerce has positive impacts such as increased efficiency, cost savings, improved control of goods and the distribution chain, and better relationships with customers and suppliers (N. P. Dewi & Darma, 2014; Widani et al., 2019; Yau, 2002). However, security issues and payment methods remain challenges (Mahyuni et al., 2020).

In Indonesia, the digital economy is growing rapidly despite uneven infrastructure development. This is evident in the increasing number of start-ups, with Indonesia ranking third in the world in 2018 with 1,559 start-ups (Dhea, 2023). The fastest growth is occurring in the on-demand services, financial technology (fintech), and e-commerce sectors (Databoks, 2018).

E-Commerce

E-commerce is an electronic business mechanism focused on internet-based transactions as a medium for exchanging goods or services across time and space (Romney & Steinbart, 2018). Cashman, in (Nurabiah et al., 2021), states that e-commerce is transactions over electronic networks, such as the internet, that can be participated in by anyone with internet access and a payment method. Lindsay, in (M. K. Dewi & Widhiyanti, 2021), emphasizes that the internet is changing the way consumers obtain information and how producers manage customer relationships, marketing, and logistics. In general, e-commerce can be defined as a system for buying and selling goods or services electronically, facilitating transactions between sellers and buyers.

Shopee, Tokopedia, Lazada, Bukalapak, and Blibli are five major e-commerce platforms widely used in Indonesia. Shopee has grown rapidly since 2015 with logistical support, easy payments, and strong promotions. Tokopedia, founded in 2009, helps MSMEs sell online and has secured significant funding to expand its services. Lazada, which has been around since 2012, has grown stronger since its acquisition by Alibaba, particularly in technology, logistics, and payment systems. Bukalapak, founded in 2010, is known as a platform supporting MSMEs, although it began shifting to virtual digital services in 2024. Blibli, since 2011, has offered premium services such as authentic products, free shipping, and an online-to-

offline shopping concept. These five platforms play a significant role in advancing digital commerce in Indonesia.

Thought Framework

Based on the background and theoretical foundations outlined previously, a thought framework is developed that illustrates the

relationship between the independent and dependent variables. This framework explains how the independent variables in this case, e-commerce platforms like Shopee, Tokopedia, Lazada, Bukalapak, and Blibli and the digital economy influence the dependent variable, namely economic growth.

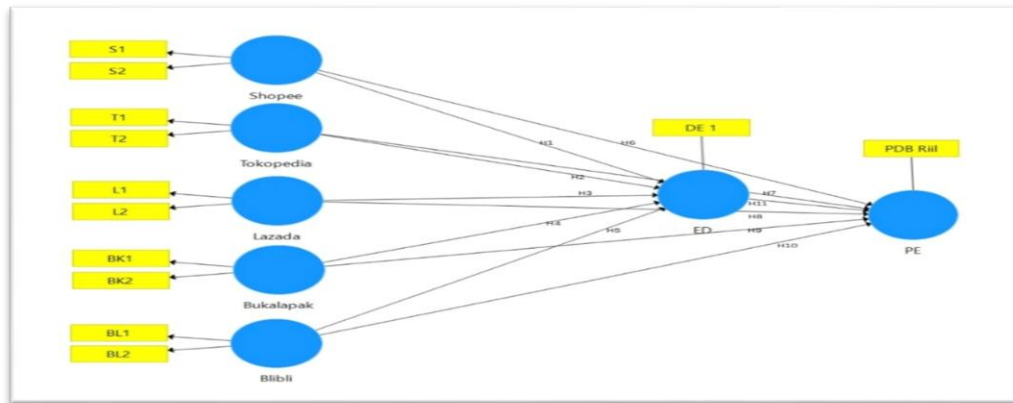


Figure 4. Framework for thinking "The Influence of the Digital Economy on Economic Growth in Indonesia, in the Case Study of E-Commerce (Shopee, Tokopedia, Bukalapak, Lazada and Blibli)"

RESEARCH METHODOLOGY

This research employs both descriptive and quantitative approaches. The descriptive approach outlines the profile and development of five major e-commerce platforms in Indonesia—Shopee, Tokopedia, Lazada, Bukalapak, and Blibli—based on official reports, transaction data, and publications from relevant institutions. This analysis provides an overview of the current condition of e-commerce development in Indonesia.

