THE EUROPEAN JOURNAL OF APPLIED ECONOMICS

EJAE 2025, 22(1): 53 - 70
ISSN 2406-2588
UDK: 330.341:004.9
DOI: 10.5937/EJAE22-55546
Original paper/Originalni naučni rad

DIGITALIZATION AND ECONOMIC GROWTH NEXUS IN THE ASEAN REGION

Vinnandra Putri Kharisma,
[0009-0001-3016-1476]

Andrian Dolfriandra Huruta*
[0000-0001-7676-5294]

Universitas Kristen,
Satya Wacana, Indonesia

Abstract:
The digitalization of the economy has emerged as a pivotal driver of growth in the ASEAN region. The prevalence of non-cash transactions and e-commerce has increased exponentially in recent years, and these developments have been widely discussed in academic and public discourse. This research examines the impact of e-money and e-commerce on economic growth in 11 ASEAN countries. The data were obtained from the World Bank and the Statista Research Department. The data were analyzed using the System-Generalized Method of Moments (SYS-GMM) model with a dynamic panel data structure. The findings indicate that e-money has no discernible impact on economic growth, whereas e-commerce exerts a positive and statistically significant influence on economic growth. This research highlights that e-commerce is pivotal in facilitating market expansion, enhancing efficiency, and fostering innovation.

Keywords:
economic growth, e-money, e-commerce, ASEAN, SYS-GMM.

JEL Classification:
O47, L81, E5

INTRODUCTION

Economic growth is an ongoing process representing all economic activity's ultimate objective (Armunanto *et al.*, 2021). The economy's growth can be measured by calculating the total production of goods and services produced by all economic sectors over a specified period and comparing it to the total production of the previous period. An increase in total output is indicative of economic growth. The member countries of the Association of Southeast Asian Nations (ASEAN) share a common objective, namely to stimulate the growth of various economic sectors and to enhance overall economic expansion. The ASEAN countries exhibit considerable variation in terms of their respective levels of economic development. This ranges from highly developed countries, such as Singapore, to those that are still in the process of developing, such as Laos and Cambodia.

Article info:
Received: December 19, 2024
Correction: February 22, 2025
Accepted: March 23, 2025

*E-mail: andrian.huruta@uksw.edu

Information and communication technology advancement represents a significant global concern (Anvari & Norouzi, 2016). The impact of innovations and advances in information and communication technology on human life is pervasive, affecting every aspect. This is because they bring about gradual changes to the economy. To illustrate, the financial and banking systems have been significantly impacted (Mashabi & Wasiaturrahma, 2021). One of the most significant technological developments in finance is the emergence of financial technology (fintech). The development of fintech represents a significant innovation in the field of finance, offering individuals a convenient and expedient means of conducting financial transactions (Setiawan *et al.*, 2021). The development of fintech exhibited a notable surge between 2012 and 2021, with the highest value of global investment in fintech companies recorded in 2021. However, the rate of investment in and transactions involving fintech companies slowed, and there was an increase in the number of employees laid off in 2022. A notable decline was observed in the United States, with a reduction of US$ 40 billion (Statista Research Department, 2023).

The advancement of mobile technology and the digitization of financial services have experienced a notable expansion, as evidenced by the emergence of electronic money (e-money) (Widayat *et al.*, 2020). The emergence of e-money effectively transforms traditional physical currency into electronic forms, also facilitating the transition of cash payments into digital transactions. The adoption of electronic payments with e-money offers numerous advantages and conveniences (Wong *et al.*, 2020). These include greater practicality, efficiency, and transparency of transactions, as well as ease of transaction and avoidance of risk of theft and counterfeit money. Nevertheless, several studies on electronic, online, and mobile payments have identified several recurring security concerns. For example, several barriers to the adoption of e-money have been identified (Danisewicz & Elard, 2023). Those who utilize e-money may encounter the potential for failure to complete payments due to insufficient infrastructure, the risk of unauthorized access to personal data, the risk of fraud, and more (Widayat *et al.*, 2020).

As reported by the Times of India (2023), India led the global ranking in digital payments, with 89.5 million transactions recorded by 2022. Brazil occupied the second position on the list with 29.2 million transactions, followed by China with 17.6 million transactions. Thailand was ranked fourth with 16.5 million digital transactions, while South Korea had 8 million transactions by 2022. Standard and Poor's (S&P) Global Market Intelligence has indicated that Indonesia is a principal contributor to the expansion of e-money in Southeast Asia, along with Malaysia, Singapore, the Philippines, and Thailand (The Jakarta Post, 2019).

Any economic activity that occurs through computer networks can be classified as e-commerce. E-commerce can be defined as the sale of goods and services utilizing the internet as a medium. The utilization of technology allows users to efficiently and expediently compare prices. In the current era, the information held by e-commerce users is readily accessible through online sources (Ibarra *et al.*, 2015). China represented the largest e-commerce market, with a total online sales volume of US$ 1,538 billion in 2022. The United States followed with US$ 875 billion, accounting for 14.83% of the market. In contrast, Indonesia occupied the next position in the ranking, representing one of the most rapidly developing e-commerce markets globally, with online sales reaching US$ 59 billion (E-Commerce Nation, 2023).

This research is divided into several sections. Section 2 highlights the originality of this work and the scientific contribution through the research background. Section 3 includes a literature review and hypothesis development. Section 4 reports the measurement of variables and hypothesis testing. Section 5 contains the results of the analysis and discussion. The final section outlines the conclusions, limitations, and recommendations for future research.

BACKGROUND

The effect of non-cash payments on a global scale has been the subject of research conducted by several scholars. Zandi *et al.* (2013) investigated the impact of non-cash payments on economic growth in 56 high-income countries between 2008 and 2012. The researchers discovered that the use of electronic cards for payments can lead to an increase in consumption of 0.7 percent. The observed increase in consumption contributed 0.17 percent to gross domestic product (GDP) growth in the 56 countries under consideration. Moreover, Oyewole *et al.* (2013) discovered that electronic payments exerted a beneficial and considerable influence on economic growth and trade per capita in Nigeria. Pang *et al.* (2022) demonstrated that electronic payments exerted a beneficial influence on economic growth in European countries included in the Committee on Payments and Market Infrastructures (CPMI). The results of this research are consistent with the findings of Slozko and Pelo (2014), which demonstrated a positive relationship between electronic payments and GDP growth. Similarly, Tee and Ong (2016) found that non-cash payments have a favorable impact on economic growth. In contrast, research by Tran and Wang (2023) indicated that e-money did not affect economic growth in G20 countries and Vietnam. Wong *et al.* (2020) similarly discovered that credit card payments, e-money, and check payments did not influence economic growth in Organization for Economic Co-operation and Development (OECD) countries.

