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THE IMPACT OF DIGITAL ECONOMY ON ECONOMIC GROWTH IN SOUTHEAST ASIA

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ABSTRACT

The development of the digital economy today has proliferated along with the development of information technology. Economic digitization can affect international trade and financial inclusion, which in turn affects economic growth. How the digital economy can affect economic growth is the focus of this research. The analytical tool used is panel data analysis of 10 countries in the Southeast Asia region in 2017-2021. The results show that economic digitization is more likely to affect financial inclusion than international trade in encouraging economic growth in the Southeast Asian region.

Keywords: Digital Economy, International Trade, Financial Inclusion, Economic Growth.

INTRODUCTION

Industrial revolution 4.0 has a systemic impact on all aspects of life, both economic and social (Ziaei Nafchi & Mohelska, 2020). Industrial revolution 4.0 is known as the digital revolution or technological revolution related to automation, robots, *artificial intelligence*, and the *internet of things* (Ikhsan, 2020). The digitization of the economy is increasing the use of economic data. Data can be accessed anywhere, and anyone and is not limited to local markets (Zhen, 2021). The widespread inclusion of digital technology in domestic economic processes and

international trade will significantly reduce the transaction costs of foreign economic activities (Ahmedov, 2020). Economic digitization has also driven financial inclusion and economic growth (Guo et al., 2019; Xun et al., 2020). More and more people have mobile phones, and the provision of financial services via mobile phones and affordable internet connectivity can increase access to financial facilities (Ozili, 2018).

The digital economy increases productivity and supports socio-economic development. Many countries have used economic digitization to drive economic growth without spending many resources on digital innovation (Myovella et al., 2020; Larson, 2017; Etoundi et al., 2016; Abuladze & Gigauri, 2017; Berdykulova et al., 2014). However, digitalization also has other problems, especially for developing countries, namely increasing unemployment because digitalization replaces some existing jobs (Ikhsan, 2020) and increases the community's income gap (Maratdaevna et al., 2019). This study was conducted to identify and analyze whether the development of digitalization can drive economic growth in the Southeast Asia region through higher international trade and a more inclusive financial sector.

LITERATURE REVIEW

Digitization of the economy has a real impact on international trade. Changes in production technology and configurations related to digitization, emergence, and deployment of new business models can slow down cross-border activities due to the movement of goods and people. This is due to forming a sales circle close to the buyer (Ahmedov, 2020). Economic openness through globalization opens up opportunities for the international division of labor, natural advantages, relative advantages, and competitive advantages possessed by countries. The main idea of this concept is to make production processes capable of creating new values more efficient, taking into account local interests and conditions, bringing production closer to buyers/consumers, participating in product design development, and other parameters (Ciuriak & Ptashkina, 2018).

Economic digitization is also able to encourage economic growth through digitizing the financial sector. First, digital finance can lead to greater financial inclusion, expansion of financial services to the non-financial sector, and expansion of essential services to individuals (Gomber et al., 2017). Second, digital finance can provide affordable, convenient, and safe banking services for poor individuals in developing countries. Recent improvements in the accessibility and affordability of digital financial services worldwide can help millions of poor customers switch from cash-based transactions to formal digital financial transactions on secure digital platforms (Demirgu c-Kunt & Klapper, 2013). Improvements in the accessibility and affordability of digital financial services worldwide can help millions of poor customers switch from cash-based transactions to formal digital financial transactions on secure digital platforms (Malady, 2016).

Third, digital finance can increase gross domestic product (GDP) by providing easy access to a wide range of financial products and services (and credit facilities) for individuals and small, medium, and large enterprises, which can increase spending aggregates, thereby increasing GDP. Digital finance can also lead to better economic stability and increased financial intermediation, both for customers and the economies in which they and their families live (Ozili, 2018). Fourth, innovation in digital finance is also able to have a long-term positive impact on banking performance.

Fifth, digital finance also benefits governments by providing a platform to facilitate increased aggregate spending, resulting in higher tax revenues arising from increased volumes of financial transactions (Scott et al., 2017). Sixth, digital finance is beneficial for financial and monetary system regulators because the adoption of full-scale digital finance can significantly reduce the circulation of counterfeit money and minimize the emergence of a *shadow economy*. After all, all economic transactions are recorded (Ozili, 2018). Other benefits of digital finance to customers include greater control over customers' finances, fast financial decision making, and the ability to make and receive payments in seconds (Manyika et al., 2016).

In addition to having a positive relationship with financial inclusion, digital finance also has a negative relationship. Digital financial service providers are *profit-oriented* companies that utilize digital finance to maximize their profitability or maximize profitable opportunities from businesses affiliated with digital financial providers, namely banks, financial and non-financial institutions. Enterprise digital financial service providers may discriminatory use more aggressive marketing tactics to persuade high- and middle-income customers to use new or existing digital finance platforms or infrastructure and use less aggressive marketing tactics to persuade low-income and poor customers to use the platform. Alternatively, new or existing digital infrastructure if they believe the latter cannot afford the associated costs, thus leading to lower financial inclusion for poor and low-income customers as net monetary payments for digital finance providers are higher for high-cost and middle-income customers low compared to low-income and poor customers.