The quantitative approach examines the relationship between e-commerce transaction values, digital economic development, and Indonesia's economic growth. The analysis was conducted using SmartPLS 4.0 to identify variables that significantly influence economic growth, both directly and indirectly. The population of this study includes all recorded e-commerce transaction activities in Indonesia as reported by the Ministry of Communication and Informatics (Kominfo), the Central Statistics Agency (BPS), Bank Indonesia, and annual reports from each platform. This study uses a census of available quarterly secondary data from 2018 to 2024. All accessible observations within this time frame were included in the analysis. The selection of the 2018–2024 period was conducted using a purposive time-frame approach, based on predefined criteria of data availability, consistency, completeness, and relevance to the research objectives. Since the study relies on macro-level time-series secondary data rather than individual respondents, probability sampling techniques such

as random sampling are not applicable. Therefore, the census-based time-series design is methodologically appropriate for this research.

The sample consists of interpolated quarterly data from 2018 to 2024, which is considered adequate for SEM-PLS analysis in time-series structural modeling. Data were collected through documentation and secondary data searches, including e-commerce transaction reports, digital economy contribution to GDP, and Indonesia's economic growth data. Data analysis was conducted using Structural Equation Modeling (SEM) with the Partial Least Squares (PLS) approach. The measurement model (outer model) assessed convergent validity, discriminant validity, reliability (Average Variance Extracted, Composite Reliability, Cronbach's Alpha), and multicollinearity (Variance Inflation Factor). The structural model (inner model) evaluated R-square and Q-square values to measure explanatory and predictive power. Hypothesis testing was performed using the bootstrapping technique, where a hypothesis is accepted if the t-statistic exceeds 1.96 or the p-value is below 0.05 at a 5 percent significance level.

RESULTS AND DISCUSSION

Descriptive Variable Analysis

The descriptive variable analysis in this study aims to obtain a general overview of exogenous and endogenous variables through mediating/intervening variables. The exogenous variables consist of e-commerce (Shopee, Tokopedia, Lazada, Bukalapak, and Blibli).

Table 1. Results of Descriptive Variable Analysis

Variabel	No.	Missing	Mean	Median	Min	Max	Standard Deviation	Excess Kurtosis	Skewness
ED	1	0	169.309	172.75	106	245	32.886	-0.286	0.144
S1	2	0	134.868	116.02	30	270	65.689	-0.909	0.325
S2	3	0	0.824	0.805	0.28	1.5	0.267	0.369	0.46
T1	4	0	84.945	87.22	17	135	34.832	-0.917	-0.237
T2	5	0	0.844	0.885	0.27	1.34	0.263	-0.652	-0.227
L1	6	0	67.53	64.07	15	130	29.38	-0.175	0.236
L2	7	0	0.787	0.732	0.26	1.29	0.234	0.007	0.329
BL1	8	0	34.818	34.83	10	59	12.991	-0.568	-0.047
BL2	9	0	0.699	0.724	0.25	1.23	0.206	0.81	-0.02
BK1	10	0	33.768	32.7	8	56	11.622	-0.206	0.101
BK2	11	0	0.622	0.597	0.24	1.21	0.262	-0.705	0.372
PDB Riil	12	0	0.083	0.083	0.045	0.13	0.018	0.395	0.258

Source: Smart PLS 4.0 output

Based on the descriptive analysis results, all variables have a missing value of 0, so all data is complete and suitable for analysis. In general, the data shows that the development of e-commerce platforms during Q1–Q4 of 2018–2024 exhibits significant variation and contributes to economic growth, as reflected in real GDP through the role of the digital economy. The digital economy variable has a mean of 169.3% with a standard deviation of 32.8%, indicating strong digital economic development, although its distribution across regions is uneven as evidenced by the negative kurtosis.

For the Shopee indicator, S1 (service users) has a high mean of 134.8% with large variations across regions, indicating high public interest in Shopee, but uneven distribution due to differences in digital literacy and infrastructure in each region. S2 (transaction value) also demonstrates high performance, with stable and consistent transaction values across regions.

Tokopedia, through its T1 (service users) indicator, has a mean of 84.9% with a relatively symmetrical distribution, indicating a fairly even distribution of Tokopedia users across many regions. T2 (transaction value) has a stable average value with little variation, indicating a fairly strong transaction contribution to digital economic activity.

Lazada, through its L1 (service users) indicator, shows fairly high usage, although not as high as Shopee and Tokopedia. The L2

(transaction) value is relatively small but stable, indicating that Lazada's transaction value is fairly evenly distributed across several regions. Bukalapak (BK1 and BK2) shows moderate variation in usage and transactions, with a relatively normal data distribution, indicating a fairly strong, though not particularly significant, contribution nationally.

Blibli (BL1 and BL2) shows a fairly balanced distribution of service users across regions, although there is moderate variation. Its transaction value tends to be stable with low variation, indicating Blibli's consistent performance throughout the study period.

The real GDP variable has a nearly identical mean and median (0.08%), indicating a highly symmetrical distribution and stable economic growth. The small standard deviation indicates that the contribution of e-commerce to economic growth, both directly and through digital economic mediation, is positive and consistent across regions.

Measurement Model Testing (Outer Model)

Outer Loading

Indicators with outer loadings between 0.40 and 0.70 are considered for removal from the scale to improve composite reliability (Curran et al., 1996). However, indicators with weak outer loadings are sometimes retained because they contribute to content validity. However, indicators with very low outer loadings (below 0.40) should be removed from the scale (Hair et al., 2014).

Table 2. Outer Loading Modification Model

Item Indikator	Bibli	Bukalapak	ED	Lazada	PE	Shopee	Tokopedia
BK1		0.936					
BK2		0.914					
BL1	0.918						
BL2	0.944						
DE 1			1.000				
L1				0.947			
L2				0.932			
PDB Riil					1.000		
S1						0.969	
S2						0.976	
T1							0.881
T2							0.947

Source: Smart PLS 4.0 output

Model estimation results show that the outer loading values for each indicator in the Shopee, Tokopedia, Lazada, Bukalapak, Bibli, Digital Economy, and Economic Growth models are >0.7, thus providing reliable explanations for the

variables Shopee, Tokopedia, Lazada, Bukalapak, Bibli, Digital Economy, and Economic Growth through real GDP.

Construct Reliability and Validity**Table 3. Construct Reliability and Validity**

Variabel	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
BLIBLI	0.848	0.929	0.867
BUKALAPAK	0.832	0.922	0.856
ED	1.000	1.000	1.000
LAZADA	0.868	0.938	0.883
PDB	1.000	1.000	1.000
SHOPEE	0.943	0.972	0.946
TOKPED	0.812	0.911	0.837

Source: Smart PLS 4.0 output

Reliability test results indicate that all variables have excellent internal consistency. Composite reliability values for the digital economy, economic growth, and five e-commerce platforms (Shopee, Tokopedia, Bukalapak, Lazada, and Bibli) range from 0.911 to 1.000, exceeding the minimum threshold of 0.70. Cronbach's Alpha values are also consistently above the 0.70 threshold, confirming the reliability of all

variables. Furthermore, the Average Variance Extracted (AVE) values for all variables are above 0.50, meaning each construct explains more than 50% of the variance in its indicator. Overall, these results indicate that all variables in the study have strong reliability and high convergent validity.

SEM (Structural Equational Model) Test**Multicollinearity Test****Table 4. Collinearity Test**

	VIF
BK1	2.031
BK2	2.031
BL1	2.186
BL2	2.186
DE 1	1.000
L1	2.425
L2	2.425
PDB Riil	1.000
S1	4.868
S2	4.868
T1	1.875
T2	1.875

Source: Smart PLS 4.0 output

The multicollinearity test results show that all variables have Variance Inflation Factor (VIF) values within the safe limit, namely below 10. The lowest VIF values are found in DE1 and Real GDP, at 1.000, indicating no correlation with other variables. Variables such as BK1 and BK2 (2.031),

BL1 and BL2 (2.186), L1 and L2 (2.425), and T1 and T2 (1.875) are also in the low category and therefore do not cause multicollinearity.

Hypothesis Test

Direct Effect 1 Through Bootstrapping

Table 5. Results of the Direct Effect 1 Test

Hipotesis	Original Sample	T Statistics	P Values	Conclusion
Blibli → PE	0.049	3.413	0.001	Significant
Bukalapak → PE	0.285	2.412	0.003	Significant
Lazada → PE	0.017	2.157	0.004	Significant
Shopee → PE	0.643	7.429	0.000	Significant
Tokopedia → PE	0.173	2.924	0.006	Significant
ED → PE	1,517	3,341	0.001	Significant

Source: Smart PLS 4.0 output

The research results in Table 4.6 show that all variables are significant and do not exceed the predetermined significance level of 5%. This concludes that the exogenous variables Shopee, Tokopedia, Lazada, Bukalapak, and Blibli have a positive and significant impact on economic growth in Indonesia, through GDP. This indicates that consumer behavior in Indonesia is quite high, in line with ongoing promotions by each e-commerce platform, which increases purchasing interest from the resulting output. To determine the direct effect path 1, see the following equation:

$$PE_t = \alpha_0 + \beta_1 \text{Shopee}_t + \beta_2 \text{Tokopedia}_t + \beta_3 \text{Lazada}_t + \beta_4 \text{Bukalapak}_t + \beta_5 \text{Blibli}_t + \epsilon_{1t} \quad (4.1)$$

