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Analysis of the Effect of Digitalization on Economic Growth in ASEAN in 2021

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Abstract:
ASEAN has good technological potential and internet penetration that can support the digitalization process. Digitalization has an influence on economic growth through various sectors, such as e-commerce, online media, and financial services. In this study, digitalization is represented by the variables of digital skills, digital payment, and the number of internet users which will be the independent variables. The dependent variable is economic growth. This study uses secondary data in the form of cross-section of 10 ASEAN countries in 2021. The method used is multiple linear regression. The results is digital payment variable has no significant effect on economic growth in ASEAN. The digital skill variable has a significant positive effect on economic growth in ASEAN. The variable number of internet users has no significant effect on economic growth in ASEAN.

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Keywords:
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1. Introduction

ASEAN ranks third in the world in population, sixth in GDP, and fourth in trade value. However, ASEAN's digital economy is still underdeveloped, currently representing only 7% of GDP, compared to other continents that have reached more than 10% (The ASEAN Secretariat, 2021). Through cooperation, ASEAN countries can maximize their digital potential. ASEAN can make the digital economy the basis for strengthening and accelerating intra-regional trade and growth called digital integration. ASEAN can use local businesses to grow well domestically, regionally, and globally so that they can compete and even surpass China, Europe, and the United States. By 2025, digital integration could transform the way ASEAN competes in the global arena, allowing individuals and businesses of all sizes to not only benefit from the adoption of digital technologies, but also connect to the wider ASEAN economy beyond their borders (Hoppe et al., 2018).

ASEAN has potential with strong foundations, such as a market exceeding 670 million people, a young tech-savvy population and growing internet penetration. Digitalization can quickly become a key driver of economic development, with sectors such as e-commerce, online media and financial services. Singapore's Ministry of Trade and Industry points out that the background of a strongly integrated ASEAN digital economy is as follows (Ministry of Trade and Industry of Singapore, 2022):

1. ASEAN has 400 million internet users, the third largest number of internet users in the world
2. ASEAN's internet economy is predicted to reach more than US$300bn by 2025
3. In 2020, e-commerce in ASEAN grew 63% due to the covid-19 pandemic
4. Regional mobile penetration is the third largest in the world, reaching 132%

However, contrary to the ideal expectations (das sollen) above, ASEAN still experiences many obstacles / challenges in promoting digital integration, such as how to harmonize digital rules and standards on various digital systems, how to support cross-border data flows and protect personal data, and others (Idat, 2019; Menon & Fink, 2019 in Maulana & Suryana (2024)). The results of a study conducted by Maulana & Suryana (2024) explain that by using integrated digital economic opportunities, it will encourage domestic economic growth.

The implementation of digital technology in various aspects of life has changed the mindset, behavior, and interactions between individuals and institutions. Digital economic transformation can have both positive and negative impacts. The positive impact is that there are many opportunities for economic growth and business innovation. However, in utilizing these opportunities, an active role is needed from the government, educational institutions, and the community in increasing digital awareness and skills (Sudiantini et al., 2023).

The digital industry, such as digital paymet, is increasingly developing and is widely used in situations and conditions, such as during covid-19. Various online platforms are starting to use digital payment methods when making transactions. This is because digital payments are considered more practical than the use of cash. Based on studies, it is also said that the current generation prefers to use digital payments rather than using cash directly. From the many uses of digital payments, companies began to innovate by creating digital payment applications. This digital payment application functions to store funds, check balances, send money instantly, and make payments (Putra et al., 2022).

The world has entered the era of society 5.0 with the interconnection of devices with the internet and IoT networks that allow more people to access the internet. The integration of modern ideas, such as big data, social media, CSR, and e-commerce also plays an important role in accelerating digitalization. The expansion of internet users can impact the growth of society 5.0 and lead to the release of new economic models (Radjamin & Hermawan, 2024).

2. Literature Review

2.1. Relationship between Technology and Economic Growth

Technological advances affect economic activities, as predicted by Tapscott (Bukht & Heeks, 2017) who first introduced the term digital economy as a new economic era. In the new economy, information is presented in digital form. When information is converted into digital form and transmitted via digital networks, it can be compressed and delivered at the speed of light. Compared to analog transmission, digital communication offers significantly improved quality. Various types of information can be integrated, stored, and accessed instantly from anywhere in the world. Digital technologies are designed to meet individual preferences, influencing both business operations and personal lives.

Endogenous economic growth according to Juhro and Trisnanto (2018) is a theory of economic growth using a neoclassical approach that does not explain the concept of economic growth well. This is because one of the main variables that explain the economy, namely the level of technological development, is included in exogenous variables. Endogenous economic growth theory tries to include technological processes endogenously so that the output of the company or industry becomes better. This theory assumes that growth originates at the firm or industry level. As a result, the endogenous growth model places greater emphasis on human capital and research and development (R&D) as the primary engines driving economic expansion.

2.2. Relationship Digital Payment with Economic Growth

Maharani et al (2023) entitled The Effect of Digital Payment on Indonesia's Economic Growth: Regional Analysis in Indonesia During the Covid-19 Pandemic, the digital payment variable has a significant positive effect on economic growth. The effect of digital payment on economic growth is influenced by the use of digital payment based on the region, regional structure, facilities, poverty level, human resources, and technology in a region. In improving the digital payment system in Indonesia, it takes time and cooperation between the government and the community. Increasing digital literacy through training and education in the community can be a way to improve the digital payment system in Indonesia. Improving infrastructure can be an investment for the government because it can increase consumption with ease of transactions so as to encourage the development of MSMEs that play a role in economic growth in Indonesia.

2.3. Relationship Internet Usage with Economic Growth

Rochmahwati (2023) entitled Analysis of the Effect of Digital Technology on Economic Growth in Java, the number of internet users has a significant negative effect on economic growth in Java. This is due to the uneven internet network in all regions of Indonesia and the lack of socialization to the public regarding e-commerce, then the use of the internet is also not only in transactions, but also has a negative impact so that this can be the reason why the internet network has a negative effect.

2.4. Relationship Digital Skill with Economic Growth

Abdillah (2024) entitled The Impact of the Digital Economy on Economic Growth in Indonesia, the digital economy has an impact on economic growth seen from various aspects, such as increasing the productivity of the digital economy which can be increased in various ways, such as automation of production, distribution, and marketing carried out by businesses. Digital technology can increase innovation through various fields, such as products, services and business processes. Then another impact is the creation of digital economy jobs that can create new jobs in various sectors. Another impact is that increasing the competitiveness of digital technology can help businesses to increase competitiveness in the global market. In addition, this study also discussed that the development of the digital economy also has a positive impact on the behavior of social media users. The first impact is that economic growth increases and advances along with the increase in industrialization centers in an area. The economic productivity of a country will experience an increase in demand and faster production management in meeting market needs managed by telecommunications media and social media in technological developments. Another effect is that it enables workers to stay engaged in enhancing their skillsets and expanding their knowledge in communication, which contributes to economic.

3. Data and Methodology

This study uses secondary data. The data used, namely cross-section data for 10 ASEAN countries in 2021. The variables in this study are digital payments, digital skills, the number of internet users, and economic growth sourced from the worldbank and the ASEAN Digital Integration Index (ADII), ASEAN Secretariat in 2021. The first independent variable is digital payment which is taken from pillar 3 of the ASEAN Digital Integration Index (ADII), namely Digital Payments & Identities in the form of a point score. Then there are digital skill variables taken from pillar 4 of the ASEAN Digital Integration Index (ADII), namely Digital Skills & Talents in the form of point scores. Then for the last independent variable is the number of internet users sourced from the worldbank in the form of a percentage of the number of internet users. The three independent variables represent digitalization. