Impact of e-commerce on economic growth of countries and territories in the Asian region

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ABSTRACT

This study aims to analyze the impact of e-commerce on economic growth in 28 countries and territories in Asia during the period 2015 - 2023, by applying a panel data regression model using the Fixed Effects Model (FEM). Data was collected from reliable sources such as the World Bank, Statista, and the International Telecommunication Union (ITU). The research results show that E-Commerce Revenue (ECR), E-Commerce User rate (ECU), R&D Expenditure (RDE), Final Consumption (FC), and Population Growth (PG) all have a positive impact on economic growth; meanwhile, the ICT development index and Government Expenditure (GE) show a negative effect.

1. Introduction

In the context of the Industrial Revolution 4.0, which has created strong changes globally, e-commerce plays a key role in reshaping the way businesses trade, operate, and interact with consumers. In Asia, the period 2015 - 2023 witnessed a strong explosion of e-commerce. According to a report by Mordor Intelligence, e-commerce revenue in the Asia-Pacific region reached 4.2 trillion USD in 2024, accounting for more than 57% of total global e-commerce revenue, with an annual growth rate of 10% (Intelligence, n.d.). In addition, the Covid-19 pandemic has also changed consumer behavior, prompting people to switch to online shopping, especially in the consumer staples and electronics industries.

In Vietnam, many studies have clarified the role of e-commerce in supporting businesses to adapt and recover after the Covid-19 pandemic. Specifically, research by Le (2022) shows that e-commerce contributes to maintaining the supply chain during the period of social distancing and is a factor promoting business recovery and development after the pandemic (Le, 2022). Similarly, Dang et al. (2022) affirmed that the application of e-commerce has a positive impact on business performance, from management to operation and economic efficiency, thereby contributing to the sustainable growth of the economy (Dang et al., 2022).

Internationally, many scientific works focus on analyzing the relationship between e-commerce and economic growth through intermediate variables. In general, international studies show that e-commerce has the potential to promote economic growth, but the level of

influence depends a lot on the context, research approach and characteristics of each country. Toska and Fetai (2023) used an endogenous growth model to analyze the Western Balkan countries in the period 2008 - 2020. They found that final consumption has a positive impact on GDP growth, while public spending has no significant impact (Toska & Fetai, 2023). Boga (2019) research results emphasize the indirect impact of e-commerce through factors such as physical investment, online sales and human capital. In particular, population growth has a negative impact on growth according to the neoclassical perspective. Although it is not possible to determine a direct link between e-commerce and economic growth, the study shows that some intermediate factors contribute to improving business performance (Boga, 2019). Anvari and Norouzi (2016) extend the scope of analysis to 21 countries over the period 2005 - 2013, incorporating organizational, institutional, and infrastructural aspects (Anvari & Norouzi, 2016), thereby showing that e-commerce contributes to promoting growth at many levels: business, industry, and country.

Klara Lind's research focuses on the role of e-commerce in the consumer goods industry in Vietnam during the period 1990 - 2020 (Lind, 2020). The results of the study indicate that e-commerce promotes market access and productivity, but there is still untapped potential in rural areas and less digitized industries. Meanwhile, in China, Lili and Yan (2014) found that the number of Internet users and e-commerce businesses has a positive impact on GDP, but the number of online shoppers has an inverse impact (Lili & Yan, 2014). Elseoud's (2014) study in Saudi Arabia analyzed the impact of e-commerce on real GDP during the period 2001 - 2013 using an econometric model, also suggesting that most of the factors related to e-commerce, such as spending on information technology and Internet transactions, contributed to promoting economic growth, except for the size of the public sector (Elseoud, 2014).

Based on the inheritance of domestic and foreign research, this article aims to further analyze the factors of e-commerce affecting economic growth in the Asian region in the period 2015 - 2023, in order to supplement empirical evidence and propose policy implications suitable to the regional context.

2. Theoretical basis

2.1. Endogenous growth theory

Technology, investment in Research and Development (R&D), and human capital improvement are the main drivers of growth. Romer (1986) argues that investment in technology and research are key factors in improving Total Factor Productivity (TFP) (Romer, 1986), while Lucas (1988) asserts that human capital, through education and labor skills, plays an important role in creating added value and maintaining sustainable economic development.

Applied in the context of e-commerce, this theory clarifies how the development of online platforms and digital technologies can improve labor productivity, optimize business processes, and expand market access opportunities. E-commerce promotes investment in R&D and technological innovation, facilitating the development of digital platforms for production, trade, and services. Liu et al. (2013) assert that e-commerce increases labor productivity through technology transfer and digital skills. At the same time, the development of e-commerce and the information technology development index (ICT) increases the demand for high-quality labor, promotes investment in education and training, and contributes to sustainable economic growth (Liu et al., 2013).

2.2. Neoclassical growth theory

Solow (1956) emphasized that technological progress is the key factor to ensure sustainable economic growth, while capital and labor only promote growth in the short run. When traditional inputs reach their limits, improving productivity through technological innovation becomes essential to maintain growth momentum (Solow, 1956).

In the context of e-commerce, digital technologies and online systems contribute to improving the overall productivity of the economy through three key elements of the growth model: promoting investment in digital infrastructure, improving the quality of human resources due to the demand for digital skills, and optimizing production and service processes using technology. Research by Freund and Weinhold (2004) also shows that the level of Internet and e-commerce popularity is strongly correlated with economic growth rates, especially in developing countries, in which e-commerce revenue reflects the level of technological development, labor productivity, and resource efficiency (Freund & Weinhold, 2004).

2.3. Mankiw - Romer - Weil growth model

According to the Mankiw - Romer - Weil growth model (1992), human capital - including the skills, knowledge, and capabilities of the workforce - plays an important role in improving productivity and promoting sustainable economic development (Mankiw et al., 1992). Romer (1990) expanded this theory by emphasizing that human capital is not only a direct factor affecting labor productivity but also facilitates the adoption and development of advanced technologies (Romer, 1990).

In the context of the fourth industrial revolution, e-commerce helps to improve the skill level of the workforce and meet the growing demand for new skills in the digital age by promoting online learning, digital skills training programs, and access to global knowledge. Chen et al. (2022) demonstrate that e-commerce has a positive impact on human capital and promotes long-term economic growth (Chen et al., 2022).

3. Research methodology

3.1. Research data

The authors collected data through the World Bank, Statista, and the International Telecommunication Union (ITU). Based on these data sources, the authors assessed the relationship between economic factors and the growth of countries.

Sample size: The authors decided to focus on data from 28 countries and territories in Asia during the period 2015 - 2023. This approach helps ensure accuracy, consistency and provides a clearer view of the relationship between economic factors and growth rates in the region.