Second, the bias in the provision of digital finance can be geographical as digital financial providers, based on their internal risk assessment, which may change over time, may choose to withdraw or discontinue providing digital financial services specifically for high-risk rural areas. Regions or communities do not have the supporting infrastructure to maintain certain digital financial services, thus leading to lower financial inclusion. Some of the supporting infrastructure required for digital finance to function efficiently could include mobile phones with modern (and up-to-date) operating software systems and applications supporting digital financial services.

Third, an educational bias can be introduced in the provision of digital financial services. Suppose the net monetary value of providing digital finance to the poor is deficient. In that case, digital finance providers, based on their profitability assessment, may focus less on delivering digital finance to the poor and uneducated who do not have the basic financial literacy to understand digital finance.

There are interesting results from research conducted by Demirgüç-Kunt and Klapper (2013). Their study proves that the higher a person's level of income and education, the more inclusive finances are. In line with these results, Allen, Demirguc-Kunt, Klapper, and Peria (2016) conducted a follow-up study and found that higher income and higher education levels are positively associated with greater financial inclusion. The implication of this study is that poor, low-income, and illiterate individuals do not benefit proportionally from financial inclusion, which raises new, more severe problems.

Studies in Uzbekistan show that the implementation of digital technology in companies is hindered by the slow process of introducing electronic services, lack of mechanisms to transfer documents from paper to electronic form, technical and organizational deficiencies, generational and social status differences (not all employees can use electronic services

equally). And conservative employees. To change the situation, companies need to have employees with relevant professional knowledge, make agreements with leading technology providers, and use the most modern and effective software development (Maratdaevna et al., 2019).

Scott et al. (2017) examine the impact of implementing SWIFT (*Society for Worldwide Interbank Financial Telecommunication*) on bank performance, network-based technology infrastructure, and a set of standards for interbank telecommunications worldwide. They examined 6848 banks in 29 countries in Europe and the US. They found that implementing SWIFT (i) had a significant effect on profitability in the long run; (ii) this profitability effect is more significant for small banks than for large banks; and (iii) show a significant network effect on performance.

METHODOLOGY

Data used in this study are data on the development of economic digitization, international trade, financial inclusion, and economic growth in the Southeast Asian region with a period of 2017-2021. In the estimation technique of the panel data regression model, there are three models, namely the model with the Pooled Least Square (Common Effect) method, the Fixed Effects model, and the Random Effects model. The best model in panel data regression should follow any test: First is Chow test to choose between the Pooled Least Square (common) method or the Fixed Effects technique. The second is Hausman Test to choose between Fixed Effects or Random Effects techniques (Gujarati & Porter, 2009).

a. Chow Test

Chow test is a test to determine the common effects model with the most appropriate fixed effects model for estimating panel data. Viewing the results of the chow test can be done in two ways. The first is to look at the F statistic value and the table F statistic value or the second way to look at the probability value (p -value) and its alpha value (α) (Gujarati, 2012):

- 1). If the results of the Chow test show that the F value is greater than the F-table value or the probability value is less than the significant value, then H_0 (common effects model) is rejected, and H_1 (fixed effects model) is accepted, which means that the Fixed Effects Model approach is better to estimate the panel data regression.
- 2). If the results of the Chow test show that the F value is smaller than the F-table value or the probability value is greater than the significant value, then H_0 is accepted, and H_1 is rejected, which means that the Common Effects Model approach is better used for panel data regression estimation than the Fixed Effects Model.

b. Hausman Test

Hausman test is used to determine the most appropriate fixed effects model approach or Random Effects model for panel data. The difference between the fixed effects model and the random-effects model lies in the constant value, where the fixed effects model does not contain random variables (disturbance), while the random effects model contains the influence of random variables (disturbances).

In the fixed-effects model, the estimation results are unbiased and inefficient, but the random effects estimation results are biased and efficient. If the Hausman test results show the Hausman statistical value is greater than the chi-square value or the probability value is smaller than the significance level value, then H_0 (random-effects model) is rejected, and H_1 (fixed effects model) is accepted, which means that the Fixed Effects Model approach is more

effective. Better than the Random Effects Model approach. If the Hausman test results show the Hausman statistical value is smaller than the chi-square value or the probability value is greater than the significance level value, then H_0 is accepted, and H_1 rejected, which means that the Random Effects Model approach is better than the Fixed Effects. Here, the research models are:

$$IK = \alpha_0 + \alpha_1 ED1_{it} + \alpha_2 ED2_{it} + \alpha_3 ED3_{it} + e_t \quad (1)$$

$$TRADE = \beta_0 + \beta_1 ED1_{it} + \alpha_2 ED2_{it} + \beta_3 ED3_{it} + e_t \quad (2)$$

$$EG = \gamma_0 + \gamma_1 TRADE_{it} + \gamma_2 IK_{it} + e_t \quad (3)$$

IK : Financial inclusion is measured by the ratio of broad money (M2) to GDP (%)

TRADE : International trade is measured by the ratio of exports plus imports to GDP (%)

EG : Economic growth, measured by real GDP growth (%)

ED1 : Number of internet users (%)

ED2 : Number of social media users (millions)

ED3 : Average internet network speed (Mbps)

RESULTS AND DISCUSSION

Following the first objective of the study, which is to analyze the effect of economic digitization on international trade in the Southeast Asia region, the results The research shows that only the average internet network speed variable (ED3) has an effect, while the variable number of internet users (ED1) and the number of social media users (ED2) has no significant effect on international trade in the Southeast Asian region for the 2017-2021 period. Five percent significance level (Table 1).

Table 1
Panel Model Regression Results: Model 1

Dependent Variable: TRADE					
Method: Panel Least Squares					
Variable	Coefficient	Std. Error	t-Statistic	Prob.	
C	15.07894	49.38023	0.305364	0.7631	
ED1	1.149444	0.723009	1.589805	0.1268	
ED2	-0.287457	0.237714	-1.209253	0.2400	
ED3	1.065145	0.229979	4.631493	0.0001	

The ED3 variable regression coefficient figure of 1.065 indicates that an increase in the average speed of the internet network can cause an increase in international trade network speed of 1 MB. International trade is measured by the ratio of exports plus imports to GDP. The stronger the internet network will facilitate international trade transactions, both exports and imports. An increase in exports will encourage an increase in aggregate demand, income, and output. On the other hand, an increase in imports can decrease aggregate demand, income, and output.

The second objective of this study is to analyze the effect of economic digitization on financial inclusion in the Southeast Asian region. Financial inclusion is measured by the ratio of broad money (M2) to GDP. The results show that the variable number of internet users (ED1) and the number of social media users (ED2) can affect financial inclusion in the Southeast Asian region

for the period 2017-2021 at a significance level of 5 percent, while the variable average internet network speed (ED3) does not. Significant effect (Table 2).

Table 2.

Panel Model Regression Results: Model 2

Dependent Variable: IK				
Method: Panel Least Squares				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	15.49240	2.342761	6.612880	0.0000
ED1	-0.099322	0.034302	-2.895532	0.0087
ED2	0.024389	0.011278	2.162571	0.0423
ED3	-0.009189	0.010911	-0.842162	0.4092

Financial inclusion is measured by the ratio of money area (M2) to GDP. The ED1 regression coefficient value of -0.099 indicates that increasing the number of internet users by 1 percent can reduce financial inclusion by 0.099 percent. The higher the internet users, the higher the access to information on the financial sector, both banks and non-banks. The decreasing M2 to GDP ratio indicates that the banking market is decreasing along with other financial institutions such as fintech and other digital financial activities. Internet users can make financial transactions without having to go through banking. The ED2 regression coefficient of 0.024 indicates that an increase in the number of social media users by 1 million will cause an increase in financial inclusion of 0.024 percent. This means that the information obtained by social media users can encourage users to save their funds in banking either in the form of demand deposits, savings, or time deposits.

The third objective is to analyze the effect of international trade and financial inclusion on economic growth in the Southeast Asian region. The study results show that the financial inclusion variable has a positive effect on economic growth. In contrast, the international trade variable has no significant effect on economic growth in the Southeast Asian region for 2017-2021 at a significance level of 5 percent (Table 3). This means that financial inclusion can increase public access to financial facilities so that banking intermediation can run well and encourage output to grow higher. On the other hand, economic openness, as reflected in the increase in exports and imports, has not been able to encourage domestic output to grow because the increase in exports is *offset* by an increase in imports which can reduce domestic product so that the result of economic growth is not affected.

Table 3.

Panel Model Regression Results: Model 3

Dependent Variable: EG				
Method: Panel Least Squares				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.173765	1.116903	1.050911	0.3038
TRADE	-0.001411	0.003563	-0.396095	0.6955
IK	0.418619	0.088334	4.739065	0.0001

CONCLUSION AND RECOMMENDATION

Economic digitization is more likely to affect financial inclusion variables than international trade in encouraging economic growth in the Southeast Asia region. Strengthening financial inclusion through increasing and deepening financial access can create financial efficiency and increase productivity. The development of digital-based financial institutions can shift conventional financial activities. The ease of transactions and the variety of options for access to finance have led to an increase in public data that can be channeled into the productive sector and accelerate growth. International trade has not been able to act as a growth driver because of economic openness and the development of information technology that facilitates international transactions, on the one hand, encouraging an increase in exports. However, on the other hand, imports have also increased, so that an increase in imports contracts the expansive impact of exports. Thus, government policies in increasing economic growth need to pay more attention to the deepening of the financial sector in both bank and non-bank financial institutions and the need for export-oriented policies and to substitute imported goods that can be produced domestically.

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