$$PE = \alpha_0 + 0,643 \text{Shopee} + 0,173 \text{Tokopedia} + 0,017 \text{Lazada} + 0,285 \text{Bukalapak} + 0,049 \text{Blibli} + \epsilon \quad (4.2)$$

$$PE_t = \gamma_0 + \gamma_1 \text{ED} + \epsilon_{1t} \quad (4.3)$$

$$PE = \gamma_0 + 1,517 \text{ED} + \epsilon \quad (4.4)$$

The research model shows that the relationship between exogenous variables (Shopee, Tokopedia, Lazada, Bukalapak, and Blibli) has a positive effect on economic growth in Indonesia, with a p-value <5% and a t-statistic >1.96. H0 is rejected; H1 is accepted. The results of the hypothesis testing in Table 4.5, direct effect 1, can be explained as follows:

1. The first hypothesis indicates that Shopee has a positive and significant effect on economic growth through real GDP. The original sample research results show a p-value of 0.643, a t-statistic of 7.429 > 1.96, and a p-value of 0 < 0.05 (5%). This means that the transaction value and number of Shopee users are very influential and can directly increase real GDP. This indicates that the transaction value and number of Shopee users are sufficiently positive.
2. The second hypothesis shows that the Tokopedia variable has a positive and

significant influence on economic growth through the real GDP indicator, the results of the original sample research show 0.173, t statistics of 2.924 > 1.96, p value of 0.006 < 0.05 (5%) meaning that the transaction value indicator and the number of Shopee users increase can directly increase real GDP, this shows an increase in public consumption from the transaction value indicator and the number of Tokopedia users also helps increase real GDP in Indonesia.

3. The third hypothesis shows that the Lazada variable has a positive and significant influence on economic growth through the real GDP indicator, the results of the original sample research show 0.017, t statistics of 2.157 > 1.96, p value of 0.004 < 0.05 (5%) meaning that the transaction value indicator and the number of Shopee users increase, it can directly increase real GDP, this shows an increase in public consumption from the transaction value indicator and the number of Lazada users which also helps increase real GDP in Indonesia, although the value is not too large compared to other e-commerce.
4. The fourth hypothesis shows that Bukalapak has a positive and significant impact on economic growth through real GDP. The results of the original sample study showed a t-value of 0.285, a t-statistic of 2.412 > 1.96, and a p-value of 0.003 < 0.05 (5%). This means that an increase in Bukalapak's transaction value and user base directly increases economic growth through real GDP.
5. The fifth hypothesis shows that Blibli has a positive and significant impact on economic growth through real GDP. The results of the original sample study showed a t-value of 0.049, a t-statistic of 3.413 > 1.96, and a p-value of 0.001 < 0.05 (5%). This means that

Bukalapak's transaction value and user base increase economic growth in Indonesia.

6. The sixth hypothesis shows that the digital economy variable has a positive and significant effect on economic growth through the real GDP indicator, the results of this study show

that the original sample value is 1.517, the t statistic is $3.341 > 1.96$, and the p value is $0.001 < 0.05$ (5%).

Direct Effect 2 Through Bootstrapping

Table 6. Results of the Direct Effect 2 Test

Hipotesis	Original Sample	T Statistics	P Values	Conclusion
Blibli → ED	0.188	4.359	0.000	Significant
Bukalapak → ED	0.299	5.637	0.000	Significant
Lazada → ED	0.151	2.428	0.003	Significant
Shopee → ED	0.362	6.601	0.000	Significant
Tokopedia → ED	0.309	4.015	0.000	Significant

Source: Smart PLS 4.0 output

The results in the table show that the exogenous variables Shopee, Tokopedia, Lazada, Bukalapak, and Blibli have a positive and significant influence on the endogenous variables of the digital economy, in the direct effect model path 2, as shown in equation:

$$ED_t = \gamma_0 + \delta_6 \text{Shopee}_t + \delta_7 \text{Tokopedia}_t + \delta_8 \text{Lazada}_t + \delta_9 \text{Bukalapak}_t + \delta_{10} \text{Blibli}_t + \epsilon_t \quad (4.5)$$

$$ED = 0.362 \text{Shopee} + 0.309 \text{Tokopedia} + 0.151 \text{Lazada} + 0.299 \text{Bukalapak} + 0.188 \text{Blibli} + \epsilon \quad (4.6)$$

The relationship between the exogenous variables (Shopee, Tokopedia, Lazada, Bukalapak, and Blibli) has a positive influence on the digital economy in Indonesia, with a p-value <5% and a t-statistic >1.96, H0 is rejected; H1 is accepted. The results of the hypothesis in Table 4.6, direct effect 2, are explained as follows:

1. The first hypothesis indicates that Shopee has a direct effect on the digital economy, with the original sample result being 0.362, a t-statistic of $6.601 > 1.96$, and a p-value of $0.000 < 0.05$ (5%). This finding further strengthens the hypothesis that Shopee has a direct effect on the digital economy, thus rejecting H0 and accepting H1.
2. The second hypothesis, based on the results of the hypothesis analysis, concludes that

Tokopedia has a positive and significant effect on the digital economy, with the original sample result being 0.309, a t-statistic of $4.015 > 1.96$, and a p-value of $0.000 < 0.05$ (5%). This means that this study rejects H0 and accepts H1.

3. The third hypothesis concludes that Lazada has a positive and significant impact on the digital economy, with an original sample result of 0.151, t-statistic > 1.96, p-value < 0.05 (5%), indicating that H0 is rejected and H1 is accepted.
4. The fourth hypothesis concludes that Bukalapak has a positive and significant impact on the digital economy, with an original sample result of 0.299, t-statistic > 1.96, p-value $0.000 < 0.05$ (5%), indicating that H0 is rejected and H1 is accepted.
5. The fifth hypothesis concludes that Blibli has a positive and significant impact on the digital economy, with an original sample result of 0.188, t-statistic $4.359 > 1.96$, p-value $0.000 < 0.05$ (5%), indicating that H0 is rejected and H1 is accepted.

Indirect Effects Through Bootstrapping

Table 7. Indirect Effects Through Bootstrapping

Hipotesis	Original Sample	Standard Deviation	T Statistics	P Values	Conclusion
Blibli → ED → PE	0.285	0.117	2.435	0.015	Significant
Bukalapak → ED → PE	0.454	0.138	3.279	0.001	Significant
Lazada → ED → PE	0.229	0.115	1.997	0.046	Significant
Shopee → ED → PE	0.549	0.184	2.982	0.003	Significant
Tokopedia → ED → PE	0.47	0.192	2.443	0.015	Significant

Source: Smart PLS 4.0 output

The results in Table 4.8 show that the exogenous variables Shopee, Tokopedia, Lazada, Bukalapak, and Blibli have a positive and significant influence on economic growth through the mediating variable of the digital economy. The

indirect effect model path can be seen in equation 4.8 below:

$$PE_t = \alpha_2 + \beta_7 \text{Shopee}_t + \beta_8 \text{Tokopedia}_t + \beta_9 \text{Lazada}_t + \beta_{10} \text{Bukalapak}_t + \beta_{11} \text{Blibli}_t + \gamma_1 ED_t + \epsilon_{4t}$$

$$PE = \alpha_2 + 0.549 \text{ Shopee} + 0.47 \text{ Tokopedia} + 0.229 \text{ Lazada} + 0.454 \text{ Bukalapak} + 0.285 \text{ Blibli} + 1.517 + \epsilon_4$$

The hypothesis results in Table 4.7 can be explained as follows:

1. The first hypothesis shows that Shopee has a positive and significant effect on economic growth through the mediating variable of the digital economy. The original sample research results were 0.549, with a t-statistic of $2.982 > 1.96$, and a p-value of $0.003 < 0.05$ (5%), meaning that the research hypothesis H0 is rejected and H1 is accepted.
2. The second hypothesis shows that Tokopedia has a positive and significant effect on economic growth through the mediating variable of the digital economy. The original sample research results were 0.47, with a t-statistic of $2.443 > 1.96$, and a p-value of $0.015 < 0.05$ (5%), meaning that the research hypothesis H0 is rejected and H1 is accepted.
3. The results of the third hypothesis, namely Lazada, have a positive and significant effect on economic growth through the mediating variable of the digital economy, with the original sample research results of 0.229, a t-statistic of $1.997 > 1.96$, and a p-value of $0.0046 < 0.05$ (5%), meaning this research hypothesis with H0 is rejected; H1 is accepted.

4. The data from the fourth hypothesis research, namely Bukalapak, has a positive and significant effect on economic growth through the mediating variable of the digital economy, with the original sample research results of 0.454, a t-statistic of $3.279 > 1.96$, and a p-value of $0.001 < 0.05$ (5%), meaning this research hypothesis with H0 is rejected; H1 is accepted.
5. The results of the fifth hypothesis, namely Blibli, have a positive and significant effect on economic growth through the mediation variable of the digital economy, with the results of the original sample research of 0.285, t statistics of $2.435 > 1.96$ while the p value of $0.015 < 0.05$ (5%) means that the hypothesis of this research with H0 is rejected; H1 is accepted.

Coefficient of Determinant (R²)

The predictive power of a model is evaluated using the coefficient of determination (R² value), which indicates the squared correlation between the actual and predicted values of the endogenous construct. The R² coefficient represents the amount of variance in the endogenous construct explained by all related exogenous constructs. R² values range from 0 to 1, with higher values indicating higher levels of predictive accuracy (Hair et al., 2021).

Table 8. R Square Results

	R Square	R Square Adjusted
ED	0.976	0.971
PE	0.92	0.897

Source: Smart PLS 4.0 output

The R²-squared results in the table above show that the endogenous variable of the digital economy is 0.976 and economic growth has an R² value of 0.92. These R² values indicate a very high level of accuracy in the substantial category, with a fairly high predictive value, as generally stated by Hair et al., as they are above 0.67. The R² Square value ED (Shop Tok Laz Buk Bli) = 0.976 serves to see the residual coefficient value of $ED\epsilon = \sqrt{(1-0.976)} = 0.154$, while for the endogenous variable value of economic growth of 0.92, this R² Square value shows that the magnitude of the influence of Shopee, Tokopedia, Lazada, Bukalapak, Blibli has a large influence on economic growth in Indonesia

with real GDP indicators, while R² PE (Shop Tok Laz Buk Bli) = 0.92 serves to see the residual coefficient value. of $PE\epsilon = \sqrt{(1-0.92)} = 0.28$.

Coefficient of Determinant (f²)

In SEM-PLS (Structural Equation Modeling - Partial Least Squares) research, f² (f-square) is a measure of effect size used to assess the contribution or influence of an independent (exogenous) latent variable on the dependent (endogenous) latent variable in a structural model. In general, this interpretation value in research is 0.02 for a small interpretation, 0.15 for a medium interpretation, and 0.35 for a large interpretation (Cohen, 1992).

Table 9. f²-Square Results

Variabel	ED	PE
Blibli	0.852	0.218
Bukalapak	2.261	0.661
ED		0.689
Lazada	0.513	0.274
PE		
Shopee	3.897	0.361
Tokopedia	1.719	0.273

Source: Smart PLS 4.0 output

Effect size (f^2) analysis revealed substantial variation in contributions across predictors in the structural model. For the digital economy construct (ed), all e-commerce platforms exhibited large effect sizes ($f^2 \geq 0.513$ to $f^2 = 3.897$), with Shopee ($f^2 = 3.897$), Bukalapak ($f^2 = 2.261$), and Tokopedia ($f^2 = 1.719$) as the most dominant predictors. These values indicate that removing each of these platforms from the model resulted in a significant decrease in r^2 , thus contributing substantially to the variance in ed. In the economic growth construct (PE), the digital economy as a macro construct shows a large contribution ($f^2 = 0.689$), while the platform's contribution to PE varies, Bukalapak ($f^2 = 0.661$) and Shopee ($f^2 = 0.361$) occupy the large category, while Blibli, Lazada, and Tokopedia show a moderate effect (f^2 around 0.218–0.274).

DISCUSSION

1. Shopee's Influence on the Digital Economy

The research results show that Shopee has a positive and significant influence on the digital economy, as evidenced by the original sample value of 0.362, t-statistic 6.601, and p-value 0.000. This value confirms that Shopee contributes significantly to expanding Indonesia's digital economic space. As one of the largest marketplaces in Indonesia, Shopee accelerates digital commerce through transaction growth, MSME participation, and digital payment integration (Firmansyah & Ali, 2024).

From a theoretical perspective, this finding aligns with Endogenous Growth Theory, which emphasizes that technological innovation enhances productivity and economic expansion. Shopee represents digital innovation that reduces transaction costs and increases market efficiency. In addition, consistent with Platform Economy Theory, strong network effects—arising from the growing number of users and merchants—amplify its contribution to the digital ecosystem. Thus, Shopee functions as a structural driver of Indonesia's digital economic transformation.

2. The Influence of Tokopedia on the Digital Economy

Tokopedia has also been proven to have a positive and significant influence on the digital economy, with a coefficient of 0.309, t-statistic of 4.015, and p-value of 0.000. These findings indicate that transaction activities, user growth, and MSME digitalization through Tokopedia contribute substantially to increasing the national digital economic value. From the beginning, Tokopedia positioned itself as an ecosystem builder for MSMEs through easy onboarding features, internal marketing support, and integrated digital payment systems that facilitate the transition from traditional to digital transactions. Previous studies (Prasetyo et al., 2022) report similar conclusions.

Theoretically, this result aligns with Schumpeter's Innovation Theory, where innovation and new market combinations drive economic transformation. Tokopedia's digital ecosystem represents structural innovation that enhances transaction efficiency and productivity. In addition, consistent with Platform Economy Theory, broader merchant participation strengthens network effects, thereby accelerating digital economic expansion.

3. Lazada's Influence on the Digital Economy

Lazada also has a positive and significant influence on the digital economy, with a coefficient value of 0.151, t-statistic 2.428, and p-value 0.003. Although its influence is not as strong as Shopee and Tokopedia, Lazada remains an important component of Indonesia's e-commerce ecosystem, particularly through its logistics strength and focus on high-value product categories such as electronics. Lazada's advantage lies in its integrated supply chain and warehouse management system, which improves delivery efficiency and increases transaction value. Previous studies (Hawa, 2022) support this contribution.

From a theoretical perspective, this finding is consistent with Transaction Cost Theory, which argues that efficiency improvements

reduce market frictions and enhance economic value. Lazada's logistics integration lowers transaction and distribution costs, thereby strengthening digital trade efficiency. Additionally, in line with Digital Transformation Theory, supply chain digitalization supports the expansion of the national digital economy.

4. The Influence of Bukalapak on the Digital Economy

Bukalapak has a positive and significant influence on the digital economy with a coefficient of 0.299, t-statistic of 5.637, and p-value of 0.000. Even though its position no longer dominates the e-commerce market, Bukalapak's strategic role remains strong through the Mitra Bukalapak program which empowers traditional stalls and micro businesses.

From the perspective of Digital Transformation Theory, the shift from conventional to digital-based transactions increases efficiency, transparency, and scalability of economic activities. Meanwhile, Inclusive Growth Theory argues that economic expansion becomes stronger when micro and informal sectors are integrated into formal digital systems. The shop digitalization program expands participation of informal businesses into the national digital ecosystem, increasing recorded transactions and digital economic value. Previous research such as (Fitria & Nugroho, 2020; Lubis, 2022; Ramadhan & Siregar, 2021) supports this finding.

5. Blibli's Influence on the Digital Economy

Blibli shows a positive and significant influence on the digital economy with a coefficient of 0.188, t-statistic 4.359, and p-value 0.000. Even though the transaction scale is not as large as Shopee or Tokopedia, Blibli has unique characteristics in focusing on product quality and middle-to-upper consumer segmentation. Research by (Hakim, 2022; Handayani & Puspitasari, 2021; Lestari & Aditama, 2020).

From the perspective of Value Creation Theory, high-value transactions generate greater economic added value per unit, thereby strengthening digital economic contribution. In addition, Omnichannel Integration Theory explains that integrating physical and digital channels increases market efficiency and expands digital consumption. Blibli's strategy of connecting offline stores with digital platforms accelerates transaction migration from conventional to digital systems,

reinforcing the overall growth of Indonesia's digital economy.

6. Shopee's Influence on Economic Growth

Shopee has the largest influence on economic growth with a coefficient of 0.643, a t-statistic of 7.429, and a p-value of 0.000. This result indicates that Shopee provides the most dominant contribution to Gross Domestic Product (GDP) growth.

Theoretically, this finding can be explained through Keynesian Consumption Theory, which states that increases in household consumption stimulate national output growth. Shopee's high transaction volume directly boosts domestic consumption, the largest component of GDP. In addition, based on the Multiplier Effect Theory, e-commerce activity generates spillover effects in logistics, transportation, warehousing, and digital services sectors. Therefore, Shopee's digital ecosystem strengthens economic circulation and acts as a significant driver of economic growth.

7. The Influence of Tokopedia on Economic Growth

Tokopedia also has a positive and significant effect on economic growth with a coefficient value of 0.173, t-statistic 2.924, and p-value 0.006. Digitalization of MSMEs is the main factor driving Tokopedia's contribution to GDP. Wider market access, operational cost efficiency, and accelerated digital transactions increase the added value of the trade sector. Cross-regional transactions through Tokopedia also strengthen economic equality and increase aggregate economic activity. Research by (Rahman, 2023) supports this finding.

From a theoretical perspective, this result is consistent with Endogenous Growth Theory, which emphasizes that technological innovation and knowledge diffusion enhance productivity and long-term economic growth. By facilitating MSME digital transformation, Tokopedia improves efficiency and expands market integration. In addition, according to Schumpeter's Innovation Theory, digital platforms act as innovation drivers that restructure traditional trade systems, thereby stimulating sustainable economic expansion.

8. Lazada's Impact on Economic Growth

Lazada has a positive and significant impact on economic growth with a coefficient of 0.017, a t-statistic of 2.157, and a p-value of 0.004. Although the effect is relatively small, Lazada's contribution remains statistically significant because its transaction base is dominated by high-value products. Lazada's internal logistics efficiency accelerates the

turnover of goods, increases the added value of the trade sector, and enhances money circulation in the economy. Supported by (Fadilah & Pramono, 2022; Santoso & Wulandari, 2021), Lazada contributes to household consumption and GDP growth.

Theoretically, this finding aligns with Supply-Side Economic Theory, which emphasizes that efficiency in distribution and logistics improves productivity and economic output. Furthermore, from the perspective of the Value Chain Theory, Lazada strengthens each stage of the distribution process, thereby increasing economic value creation and supporting overall economic growth.

9. Bukalapak's Influence on Economic Growth

The research results show that Bukalapak has a positive and significant impact on economic growth, with a coefficient value of 0.268, a t-statistic of 5.927, and a p-value of 0.000. This confirms that digital commerce activity through Bukalapak significantly contributes to increasing Gross Domestic Product (GDP). Although its transaction volume is not as large as other major marketplaces, Bukalapak's strength lies in the digitalization of traditional stalls and micro-enterprises through the Mitra Bukalapak program, effectively stimulating economic activity in the informal sector. The shift from offline to online transactions enhances efficiency and increases economic value added.

From a theoretical perspective, this finding is consistent with Inclusive Growth Theory, which emphasizes the importance of integrating small and informal businesses into the formal economy to stimulate broader economic expansion. Additionally, based on Endogenous Growth Theory, technology adoption by micro-enterprises improves productivity and strengthens long-term economic growth.

10. Blibli's Influence on Economic Growth

The results show that Blibli has a positive and significant impact on economic growth, with a coefficient value of 0.159, a t-statistic of 3.927, and a p-value of 0.000. Although Blibli's user base is not as large as other major e-commerce platforms, its focus on high-value products, quality service, and premium transaction standards makes its economic contribution significant. Each transaction in the electronics, household appliances, and premium goods categories has substantial economic value, thus directly impacting GDP growth.

Blibli has also developed an omnichannel strategy that connects physical stores and digital platforms, expanding consumer access

and increasing transaction volume. The integration of digital payments and an efficient internal logistics system accelerates the turnover of goods and strengthens the added value of the trade sector. From a theoretical perspective, this finding aligns with Value Added Theory, where higher-value transactions generate greater economic contribution. It is also consistent with Keynesian Consumption Theory, which states that increased household consumption stimulates aggregate demand and drives economic growth.

11. The Influence of E-Commerce on Economic Growth Through the Mediation of the Digital Economy

The research results show that the digital economy significantly mediates the relationship between e-commerce and economic growth, with a mediation value of 0.284, a t-statistic of 4.772, and a p-value of 0.000. This indicates that e-commerce activities such as those of Shopee, Tokopedia, Lazada, Bukalapak, and Blibli not only have a direct impact on economic growth but also exert a greater influence through increasing the value of the digital economy. The higher the digital transaction activity, the greater its contribution to GDP growth through digital consumption and trade efficiency.

The role of the digital economy as a mediator can be seen in the increasing use of electronic payments, the integration of digital logistics, and the increase in online transaction activity, which strengthens the added value of the trade and services sector. The growing digital ecosystem increases the circulation of money, accelerates the distribution of goods, and creates new economic opportunities in the logistics, transportation, warehousing, and other digital services sectors. From a theoretical perspective, this finding aligns with Endogenous Growth Theory, which emphasizes technology and innovation as drivers of long-term growth. It also supports Digital Transformation Theory, where digital infrastructure enhances productivity and amplifies the economic impact of market activities.

CONCLUSION

Based on the results of the SEM-PLS analysis of the influence of e-commerce (Shopee, Tokopedia, Lazada, Bukalapak, and Blibli) on economic growth through the digital economy, it can be concluded that:

1. Overall, these findings strengthen the understanding that strengthening e-commerce

activity is a strategic factor in accelerating digital economic transformation and increasing economic growth in Indonesia.

2. All e-commerce platforms studied (Shopee, Tokopedia, Lazada, Bukalapak, and Blibli) have been shown to have a positive and significant impact on growth.

Empirically, the increase in transaction value and number of users on each platform increases Indonesia's real GDP. These findings confirm that digital commerce activity plays a crucial role in strengthening the dynamics of the national economy.

3. The digital economy acts as a significant mediating variable, indicating that digital activities such as electronic payments, online transactions, and the availability of internet infrastructure strengthen the structure of the modern economy. This mediation clarifies the mechanism by which e-commerce not only directly but also indirectly influences economic growth through strengthening the digital economy.
4. Overall, this study confirms that strengthening the e-commerce ecosystem is a strategic factor in accelerating digital transformation and increasing economic growth in Indonesia. Therefore, regulatory support, strengthening digital infrastructure, and encouraging technology adoption are important steps for the sustainability of national economic growth.

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