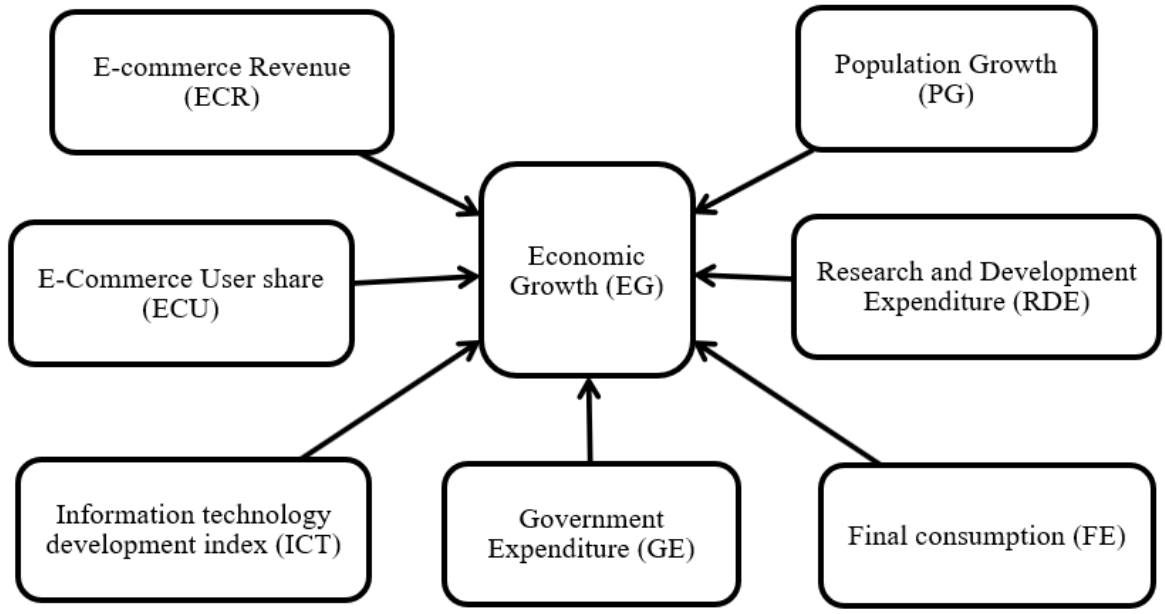
3.2. Research model

The research team used a panel data regression model to assess the impact of e-commerce on economic growth. To increase the reliability and accuracy of the results, the team added some important control variables such as government spending, final consumption, research and development spending, and population growth. The selection of these variables was based on macroeconomic theory as well as previous studies, helping to explain potential unwanted fluctuations in the data. This sheds light on the relationship

between e-commerce and economic growth and minimizes the impact of extraneous factors, ensuring the rigor of the research model. From these analyses, the research team proposed the following model:

Figure 1

Proposed Research Model



Note. Research team proposal

Regression equation:

$$EG_{i,t} = \beta_0 + \beta_1 ECR + \beta_2 \ln(ECU) + \beta_3 ICT + \beta_4 GE + \beta_5 \ln(FC) + \beta_6 RDE + \beta_7 PG + \varepsilon_{i,t} \quad (1)$$

With hypothesis:

H1: ECR has a positive impact on EG

H2: ECU has a positive impact on EG

H3: ICT has a positive impact on EG

H4: GE has an impact positive/negative on EG

H5: FC has a positive impact on EG

H6: RDE has a positive impact on EG

H7: PG has a positive impact on EG

The authors propose to apply a logarithm transformation to the variables ECU (E-Commerce User rate) and FC (Final Consumption) to optimize data processing and analysis. Specifically:

First, the logarithm transformation helps standardize data, making the data distribution closer to the normal distribution. Since ECU and FC can have large fluctuating values and uneven distribution, this transformation helps to minimize errors while increasing the ability to meet the assumptions of the OLS (Ordinary Least Squares) regression method. As a result, the estimation results become more accurate, while limiting the risk of serious bias in the model.

Second, the use of logarithms improves the relationship between variables in the model by narrowing the range of data fluctuations, helping to better control values that are too large or too small. This contributes to enhancing model stability, reducing the risk of multicollinearity, and ensuring consistency in regression analysis.

Table 1

Description of the Components of the Variables in the Research Model

Variable name	Symbol	Variable type	References	Research hypothesis
Economic Growth	EG	Dependent variable	Armunanto et al. (2021); Parishev et al. (2020)	
E-Commerce Revenue	ECR	Independent variable	Anvari and Norouzi (2016)	Positive impact on economic growth
Natural logarithm of E-Commerce User share	lnECU	Independent variable	Pratiwi (2022)	Positive impact on economic growth
Information technology development index	ICT	Independent variable	Schreyer (2000); Pratiwi (2022)	Positive impact on economic growth
Government Expenditure	GE	Independent variable	Chipaumire et al. (2014); Oladele et al. (2017)	Positive/negative impact on economic growth
Natural logarithm of Final Consumption	lnFC	Independent variable	Toska and Fetai (2023)	Positive impact on economic growth
Research and Development Expenditure	RDE	Independent variable	Anvari and Norouzi (2016)	Positive impact on economic growth
Population Growth	PG	Independent variable	Obere et al. (2013)	Positive impact on economic growth

Note. Construction research group

3.3. Research methods

The authors collected data, used R software to apply panel data models, and analyzed research results. The data processing process began with descriptive statistics, building correlation matrices, and checking for multicollinearity. Next, the group performed regression with three models: Pooled OLS model, Fixed Effects Model (FEM), and Random Effects Model (REM). To select the appropriate model, two tests were used: the Lagrange Multiplier (Honda) test to determine whether the model has individual and time effects, and the Pooled model is not suitable; the Hausman test was used to compare FEM and REM, thereby determining that FEM is the more appropriate model in explaining the relationship between variables. After selecting the optimal model, the group continued to test the model's defects such as heteroscedasticity, autocorrelation between independent variables, and cross-dependence. Finally, the FGLS model is implemented to overcome these shortcomings and improve the accuracy of the regression results.

4. Research results

4.1. Descriptive statistics

Descriptive statistics results from data collected from 28 countries and territories in the Asia region during the period 2015 - 2023 with variables including Economic Growth, E-commerce Revenue, E-commerce User Rate, ICT Development Index, Government Spending or Consumption, Research and Development Spending, Final Consumption, and Annual Population Growth are shown in the following table.

Table 2

Descriptive Statistics of Variables Used in the Model

Variable	Min	1st Qu	Median	Mean	3rd Qu	Max
EG	-9.518	1.566	4.100	3.388	5.750	12.600
ECR	0.1855	1.6011	3.3700	38.118	7.0500	1,359.180
ECU	10.20	19.18	22.05	25.70	28.35	76.40
ICT	1.710	4.260	5.585	5.665	7.088	9.740
GE	-17.54	10.81	13.69	13.64	17.30	26.12
FC	32.37	64.81	70.37	70.81	76.97	108.30
RDE	0.07515	0.24359	0.45443	0.86042	1.6126	5.70555
PG	-4.1703	0.4103	1.0210	1.0405	3.6005	8.6512

Note. Extracted from research data

4.2. Correlation matrix and multicollinearity of variables

The correlation matrix between the dependent variable and the independent variables (Table 3) did not show any high correlation phenomenon (the highest coefficient 0.564 < 0.7). The VIF index of the variables was below the warning threshold, with the highest VIF being 2.333 and the average reaching 1.465. Due to the above analysis, the variables were kept in the model for further analysis.

Table 3

Correlation Matrix between Dependent Variable and Independent Variables

	EG	ECR	log(ECU)	ICT	GE	log(FC)	RDE	PG	VIF
EG	1.000								
ECR	0.066	1.000							1.387048
log(ECU)	-0.036	0.458	1.000						2.333795
ICT	-0.157	0.047	0.564	1.000					1.651528
GE	-0.104	0.094	0.198	0.181	1.000				1.201950
log(FC)	0.042	-0.154	-0.343	-0.278	0.037	1.000			1.200455
RDE	-0.078	0.416	0.323	0.324	0.357	-0.151	1.000		1.355774
PG	0.076	-0.151	-0.267	-0.159	0.059	-0.034	-0.121	1.000	1.127286
Mean VIF									1.4654051

Note. Extracted from research data

4.3. Pooled-OLS, FEM and REM model estimation results

The estimation results are presented in Table 4 based on three models: Pooled-OLS, FEM (Fixed Effects Model), and REM (Random Effects Model). The explanatory power of the independent variables for the dependent variable Economic Growth (%) (EG) in the three models is 7.4%, 7.4%, and 3.5%, respectively.

The analysis of the results shows that the impact trends of internal and macroeconomic factors on economic growth are relatively consistent among the models. Notably, the information and communication technology development index (ICT) has a negative impact with statistical significance at the 0.1% level in the Pooled-OLS and FEM models, but is no longer statistically significant in the REM model.