In addition to global e-money research, other studies have also been conducted by researchers in Indonesia. Aminata and Sjarif (2020) discovered that e-money transactions positively and statistically significantly influence economic growth. Moreover, Givelyn *et al.* (2022) revealed that e-money has a positive and significant impact over the long term. In addition to e-money, e-commerce is expected to contribute to a country's economic growth. Prior research indicated that the e-commerce industry is a primary driver of national economic growth (Kabir *et al.*, 2020). A substantial body of research has been conducted on the effects of e-commerce on the economy. Elseoud and Abou (2014) demonstrated that e-commerce had the potential to stimulate economic growth in Saudi Arabia. This is attributable to several e-commerce indicators, including the volume of business transactions conducted through the internet, investment in information and communication technology, and the number of credit cards in circulation. All these indicators have a positive and statistically significant effect on economic growth. Another research by Armunanto *et al.* (2021) indicated that the implementation of e-commerce must be accompanied by the provision of adequate infrastructure quality, including technology-based infrastructure improvement and human resource readiness. Furthermore, their findings also demonstrated that e-commerce transactions, investment in the information and communication technology sector, and labor in e-commerce positively and significantly impact economic growth in the ASEAN region.

Additionally, research related to e-commerce has been conducted in Indonesia. Wijanarka and Kadek (2022) demonstrated that e-commerce exerted a positive and statistically significant influence on economic growth during the period of the global COVID-19 pandemic. Moreover, Wijanarka and Kadek (2022) posited that e-commerce, which is predominantly comprised of Micro, Small, and Medium Enterprises (MSMEs), has been the primary catalyst for economic growth in Indonesia. This is evidenced by the economic activities conducted through digital transactions and communication. It is, therefore, incumbent upon the government to provide support for the utilization of the existing potential in the e-commerce field. Pratiwi (2022) discovered that computer users, e-commerce users, internet access, and information and communication technology investments had a positive and significant impact on economic growth in Indonesia. Of these factors, the e-commerce indicator with the greatest influence is computer users. In contrast, Nopiah *et al.* (2024) found that e-commerce has a negative and significant effect on economic growth. Table 1 shows the existing scientific works related to the digitalization and economic growth nexus.

Table 1. Existing scientific works

No.	Authors	Title	Description	Results
1	Zandi *et al.* (2013)	The Impact of Electronic Payments on Economic Growth	Card usage enhances economic efficiency, significantly boosting growth annually through factors like transaction efficiency, credit access, and consumer confidence, ultimately increasing personal consumption across economies.	The study supports policies promoting card use, as it increases consumption and GDP.
2	Oyewole *et al.* (2013)	Electronic Payment System and Economic Growth: A Review of Transition to Cashless Economy in Nigeria	This study examines how cashless payments impacted economic growth in G20 countries and Vietnam from 2011 to 2020.	The growth-enhancing effect impacts economic growth. Additionally, a positive link between economic growth and check payments.
3	Pang *et al.* (2022)	Digital Cashless Payments and Economic Growth: Evidence from CPMI Countries	This paper investigates the relationship between digital payments and economic growth in 27 CPMI countries, comparing the impacts in developed and developing nations.	E-money payment significantly impacts economic growth.
4	Slozko and Pelo (2014)	The Electronic Payments as a Major Factor for Further Economic Development	The paper outlines recent IT trends and their impact on the cashless payment sector.	The paper shows a link between rising e-payment use and GDP growth, examining digital money's impact on the financial system.
5	Tee and Ong (2016)	Cashless payment and economic growth	This study analyzes the impact of cashless payment adoption in Austria, Belgium, France, Germany, and Portugal from 2000 to 2012.	Adopting cashless payment significantly impacts the economy of five EU countries.
6	Tran and Wang (2023)	Cashless Payments Impact to Economic Growth: Evidence in G20 Countries and Vietnam—Vietnamese Government with a Policy to Support Cashless Payments	This paper explores cashless payment options for G20 countries and Vietnam; it examines debit cards, credit cards, e-money, and checks; it investigates which instruments promote economic growth. Finally, it focuses on applying these effects to encourage cashless payments in Vietnam.	Results indicate that cashless payment via checks boosts economic growth in G20 countries and Vietnam. The growth effect is significant, and the positive link remains strong even when accounting for endogeneity.
7	Aminata and Sjarif (2020)	Towards a Cashless Society in Indonesia: The Impact on Economic Growth and Interest Rate	This study investigates the impact of cashless payment methods, such as credit cards, debit/ATM cards, and electronic money on economic growth and interest rates in Indonesia.	The results showed that debit card and electronic money transactions significantly boost economic growth.
8	Givelyn *et al.* (2022)	The Impact of Cashless Payment on Indonesian Economy: Before and During Covid-19 Pandemic	This study analyzes the impact of cashless payments on Indonesia's economy, focusing on GDP growth before and during the COVID-19 pandemic, using transactions from debit cards, credit cards, and e-money.	Cashless payment positively impacts economic growth, pre and during COVID-19.
9	Kabir *et al.* (2020)	The Emergence of E-Commerce Sites and Its Contribution towards the Economic Growth of Bangladesh: A Quantitative Study	This paper examines how e-commerce sites affect economic growth in Bangladesh, highlighting the development of these sites and their advantages and disadvantages for the national economy.	The study finds a strong positive link between e-commerce site factors and economic growth in Bangladesh.
10	Elseoud and Abou (2014)	Electronic Commerce and Economic Growth in Saudi Arabia	Despite its growing importance in the economy, there are few macroeconomic studies on this in Saudi Arabia. This study aims to examine the effect of E-commerce on Saudi Arabia's economic performance, measured by real GDP from 2001 to 2013.	E-commerce boosts economic growth in Saudi Arabia.
11	Armunanto *et al.* (2021)	E-Commerce Effect on Economic Growth in Asean Countries	This study analyzes how e-commerce affects economic growth in ASEAN countries from 2015 to 2019, highlighting their emergence as digital markets.	The study shows that e-commerce transactions, ICT sector investment, and e-commerce business labor positively and significantly impact economic growth in ASEAN countries.

No.	Authors	Title	Description	Results
12	Wijanarka and Kadek (2022)	The Role of SMEs in Indonesian E-Commerce to the Indonesian Economy during the Covid-19 Pandemic	The rise of digital platforms affects economies of scale and cross-network externalities. E-commerce dynamics during the COVID-19 pandemic are examined. The paper discusses the significant transformations in e-commerce related to the pandemic and MSME opportunities.	E-commerce positively impacted economic growth during the global COVID-19 pandemic.
13	Pratiwi (2022)	E-Commerce and Economic Growth in Indonesia: Analysis of Panel Data Regression	The digital economy significantly contributes to Indonesia's GDP. E-commerce is the fastest-growing sector. The growth of e-commerce and better internet infrastructure are likely to boost public consumption and GDP growth.	The study shows that e-commerce is crucial for Indonesia's economic growth.
14	Nopiah *et al.* (2024)	Impact of E-Commerce on Indonesia Economic Growth: Intermediation Models with Financial Technology Constraint	The COVID-19 pandemic caused economic disruptions globally. Restrictions changed shopping habits, leading people to prefer non-cash and online methods. E-commerce surged, influencing the spread of ideas, innovations, and information.	E-commerce negatively impacted economic growth from 2019 to 2021.

Previous works have employed a range of econometric models, including the Static Panel Data model (Armunanto *et al.*, 2021; Tran & Wang, 2023; Wong *et al.*, 2020; Zandi *et al.*, 2013; Pratiwi, 2022; Nopiah *et al.*, 2024), Vector Error Correction Model (Tee & Ong, 2016), Two-Stage Least Squares (Oyewole *et al.*, 2013), Correlation (Slozko & Pelo, 2014), Multiple Linear Regression (Aminata & Sjarif, 2020; Elseoud & Abou, 2014; Kabir *et al.*, 2020), Autoregressive Distributive Lag (Givelyn *et al.*, 2022), Gross Merchandise Value and Descriptive Statistics (Wijanarka & Kadek, 2022). However, this present research employs the Dynamic Panel Data through the Generalized Method of Moments (GMM) approach. The utilization of this model is crucial for avoiding endogeneity issues within the model. The results of this research are expected to contribute to the existing body of literature on the impact of e-money and e-commerce on the economy, particularly within the context of ASEAN.

THEORETICAL FRAMEWORK AND HYPOTHESIS DEVELOPMENT

Solow-Swan Theory

In 1962, Robert Solow developed the neo-classical growth model. The Solow growth model is an economic model that examines the relationship between output and input levels in an economy over a while, with the variables considered exogenous. This model estimates long-term economic growth concerning three key factors: labor (population growth), savings rate, and technological development. This theory posits that technological progress occurs rapidly and that the level of technology across all countries is identical. Changes in technological variables in this model are exogenous, meaning they are determined by factors external to the model (Kadigi *et al.*, 2022). In the Solow growth model, specific exogenous variables, such as population growth and technological advancement, are regarded as predetermined external factors not influenced by fluctuations in the level of output or input within the economy. These exogenous factors are regarded as preexisting and exerting influence on the economy as external forces. Consequently, the model becomes more straightforward, allowing for a more focused analysis of the relationship between other endogenous variables, such as economic growth and capital

accumulation, without the necessity of modeling the determinants of population growth or technological progress directly. The model has proven invaluable for forecasting growth and benchmarking economic growth rates across diverse geographical regions.

The Solow-Swan model has been modified to accommodate exponentially rising technological advancement (Brunner *et al.*, 2022). Technological advancement serves as a primary catalyst for economic expansion even when labor and capital levels are at their optimal levels. Edeki *et al.* (2024) illustrated that labor and capital are interchangeable, and the savings ratio remains unchanging. Savings are equivalent to investment, and capital growth occurs at a consistent rate. This assumption gives rise to a production function comprising two factors of production, namely capital growth and labor growth (Edeki *et al.*, 2024).

The Solow-Swan model employs a production function model and assumes that the production function is substitutable between capital (K) and labor (L), with technological progress regarded as an increasing function of time. The Solow-Swan model employs the Cobb-Douglas production function, which can be expressed as follows:

$$\mathbf{Y(t) = F\,[K(t), L(t), A(t)]} \tag{1}$$

In the production function above, the output will only change through K, L, and A, while time does not directly affect the production function. Technological progress (A) serves to increase productivity. Whereas the higher A, the more productive the factors of production (capital and labor). Therefore, the output produced will increase. As technological innovation, e-money and e-commerce in the Solow-Swan model are part of the technological advancement variable (A). As part of technological advancement (A), e-money can increase productivity through transaction efficiency and e-commerce through new product innovation and market expansion.

The Solow-Swan growth model represents the prevailing neoclassical approach to explaining long-term economic growth and the tendency for incomes to converge over time. The concept posits that the initial condition of a country, whether poor or rich, does not determine its economic condition in the long run. Indeed, poor countries will experience faster economic growth to catch up with rich countries (Kadigi *et al.*, 2022). Therefore, the discrepancy in income levels between countries will diminish over time. The model predicts that growth will be faster when capital levels are low. Consequently, all economies will ultimately converge in terms of per capita income (Kadigi *et al.*, 2022).

E-money

E-money is a novel payment system, defined as money transferred electronically (Popovska-Kamnar, 2014). It is a distinct entity from both printed and deposit money. The amount of money used for payment is limited to the amount of money stored in the e-money account. Moreover, Popovska-Kamnar (2014) explained the concept of e-money, which is one of the distinguishing features between e-money and other payment instruments. Unlike other payment instruments, such as credit cards, which are issued and accepted by the same institution, the issuer and recipient of e-money are different entities. In the context of e-money, a third party can act as both the issuer and manager of the e-money in question. This third party may take the form of a bank that has been granted a special license to issue e-money. It may take the form of a special e-money institution that has been granted permission from the relevant authority to issue e-money.

A variety of media platforms are utilized to disseminate information regarding the advantages and conveniences associated with the utilization of e-money to encourage individuals to adopt this mode of payment. There are numerous advantages and conveniences associated with the use of electronic payments and e-money. E-money offers a more practical and efficient method of conducting transactions, is transparent in its operations, facilitates convenient transactions, and mitigates the risk of theft and counterfeit money. Nevertheless, research indicated that security concerns are a significant barrier to the adoption of electronic money. These include the potential for transaction failure, misuse of personal data, and fraud, which are primary concerns for e-money users (Widayat *et al.*, 2020).

The evolution of payment systems is occurring concurrently with technological advancement, and the utilization of cashless payment systems is increasing. The rise in non-cash transactions has resulted in enhanced effectiveness and efficiency in payments, thereby bolstering the productivity of the country's economy. The results of studies conducted by Oyewole *et al.* (2013), Pang *et al.* (2022), Slozko and Pelo (2014), Tee and Ong (2016), and Zandi *et al.* (2013) indicated that electronic payments have a positive impact on economic growth. Conversely, Wong *et al.* (2020), Tran and Wang (2023) have demonstrated that electronic payments (e-money) do not exert an influence on economic growth. In light of the aforementioned evidence, the first hypothesis is as follows:

H1: E-money has an impact on economic growth.

E-commerce

E-commerce can be defined as the activity of buying, selling, or exchanging information to purchase or sell goods and services through the internet (Abdullah-Al-Hossain, 2022). E-commerce is classified according to the nature of the transaction, namely (1) business-to-business (B2B) transaction, in which both parties have business interests and sell goods or services to other businesses; (2) business-to-customer (B2C) transaction, in which a business sells goods or services directly to consumers; (3) customer-to-business (C2B) transaction, in which the consumer assumes the role of the vendor, selling goods or services to a company; (4) customer-to-customer (C2C) transaction, in which the transactions are conducted between consumers for the sale of goods or services through online marketplaces; (5) mobile commerce refers, in which the transactions involve the sale or purchase of goods and services facilitated by the use of mobile devices, social media, and other digital platforms (Basalma, 2024).

E-commerce represents a significant technological advancement in the global economy, facilitating the integration of the internet into production activities. Its implementation has the potential to enhance economic productivity in countries where it is adopted. The use of the internet has been shown to facilitate the dissemination of ideas and information, thereby fostering innovation. It can be argued that the source of economic growth through the application of e-commerce acts as a supporting factor for the growth of ideas and innovation, which in turn influences productivity and subsequently affects economic growth. Moreover, e-commerce also facilitates consumer access to goods and services, particularly in regions with limited physical retail outlets. This can enhance consumer choice and shopping convenience, which can facilitate economic growth (Basalma, 2024). The results of studies conducted by Armunanto *et al.* (2021), Elseoud and Abou (2014), Wijanarka and Kadek (2022) indicated that e-commerce has a positive impact on economic growth. Conversely, Nopiah *et al.* (2024) discovered that e-commerce exerts a detrimental impact on economic growth. In light of the aforementioned evidence, the second hypothesis that can be proposed is as follows:

H2: E-commerce has an impact on economic growth.

RESEARCH METHODOLOGY

Type and Data Source

This research employed a quantitative methodology utilizing secondary data. Specifically, this research used a panel data model. A combination of time series and cross-sectional data for six years (2017-2022) examined countries included in ASEAN, such as Brunei Darussalam, Cambodia, the Philippines, Indonesia, Laos, Malaysia, Myanmar, Singapore, Thailand, Timor Leste, and Vietnam. The data were collected using the purposive sampling technique based on the following criteria: the sample should be an ASEAN country, and the sample must have data on e-money and e-commerce transactions during the period between 2017 and 2022. The data employed in the research, encompassing economic growth, e-money, and e-commerce, were obtained from the World Bank and the Statista Research Department. Table 2 presents the operational definition and measurement of the research variables utilized in this research.

Table 2. Operational definition and measurement of research variables

No.	Variable	Definition	Indicator	Source
1.	GDP Growth	An increase in a country's economy over a period of time, as measured by the total production of goods and services in the economy – referred to as gross domestic product (GDP).	Growth of Gross Domestic Product (Percent)	World Bank (2024)
2.	E-money	An electronic means of payment that stores monetary value in a specific digital medium.	E-money transaction volume (in units) is presented as a natural logarithm (ln).	Statista Research Department (2024l, 2024r, 2024m, 2024u, 2024o, 2024p, 2024q, 2024n, 2024s, 2024t, 2024v)
3.	E-commerce	All buying and selling activities or transactions conducted through the use of electronic media, specifically the Internet.	E-commerce transaction volume (in unit) is presented in the form of a natural logarithm (ln).	Statista Research Department (2024a, 2024g, 2024b, 2024j, 2024d, 2024e, 2024f, 2024c, 2024h, 2024i, 2024k)

Data Analysis

This research employed the GMM approach. The GMM approach represents an extension of the Method of Moments, whereby the criterion function is minimized as a weighted sum of squares (Utami *et al*., 2014). Furthermore, Utami *et al.* (2014) elaborated on the characteristics of the GMM estimator in the linear panel data model, which include unbiasedness, minimum variance, consistency, and asymptotic normal distribution properties. These properties are achieved through the estimation of dynamic panel data using two distinct model approaches: First Difference-Generalized Method of Moments (FD-GMM) and System-Generalized Method of Moments (SYS-GMM).

This research employed the SYS-GMM as its analytical tool. The FD-GMM method is susceptible to limitations when applied to time series data, particularly when the series is too short. This could result in an imbalanced condition in the first difference transformation. The SYS-GMM method was developed by Arellano and Bover (1995) as a means of addressing the limitations of the FD-GMM approach. The SYS-GMM method allows for the estimation of data in situations when there is a lack of data or an imbalance in the time series. The SYS-GMM method exhibits the highest proportionality among other GMM methods (Arellano & Bover, 1995; Tinungki *et al.,* 2022). The following function represents the general form of dynamic panel data regression:

$$Y_{it} = a_{it} + \delta Y_{it-1} + \beta' X_{it} + u_{it} \quad (2)$$

Where:

$$u_{it} = \mu_i + v_{it} \quad (3)$$

Note:

Y_{it} : Response of the 1st individual unit at time *t*

δ : Coefficient vector of

Y_{it-1} : First lag exogenous variable observation of Y_{it}

β' : $\beta_1, \beta_2, ..., \beta_n$ is a vector of slope coefficients with size $1 \cdot n$, where *n* is the exogeneous variable

X_{it}: Exogeneous variable observation of individual *i* at time *t*

a_{it} : Intercept coefficient of each individual *i* by time *t*

u_{it} : Residuals in individual period *i* and time *t*

It is essential to test model specifications in order to guarantee the consistency and objectivity of the estimates generated, thereby ensuring the production of robust parameters. The following panel data regression model is proposed:

$$GDP_{it} = \beta_0 + \gamma_1 GDP_{it-1} + \gamma_2 GDP_{it-2} + \beta_1 EMON_{it} + \beta_2 ECOM_{it} + \varepsilon_{it} \quad (4)$$

In this context, GDP_{it} represents the economic growth of country *i* at year *t*. GDP_{it-1} is the first lag dependent variable. The second lag dependent variable is represented by GDP_{it-2}. $EMON_{it}$ denotes e-money transactions for country *i* at year *t*, while $ECOM_{it}$ signifies e-commerce transactions for country *i* at year *t*. β_0 represents a constant parameter. $\beta_1 \wedge \beta_2$ represent the impact of exogenous variables on endogenous variables. The standard error, denoted ε_{it}, captures the discrepancy between the observed and predicted values for country *i* at year *t*.

RESULTS AND DISCUSSIONS

Results

The results of the empirical analysis encompass several elements, including descriptive statistics, correlation between variables, unit root test, static panel data test, and SYS-GMM. The following Table 3 presents a summary of the descriptive statistics.

Table 3. Descriptive statistics by country

No.	Country	Period	*LnEmoney*	*LnEcommerce*	GDP
1.	Brunei Darussalam	6	6.05	-0.89	0.53
2.	Cambodia	6	7.65	0.12	4.45
3.	Philippines	6	3.07	2.97	3.86
4.	Indonesia	6	3.78	3.73	3.70
5.	Laos	6	6.88	-0.25	4.06
6.	Malaysia	6	2.49	2.39	3.59
7.	Myanmar	6	8.07	1.06	0.33
8.	Singapore	6	2.36	2.15	3.01
9.	Thailand	6	2.92	2.86	1.42
10.	Timor Leste	6	5.38	5.37	6.05
11.	Vietnam	6	2.71	2.63	5.87

As illustrated in Table 3, the highest average growth of e-money transaction volume is in Myanmar, followed by Cambodia and Laos. The highest average growth of e-commerce transaction volume of ASEAN countries during the period of 2017-2022 is in Timor Leste, followed by Indonesia and the Philippines. In contrast, Brunei and Laos exhibit a negative average e-commerce growth.

Meanwhile, the highest average economic growth can be observed in Timor-Leste, followed by Vietnam and Cambodia. The data also shows that Timor-Leste, which exhibits the highest average e-commerce growth, also demonstrates the most significant average economic growth. In addition, Table 4 summarizes descriptive statistics by research variable.

Table 4. Descriptive statistics by research variable

Variable	Obs.	Mean	Std. Dev.	Min.	Max.
GDP	66	3.351515	6.898741	-20.54	31.96
LnEmoney	66	4.669673	2.133937	1.894617	8.463269
LnEcommerce	66	2.018724	1.798893	-0.9942523	5.459586

Table 4 presents the maximum, minimum, standard deviation, and mean values. The standard deviation was employed as a metric for measuring the data distribution from its mean value. The mean, standard deviation, minimum, and maximum values of GDP are 3.35, 6.90, -20.54, and 31.96, respectively. The standard deviation value of GDP is greater than its average value, indicating that the majority of the data is dispersed from the mean to a considerable extent.

The mean and standard deviation values of e-money are 4.67 and 2.13, respectively. In addition, the mean and standard deviation values of e-commerce are 2.02 and 1.80, respectively. The mean values of e-money and e-commerce exceed the standard deviation values, indicating that the majority of the data are concentrated around the mean. The following Table 5 presents the correlation between the research variables.

Table 5. Correlation test

Variable	GDP	*LnEmoney*	*LnEcommerce*
GDP	1.000		
LnEmoney	-0.0867 (0.4887)	1.000	
LnEcommerce	-0.0867 (0.4887)	-0.5100*** (0.0000)	1.000

As illustrated in Table 5, only e-commerce and e-money exhibit a negative correlation of -0.5100. A negative correlation indicates that as the value of one variable increases, the value of the other variable tends to decrease. An increase in e-commerce is associated with a decrease in e-money. The correlation coefficient of -0.5100 indicates a relatively robust negative correlation between e-commerce and e-money. As the coefficient approaches -1, the strength of the negative correlation increases. The results of the unit root test are presented in Table 6.

Table 6. Unit root test

Variable	Statistic	z	p-value	Conclusion
GDP	0.4301	-7.3209	0.0000	Stationary
LnEmoney	-0.4658	-2.3740	0.0088	Stationary
LnEcommerce	-0.6295	-3.3597	0.0004	Stationary

Table 6 is a visual representation of the stationary panel data. In statistical analysis, stationary data is defined as data that exhibits a consistent pattern, including a constant mean and variance. The unit root test results conducted in this research indicate that the three variables exhibit stationary values. This is corroborated by the p-values of the GDP, e-money, and e-commerce variables, which are less than 0.05. Therefore, it can be concluded that the three variables have stationary panels. The static panel data test results are presented in Table 7.

Table 7. Static panel data models

Variable	Dependent Variable: GDP			
	POLS	**FEM**	**REM**	**LSDV**
LnEmoney	-0.1408813 [-0.30]	-3.711956 [-0.35]	-0.1408813 [-0.30]	-0.0183929 [-0.00]
LnEcommerce	0.3244832 [0.58]	0.8051554 [0.06]	0.3244832 [0.58]	2.631344 [0.18]
Average VIF	1.35			
R^2	0.0128	0.0093	0.0128	0.1783

Note: [] indicates the t-statistic value.

Table 7 presents the coefficient estimates for the four models (POLS, FEM, REM, and LSDV). The coefficients of the POLS, FEM, REM, and LSDV models yield identical results, indicating an insignificant outcome. Moreover, the results of the multicollinearity test indicate that there is no evidence of multicollinearity, as the average variance inflation factor (VIF) is less than 10. The results obtained with the SYS-GMM approach are presented in Table 8.

Table 8. System-Generalized Method of Moments

Dependent Variable: GDP	
Variable	**SYS-GMM**
LnEmoney (β_1)	-0.1379043 (0.919)
LnEcommerce (β_2)	4.147138 (0.046)**
First Lag (L1. *GDP*)	0.4123558 (0.001)***
Second Lag (L2.gdp)	-0.7799402 (0.042)**
AB test AR(1)	-2.4314 (0.0150)
AB test AR(2)	1.4931 (0.1354)

*Note: ** and *** indicate significance values at 5% and 1% error tolerance, respectively.*

Table 8 illustrates the results of the first-order correlation test, which indicates that there is a statistically significant first-order correlation (0.0150 < 0.05). Subsequently, the second-order correlation test [AR(2)] demonstrates that no second-order correlation exists (0.1354 > 0.05). This indicates that the parameter consistency specification test has been satisfied. The SYS-GMM test results indicate that e-money has no statistically significant effect on GDP (0.919 > 0.05). Subsequently, e-commerce exerts a positive and statistically significant influence on GDP (0.046 < 0.05).

DISCUSSION

The findings of Wong *et al.* (2020), Tran and Wang (2023) indicated that e-money had no effect on economic growth in OECD countries, G20 countries, and Vietnam, respectively. However, these results contradict the results of studies by Oyewole *et al.* (2013), Pang *et al.* (2022), Slozko and Pelo (2014), Tee and Ong (2016), and Zandi *et al.* (2013), who found that the utilization of e-money for financial transactions had a positive impact on economic growth. The potential for e-money to drive economic growth was significant; however, the impact of this phenomenon varied across different countries. Such discrepancies could be attributed to varying degrees of technological adoption, technological infrastructure, and government policies across different countries. Infrastructural limitations and inadequate digital literacy could impede the pervasive adoption of e-money, thereby constraining economic growth.

As reported by ASEAN Indonesia (2023), there was a notable decline in the exclusion rate within the ASEAN region, from 46% in 2017 to 32.6% in 2022. This suggested that access to financial services had been enhanced. The growth of digital payments in developing countries was occurring at a faster rate than in developed countries. This was due to the fact that individuals utilized digital payments to a greater extent than they did banking services, as financial services in developing countries tended to be more expensive (Pelletier *et al*., 2014). Pang *et al*. (2022) argued that the level of internet penetration in the majority of developing countries, including Indonesia, India, South Africa, and Mexico, remained relatively low. Consequently, despite the exponential growth of digital payments in these countries, internet access was not yet equitably distributed, particularly in rural areas. It can thus be concluded that the contribution of digital payments to GDP in these developing countries was relatively insignificant, indicating that there was no discernible relationship between digital payments and economic growth.

The Solow-Swan theory posits that economic growth is driven by three key factors: labor growth, capital accumulation, and technological progress. In this research, e-money, as an electronic payment instrument, was not directly related to the factors of the Solow-Swan model. The introduction of e-money had the potential to enhance transaction efficiency. However, this increase in efficiency did not have a significant effect on overall economic growth. This was because e-money was only an instrument that facilitated transactions and did not function as a production factor that could directly produce output.

Moreover, the findings of the second hypothesis indicate that e-commerce has a beneficial impact on economic growth in the ASEAN region. These results align with those previously reported by Armunanto *et al*. (2021), Elseoud and Abou (2014), Wijanarka and Kadek (2022). E-commerce made a substantial contribution to the economic growth of ASEAN countries. The removal of distance barriers and expansion of market reach enabled by e-commerce encouraged increased business activity, both from large businesses and MSMEs. This had an impact on increasing GDP, job creation, and state revenue from taxes. Additionally, e-commerce played a pivotal role in advancing financial inclusion in ASEAN. A considerable number of e-commerce platforms were collaborating with financial institutions to facilitate digital payment services. This enabled individuals previously unable to access banking services to participate in the digital economy. The expansion of MSMEs' access to e-commerce platforms, the provision of adequate digital training, and the creation of a conducive business environment would collectively promote more equitable and sustainable economic growth in ASEAN countries.

In accordance with the principles of the Solow-Swan theory, the growth of e-commerce was contingent upon the variables outlined in the Solow-Swan model. E-commerce affected labor growth in two ways. Firstly, it boosted labour demand by generating new jobs in sectors like logistics.

Second, e-commerce facilitated the creation of new jobs in sectors that did not previously exist, such as online retail. In the context of capital accumulation and technological advancement, e-commerce served to stimulate investment in technology and enhance capital efficiency, thereby fostering an increase in overall productivity.

CONCLUSIONS

The objective of this research is to determine the impact of e-money transactions and e-commerce transactions in ASEAN countries using the SYS-GMM model and data from the World Bank and Statista Research Department. The findings conclude that e-money has no discernible impact on economic growth, whereas e-commerce does exert a measurable influence on economic growth.

The first finding of this research confirms that e-money has no discernible impact on economic growth. This phenomenon might occur due to the varying levels of technology adoption, technological infrastructure, and government policies in each country. Infrastructure constraints and low levels of digital literacy could impede the growth of e-money and economic growth. Similarly, the circumstances of countries could vary. For instance, developing countries have a relatively low internet penetration rate, which results in unequal distribution of internet access and a minor contribution to GDP. Thus, it could be concluded that there is no significant relationship between the use of digital payments and economic growth. For these reasons, the government is suggested to implement measures to enhance the development of technological infrastructure, particularly in underdeveloped regions, promote digital literacy, and facilitate affordable accessibility.

Additionally, the second finding of this research confirms that e-commerce has a favorable impact on economic growth. This suggests that e-commerce has been a contributing factor in the growth of the ASEAN economy. E-commerce plays a significant role in fostering increased business activity, job creation, and state revenue from taxes. The expansion of MSME access to e-commerce, increased digital training, and a conducive business environment would encourage economic growth to be more equitable.

Meanwhile, this research has faced a major limitation. This research employs the e-money variable from the perspective of a technological advancement. However, it has not been able to describe the impact on overall economic growth. This suggests that e-money is a more complex and varied phenomenon. In light of these limitations, future researches are suggested to expand the analysis to consider additional factors that may influence the relationship between e-money and economic growth. These factors could include the internet penetration rate, digital literacy rate, technological infrastructure, and government policies (fiscal and monetary).

REFERENCES

Abdullah-Al-Hossain, L. C. (2022). E-Commerce and its Economic Contribution in Bangladesh. *East African Scholars Journal of Economics, Business and Management, 5*(10), 343–352. https://doi.org/10.36349/easjebm.2022.v05i10.011

Aminata, J., & Sjarif, G. E. (2020). Towards a Cashless Society in Indonesia: The Impact on Economic Growth and Interest Rate. *Indonesian Journal of Economics, Entrepreneurship and Innovation, 1*(2), 2721–8287. https://doi.org/10.31960/ijoeei.v1i2.705

Anvari, R. D., & Norouzi, D. (2016). The Impact of E-commerce and R&D on Economic Development in Some Selected Countries. *Procedia - Social and Behavioral Sciences, 229*, 354–362. https://doi.org/10.1016/j.sbspro.2016.07.146

Arellano, M., & Bover, O. (1995). Another look at the instrumental variable estimation of error-components models. *Journal of Econometrics, 68*, 29–51. https://doi.org/10.1016/0304-4076(94)01642-D

Armunanto, Y. N., Marselina, & Suparta, I. W. (2021). E-Commerce Effect on Economic Growth in Asean Countries. *International Journal of Economics and Management Studies, 8*(2), 100–104. https://doi.org/10.14445/23939125/ijems-v8i2p114

ASEAN Indonesia. (2023). Digitalization enhances ASEAN Region's Financial Inclusion. https://asean2023.id/en/news/digitalization-enhances-asean-regions-financial-inclusion

Basalma, E. O. (2024). The Long-Run Effect of E-commerce on Economic Growth in Saudi Arabia. *Cognizance Journal of Multidisciplinary Studies, 4*(2), 1–19. https://doi.org/10.47760/cognizance.2024.v04i02.001

Brunner, N., Mayrpeter, G., & Kühleitner, M. (2022). Parameter estimation of the Solow–Swan fundamental differential equation. *Heliyon, 8*(10), e10816. https://doi.org/10.1016/j.heliyon.2022.e10816

Danisewicz, P., & Elard, I. (2023). The real effects of financial technology: Marketplace lending and personal bankruptcy. *Journal of Banking and Finance, 155*, 1–22. https://doi.org/10.1016/j.jbankfin.2023.106986

E-Commerce Nation. (2023). Top 10 Countries with the Largest E-commerce Industry. https://www.ecommerce-nation.com/top-10-countries-with-the-largest-e-commerce-industry/

Edeki, S. O., Arowosegbe, D. O., Akinlabi, G. O., & Khalique, C. M. (2024). Solution analysis of Solow Growth Model for financial practices and applications. *Partial Differential Equations in Applied Mathematics, 11*, 100905. https://doi.org/10.1016/j.padiff.2024.100905

Elseoud, E., & Abou, M. S. (2014). Electronic Commerce and Economic Growth in Saudi Arabia. *International Journal of Economics, Commerce and Management, 2*(5), 1–16.

Givelyn, I., Rohima, S., Mardalena, M., & Widyanata, F. (2022). The Impact of Cashless Payment on Indonesian Economy: Before and During Covid-19 Pandemic. *Jurnal Ekonomi Pembangunan, 20*(1), 89–104. https://doi.org/10.29259/jep.v20i1.17898

Ibarra, L., Partida, A., & Aguilar, D. (2015). Electronic Commerce as a Business Strategy: Impact in Consumption Habits in Hermosillo, Sonora's Inhabitants. *Procedia - Social and Behavioral Sciences, 175*, 275–282. https://doi.org/10.1016/j.sbspro.2015.01.1201

Kabir, A. I., Jakowan, Md., Bosu, J., Mohsin, S., & Hamim, R. (2020). The Emergence of E-Commerce Sites and Its Contribution towards the Economic Growth of Bangladesh: A Quantitative Study. *Informatica Economica, 24*(3), 40–53. https://doi.org/10.24818/issn14531305/24.3.2020.04

Kadigi, R. M. J., Robinson, E., Szabo, S., Kangile, J., Mgeni, C. P., De Maria, M., Tsusaka, T., & Nhau, B. (2022). Revisiting the Solow-Swan model of income convergence in the context of coffee producing and re-exporting countries in the world. *Sustainable Futures, 4,* 100082. https://doi.org/10.1016/j.sftr.2022.100082

Mashabi, M., & Wasiaturrahma, W. (2021). Electronic Based Payment Systems and Economic Growth in Indonesia. *Jurnal Ilmu Ekonomi Terapan, 6*(1), 97–121. https://doi.org/10.20473/jiet.v6i1.26287

Nopiah, R., Ekaputri, R. A., Barika, B., & Febriani, R. E. (2024). Impact of E-Commerce on Indonesia Economic Growth: Intermediation Models with Financial Technology Constraint. *Riset Ekonomi Pembangunan, 9*(1), 1–23. https://doi.org/10.31002/rep.v9i1.1216

Oyewole, O. S., Gambo, J., Abba, M., & Onuh, M. E. (2013). Electronic Payment System and Economic Growth: A Review of Transition to Cashless Economy in Nigeria. *International Journal of Scientific Engineering and Technology, 2*, 913–918.

Pang, Y. X., Ng, S. H., & Lau, W. T. (2022). Digital Cashless Payments and Economic Growth: Evidence from CPMI Countries. *Capital Markets Review, 30*(2), 63–89.

Pelletier, A., Khavul, S., & Estrin, S. (2014). Mobile payment services in developing countries. International Growth Centre, 1–12.

Popovska-Kamnar, N. (2014). The Use of Electronic Money and Its Impact on Monetary Policy. *Journal of Contemporary Economic and Business Issues, 1*(2), 79–92.

Pratiwi, K. D. (2022). E-Commerce and Economic Growth in Indonesia: Analysis of Panel Data Regression. *Gema Publica, 7*(1), 171–186. https://doi.org/10.14710/gp.7.1.2022.171-186

Setiawan, B., Nugraha, D. P., Irawan, A., Nathan, R. J., & Zoltan, Z. (2021). User innovativeness and fintech adoption in Indonesia. *Journal of Open Innovation: Technology, Market, and Complexity, 7*(3), 1–18. https://doi.org/10.3390/joitmc7030188

Slozko, O., & Pelo, A. (2014). The Electronic Payments as a Major Factor for Futher Economic Development. *Economics and Sociology, 7*(3), 130–140. https://doi.org/10.14254/2071-789X.2014/7-3/13

Statista Research Department. (2023). Fintech - statistics & facts. https://www.statista.com/topics/2404/fintech/#topicOverview

Statista Research Department. (2024a). Digital Commerce - Brunei Darussalam. https://www.statista.com/outlook/dmo/fintech/digital-payments/digital-commerce/brunei-darussalam#transaction-value

Statista Research Department. (2024b). Digital Commerce - Cambodia. https://www.statista.com/outlook/dmo/fintech/digital-payments/digital-commerce/cambodia#transaction-value

Statista Research Department. (2024c). Digital Commerce - Filipina. https://www.statista.com/outlook/dmo/fintech/digital-payments/digital-commerce/philippines#transaction-value

Statista Research Department. (2024d). Digital Commerce - Indonesia. https://www.statista.com/outlook/dmo/fintech/digital-payments/digital-commerce/indonesia#transaction-value

Statista Research Department. (2024e). Digital Commerce - Laos. https://www.statista.com/outlook/dmo/fintech/digital-payments/digital-commerce/laos#transaction-value

Statista Research Department. (2024f). Digital Commerce - Malaysia. https://www.statista.com/outlook/dmo/fintech/digital-payments/digital-commerce/malaysia#transaction-value

Statista Research Department. (2024g). Digital Commerce - Myanmar. https://www.statista.com/outlook/dmo/fintech/digital-payments/digital-commerce/myanmar#transaction-value