Government Expenditure (GE) shows a negative impact on economic growth and is statistically significant at the 5% level in the REM model, while it is not statistically significant in the remaining models. Other variables, including ECR, ECU, FC, RDE, and PG, did not show clear statistical significance in all three models, suggesting that further analysis is needed to determine the potential impact of these factors.

Table 4

Regression Results of 03 Models

Variable	POOLED	FEMid	REMt
ECR	0.001	0.001	0.001
	(0.931)	(0.931)	(0.529)
Log (ECU)	0.473	0.473	0.786
	(0.661)	(0.661)	(0.843)
ICT	-0.495***	-0.495***	-0.255
	(-3.155)	(-3.155)	(-1.594)
GE	-0.028	-0.028	-0.102*
	(-0.680)	(-0.680)	(-1.680)
Log (FC)	0.761	0.761	0.154
	(0.762)	(0.762)	(0.106)
RDE	0.239	0.239	-0.083
	(1.202)	(1.202)	(-0.323)
PG	0.100	0.100	0.261
	(0.613)	(0.613)	(1.231)
(Intercept)			2.857
			(0.394)
Num, Obs,	252	252	252
R_2	0.074	0.074	0.035

Note. ***,**,* represent statistical significance at 0.1%, 1%, 5% respectively. Extracted from research data

4.4. Testing the selection of appropriate models

Table 5

Results of Testing the Selection of Regression Methods

Testing	Lagrange Multiplier - (Honda)	Hausman
H_0	There are no individual and time effects, meaning the Pooled OLS model is appropriate.	Choose REM model (no correlation exists between explanatory variables and error components).
p-value	p-value < 2.2e-16	p-value = 1.356e-05
Conclusion	Reject H0 → Pooled OLS is not appropriate.	Reject H0 → FEM is appropriate

Note. Extracted from research data

Based on the test results in Table 5, it is found that:

- Lagrange Multiplier test - (Honda): reject the hypothesis H0 (p-value < 2.2e-16) ⇒ Pooled OLS model is not appropriate.

- Hausman test: reject the hypothesis H0 (p-value = 1.356e-05) ⇒ Choose the FEM model.

Therefore, the fixed regression method (FEM) is suitable to explain the research model, ensuring reliability and accurately reflecting the impact of independent variables on the dependent variable.

4.5. Model defect inspection

Test for heteroscedasticity

Test for heteroscedasticity using the Breusch-Pagan test in a stationary model (FEM) with the hypothesis:

H0: There is no heteroscedasticity phenomenon

H1: There is heteroscedasticity phenomenon

Table 6

Breusch-Pagan Test for FEM Model

Testing	Statistical value (BP)	Degrees of freedom (df)	p-value	Conclusion
Breusch-Pagan Test (FEM)	13.855	7	0.05382	Do not reject H0 at the 5% significance level, but reject at the 10% level

Note. Extracted from research data

The test results show that the FEM model has no signs of heteroscedasticity at the 5% significance level. However, if the 10% significance level is chosen, there is a possibility of slight heteroscedasticity.

Autocorrelation test

Testing autocorrelation on panel data using the Breusch-Godfrey/Wooldridge test with the hypothesis:

H0: There is no autocorrelation in the residuals

H1: There is autocorrelation in the residuals

Table 7

Autocorrelation Test

Testing	Statistical value (BP)	Degrees of freedom (df)	P-value	Conclusion
Breusch-Godfrey/Wooldridge Test for Serial Correlation	57.08	28	0.0007482	Reject H0 : There is autocorrelation in the idiosyncratic residuals of the model.

Note. Extracted from research data

From the results in Table 7, with a significance level of α = 5%, the Breusch-Godfrey/Wooldridge test shows that the FEM model has a p-value = 0.0007482 < 0.05, so the hypothesis is rejected, meaning there is autocorrelation in the idiosyncratic residuals of the model.

Cross-sectional dependence test

Testing for cross-sectional dependence on panel data is performed using the Pesaran CD test with the hypothesis:

H0: There is no cross-dependence between units in the panel data

H1: There is cross-dependence between units in the panel data

Table 8

Cross-Sectional Dependence Test

Testing	Statistical value (BP)	p-value	Conclusion
Pesaran CD Test	5.4065	6.425e-08	Reject H0: There is cross-dependence between units in panel data.

Note. Extracted from research data

From the results in Table 8 with a significance level of α = 5%, the Pesaran CD Test shows that the fixed model (FEM) has a p-value = 6.425e-08 < 0.05 so the hypothesis is rejected, meaning there is cross-dependence between units in the panel data.

4.6. Regression model after defect correction

After using the FGLS method to overcome the two phenomena of autocorrelation between errors and variable error variance to ensure the estimation is stable and effective, the research team achieved the following results:

$$EG = 0.0015\times ECR + 0.4930\times \log(ECU) - 0.4818\times ICT - 0.0566\times GE + 0.9571\times \log(FC) + 0.3245\times RDE + 0.1250\times PG + \varepsilon_{i,t} \quad (2)$$

Table 9

Feasible Generalized Least Squares (FGLS) Method T

Variable	Estimate	Standard Error	z-value	p-value	Conclusion
ECR	0.00145467	0.00023832	6.1037	1.036e-09	Statistically significant (***)
Log (ECU)	0.49296926	0.09524427	5.1758	2.269e-07	Statistically significant (***)
ICT	-0.4818185	0.00915789	-52.5647	< 2.2e-16	Statistically significant (***)
GE	-0.05660577	0.01405098	-4.0286	5.611e-05	Statistically significant (***)
log(FC)	0.95713653	0.40506190	2.3629	0.01813	Statistically significant (*)
RDE	0.32445049	0.4348489	7.4612	8.572e-14	Statistically significant (***)
PG	0.12501345	0.02809274	4.4500	8.586e-06	Statistically significant (***)

Note. ***,**,* represent statistical significance at 0.1%, 1%, 5% respectively. Extracted from research data

The results show that E-Commerce Revenue (ECR) and E-Commerce User rate (log(ECU)) both have positive and statistically significant impacts on economic growth. Specifically, when e-commerce revenue increases by 01 billion USD, economic growth increases by 0.0015%, and when the e-commerce user rate increases by 1%, economic growth increases by 0.493%. In contrast, the ICT development index (ICT) and Government Expenditure (GE) have negative and statistically significant impacts on economic growth. On the other hand, Final Consumption (log(FC)), Research and Development Expenditure (RDE), and annual Population Growth (PG) all have positive and statistically significant impacts on economic growth, with the strongest impact from final consumption.

5. Discussion of research results and some recommendations

5.1. Discuss research results

E-Commerce Revenue (ECR) has a positive impact on economic growth. When e-commerce revenue increases, it contributes to boosting GDP through direct inclusion in the gross domestic product (Wijaya et al., 2020) or indirectly expand market size, increase labor productivity, reduce operating costs and create conditions for sustainable economic development (Markets, 2022; Wang & Ma, 2018). This is consistent with previous studies such as Fang et al. (2015).

The E-Commerce User rate (log(ECU)) has a positive impact on economic growth. As the e-commerce user rate increases, the digital economy grows stronger, thereby increasing aggregate demand, while stimulating the development of businesses through investment and expansion (Devarajan et al., 1996; Markets, 2022). In addition, the network effect arises when the number of users increases, helping to improve the value of the e-commerce ecosystem, enhancing the competitiveness and efficiency of e-commerce transactions. This independent variable also contributes to promoting the financial system through the development of online payment platforms, which is a factor supporting economic development.

The ICT Development Index (ICT) shows a negative impact on economic growth. Although information technology has undeniable potential to drive innovation and productivity, this counterintuitive result may stem from the fact that many of the 28 surveyed Asian countries and territories - ranging from advanced economies like Japan, South Korea,

and Singapore to developing markets such as Vietnam, Indonesia, and Mongolia - have not yet fully leveraged ICT for economic performance. In several developing countries (e.g., Laos, Myanmar, Mongolia), ICT investments often face poor institutional quality, low absorptive capacity, and limited digital skills in the labor force, which hinder the translation of infrastructure into productivity gains. Conversely, even in countries with advanced ICT development, such as Japan or South Korea, high saturation levels may lead to diminishing marginal returns, where further ICT expansion does not proportionally increase growth. This phenomenon is often referred to as the "ICT paradox" or "technology trap," whereby substantial ICT investments, without complementary improvements in governance, education, and sectoral integration, can increase costs without generating proportional benefits. For instance, while China and Singapore have successfully integrated ICT into manufacturing and services to boost competitiveness, other economies, such as Pakistan or Uzbekistan, still face institutional inefficiencies and infrastructure gaps that dilute the economic payoff of ICT. These disparities highlight that ICT development alone does not automatically guarantee economic growth; rather, effective institutional frameworks, high-quality human capital, and policies to integrate ICT across key economic sectors are essential to unlock its true potential.

Government experditure/consumption shows a negative impact on economic growth. Increased public spending risks causing a "crowding-out" effect, pushing up interest rates and reducing access to capital for private enterprises, directly leading to a decline in investment and economic performance. In addition, especially in developing countries, inefficient use of public resources can create a dependence of the private sector on government support, reducing the incentive to innovate and improve productivity (Devarajan et al., 1996).

Investment in research and development (RDE) has shown a clear positive impact on economic growth by stimulating innovation, laying the foundation for the emergence of advanced products and technologies, strengthening international competitive advantages, and expanding market reach. Furthermore, R&D spending also contributes significantly to improving labor productivity, creating high-quality job opportunities, and ensuring a sustainable growth process.

Final consumption (% GDP) (log(FC)) has a positive impact. This result is consistent with economic theory, confirming that consumption is the main driving force for growth, especially in developing countries such as Vietnam, the Philippines, and Indonesia in the period 2015 - 2023. Increasing consumption contributes greatly to increasing demand and stimulating the economy (Dornbusch et al., 2013).

Annual Population Growth (PG) has a positive impact on economic growth. A large population not only expands the consumer market but also motivates businesses to expand production, invest in technology, and create jobs, especially in Southeast Asian countries in the period 2015 - 2023.

5.2. Recommendation

E-commerce plays an important role in promoting national economic growth, helping to modernize the economy, expand the market, and improve competitiveness. However, to maximize this potential, it is necessary to build a synchronous ecosystem, including digital infrastructure, support policies, high-quality human resources, and a transparent legal environment. On that basis, the article proposes a number of recommendations for effective and sustainable e-commerce development as follows:

For the government: First, strengthen digital infrastructure by expanding broadband and fiber optic networks, ensuring equitable access (≥ 100 Mb/s), and encouraging private investment through incentives. At the same time, enhance cybersecurity via technology investment, personnel training, and a national monitoring center. Second, promote green IT by introducing policies that support eco-friendly technology adoption and building strategies aligned with sustainable growth. Third, expand digital payments by cooperating with banks and fintech firms, prioritizing mobile solutions, user-friendly applications, and reduced transaction fees. Fourth, facilitate cross-border trade by simplifying customs procedures, reducing tariffs, and leveraging international agreements. Fifth, develop high-quality human resources, especially in technology, to meet the demand of large corporations and global investors.

For businesses: First, improve customer experience through user-friendly platforms, fast access, and robust cybersecurity. Effective marketing should focus on social media, SEO, and competitive pricing strategies. Second, invest in technology and cooperation, with emphasis on affordable IT solutions, cloud services, and PPPs for infrastructure and education programs. Businesses should also integrate advanced tools such as AI, blockchain, and big data. Regular R&D evaluation (patents, ROI, time-to-market) will further enhance efficiency.

For the people: Individuals should proactively enhance digital skills via courses and workshops, adopt e-commerce for efficiency and entrepreneurship, and strengthen cybersecurity awareness (e.g., strong passwords, two-factor authentication, fraud prevention). This helps ensure safer and more effective participation in the digital economy.

5.3. Lessons for Vietnam

Vietnam is a market with great potential for e-commerce development, creating a foundation for the digital economy to promote national economic growth. Data released by the Department of E-commerce and Digital Economy shows that while in 2024, Vietnam's B2C e-commerce revenue only reached about 08 billion USD, by 2019, it had surpassed the 10 billion USD mark (reaching 10.8 billion USD). Revenue continued to increase to 11.8 billion USD in 2020, reaching 20.5 billion USD in 2023 and 25.4 billion USD in 2024, accounting for 5.4% of the total GDP of the economy. According to reports from Google, Temasek, and Bain & Company, the size of Vietnam's e-commerce market is expected to reach 63 billion USD by 2030. The research team recommends that the Vietnamese government should have the following policies: (1) Raising awareness of e-commerce through communication, educating people and businesses on digital skills, and strengthening cooperation across society to build a safe and transparent digital environment; (2) Building high-quality human resources for e-commerce by investing in specialized training on digital platforms, advanced technologies, and strengthening cooperation between universities and businesses; (3) Protecting consumer rights in e-commerce transactions by issuing a clear legal framework, establishing a monitoring agency, enhancing interaction with consumers, and publicizing information on service quality; (4) Upgrading digital infrastructure, including modern technology systems, high-speed internet, smart applications and national databases, while focusing on information security in cyberspace; (5) Building a solid institution for e-commerce by reforming tax administration, implementing an online tax declaration system and perfecting the tax legal framework suitable for the digital economy; (6) Developing financial support policies for businesses, promoting cooperation with financial institutions, tax incentives for the technology industry and implementing investment, research and development support programs.

6. Conclusion

The results of regression analysis of data from 28 Asian countries in the period 2015 - 2023 have clarified the multidimensional and increasing impact of e-commerce on economic growth in countries and territories in the Asian region. In the context of a strong digital economy, e-commerce is not only a trend but also an important driving force, directly promoting the economic development of the region. This requires Asian countries to continue to prioritize investment in developing e-commerce infrastructure in a synchronous and effective manner, improving the competitiveness of businesses in the online environment, and at the same time building a safe and transparent online trading environment to strengthen consumer confidence, thereby maximizing the economic growth potential that e-commerce brings. The research results have great significance for Vietnam in the process of socio-economic development such as: Firstly, further promoting the completion of the legal framework and policies to support e-commerce; Second, focus on synchronous development of logistics and payment infrastructure; Third, improve the quality of e-commerce human resources and strengthen measures to protect consumer rights to create favorable conditions for e-commerce to develop sustainably and contribute increasingly to national economic growth.

7. Limitations

In addition to the results achieved, the study still has some limitations, such as: First, the study still has limitations in data uniformity among Asian countries. Second, the study has not fully assessed cultural, social, and local policy factors, and has not clearly separated the impact of exogenous events such as the Covid-19 pandemic in the period 2015 - 2023.

8. Research directions

The authors' next research will focus on improving the quality and uniformity of data, expanding the scope of analysis to qualitative factors, and deeply analyzing the impact of special events to clarify the relationship between e-commerce and economic growth in a deeper and more systematic way.

SCIENTIFIC CONTRIBUTION

The manuscript clearly identifies a research gap; the manuscript provides new datasets or empirical evidence; the manuscript presents statistically and practically significant findings.

AUTHOR CONTRIBUTIONS

CRediT: Nguyen Dinh Binh: Conceptualization, Methodology, Validation, Formal Analysis, Writing – Original Draft, Writing – Review & Editing, Project Administration; **Nguyen Tran My Quyen**: Formal Analysis, Investigation, Data Curation; **Huynh Quang Buu**: Conceptualization, Methodology, Formal Analysis; **Dinh Thuy Trang**: Formal Analysis, Investigation, Data Curation; **Tran Thi Thuc Anh**: Formal Analysis, Investigation, Data Curation; **Nguyen Thi Cam Nhung**: Formal Analysis, Investigation, Data Curation.

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The authors hereby declares that there is no conflict of interest in the publication of this article.

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