Statista Research Department. (2024h). Digital Commerce - Singapore. https://www.statista.com/outlook/dmo/fintech/digital-payments/digital-commerce/singapore#transaction-value

Statista Research Department. (2024i). Digital Commerce - Thailand. https://www.statista.com/outlook/dmo/fintech/digital-payments/digital-commerce/thailand#transaction-value

Statista Research Department. (2024j). Digital Commerce - Timor Leste. https://www.statista.com/outlook/dmo/fintech/digital-payments/digital-commerce/timor-leste#transaction-value

Statista Research Department. (2024k). Digital Commerce - Vietnam. https://www.statista.com/outlook/dmo/fintech/digital-payments/digital-commerce/vietnam#transaction-value

Statista Research Department. (2024l). Digital Payments - Brunei Darussalam. https://www.statista.com/outlook/dmo/fintech/digital-payments/brunei-darussalam#transaction-value

Statista Research Department. (2024m). Digital Payments - Cambodia. https://www.statista.com/outlook/dmo/fintech/digital-payments/cambodia#transaction-value

Statista Research Department. (2024n). Digital Payments - Filipina. https://www.statista.com/outlook/dmo/fintech/digital-payments/philippines#transaction-value

Statista Research Department. (2024o). Digital Payments - Indonesia. https://www.statista.com/outlook/dmo/fintech/digital-payments/indonesia#transaction-value

Statista Research Department. (2024p). Digital Payments - Laos. https://www.statista.com/outlook/dmo/fintech/digital-payments/laos#transaction-value

Statista Research Department. (2024q). Digital Payments - Malaysia. https://www.statista.com/outlook/dmo/fintech/digital-payments/malaysia#transaction-value

Statista Research Department. (2024r). Digital Payments - Myanmar. https://www.statista.com/outlook/dmo/fintech/digital-payments/myanmar#transaction-value

Statista Research Department. (2024s). Digital Payments - Singapore. https://www.statista.com/outlook/dmo/fintech/digital-payments/singapore#transaction-value

Statista Research Department. (2024t). Digital Payments - Thailand. https://www.statista.com/outlook/dmo/fintech/digital-payments/thailand#transaction-value

Statista Research Department. (2024u). Digital Payments - Timor Leste. https://www.statista.com/outlook/dmo/fintech/digital-payments/timor-leste#transaction-value

Statista Research Department. (2024v). Digital Payments - Vietnam. https://www.statista.com/outlook/dmo/fintech/digital-payments/vietnam#transaction-value

Tee, H. H., & Ong, H. B. (2016). Cashless payment and economic growth. *Financial Innovation, 2*(4), 1–9. https://doi.org/10.1186/s40854-016-0023-z

The Jakarta Post. (2019). Indonesia among top e-money drivers in Southeast Asia: S&P report. The Jakarta Post. https://www.thejakartapost.com/news/2019/11/19/indonesia-among-top-e-money-drivers-in-southeast-asia-sp-report.html

Times of India. (2023). India tops world ranking in digital payments, beats China by huge margin: Report. Times of India. https://timesofindia.indiatimes.com/gadgets-news/india-tops-world-ranking-in-digital-payments-beats-china-by-huge-margin-report/articleshow/100944643.cms

Tinungki, G. M., Robiyanto, R., & Hartono, P. G. (2022). The Effect of COVID-19 Pandemic on Corporate Dividend Policy in Indonesia: The Static and Dynamic Panel Data Approaches. *Economies, 10*(1), 1–18. https://doi.org/10.3390/economies10010011

Tran, L., & Wang, W. (2023). Cashless Payments Impact to Economic Growth: Evidence in G20 Countries and Vietnam—Vietnamese Government with a Policy to Support Cashless Payments. *American Journal of Industrial and Business Management, 13*(4), 247–269. https://doi.org/10.4236/ajibm.2023.134017

Utami, B. H. S., Warsono, W., Kurniasari, D., Usman, M., & Elfaki, F. A. (2014). Generalized Method of Moments' Characteristics and Its Application on Panel Data. Science International Lahore, 26(3), 985–990.

Widayat, W., Masudin, I., & Satiti, N. R. (2020). E-Money payment: Customers' adopting factors and the implication for open innovation. *Journal of Open Innovation: Technology, Market, and Complexity, 6*(3), 1–14. https://doi.org/10.3390/JOITMC6030057

Wijanarka, T., & Kadek, N. D. A. P. S. (2022). The Role of SMEs in Indonesian E-Commerce to the Indonesian Economy during the Covid-19 Pandemic. *Journal of World Trade Studies, 7*(1), 33–48. https://doi.org/10.22146/jwts.v6i2.4821

Wong, T. L., Lau, W. Y., & Yip, T. M. (2020). Cashless Payments and Economic Growth: Evidence from Selected OECD Countries. *Journal of Central Banking Theory and Practice, 9,* 189–213. https://doi.org/10.2478/jcbtp-2020-0028

World Bank. (2024). GDP Growth (annual %). https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG?end=2022&start=2017

Zandi, M., Singh, V., & Irving, J. (2013). The Impact of Electronic Payments on Economic Growth. *Moody's Analytics: Economic and Customer Credit Analytics, 217*(2), 1–16.

DIGITALIZACIJA I EKONOMSKI RAST NEKSUS U REGIONU ASEAN

Rezime:

Digitalizacija ekonomije se pojavila kao ključni pokretač rasta u regionu ASEAN. Rasprostranjenost bezgotovinskih transakcija i e-trgovine je eksponencijalno porasla poslednjih godina, što je postalo tema o kojoj se naširoko raspravlja u akademskim krugovima i široj javnosti. Ovo istraživanje ispituje uticaj e-novca i e-trgovine na ekonomski rast u 11 zemalja ASEAN-a. Podaci su dobijeni od Svetske banke i Statista istraživačkih odeljenja. Podaci su analizirani korišćenjem Sistem-Generalized Method of Moments (SIS-GMM) modela sa dinamičkom strukturom panel podataka. Nalazi ukazuju da e-novac nema vidljiv uticaj na privredni rast, dok e-trgovina ima pozitivan i statistički značajan uticaj na privredni rast u posmatranim zemljama. Ovo istraživanje naglašava da je e-trgovina ključna u olakšavanju širenja tržišta, poboljšanju efikasnosti i podsticanju inovacija.

Ključne reči:

ekonomski rast,
e-novac,
e-trgovina,
ASEAN,
SIS-GMM.

JEL klasifikacija:
O47, L81, E5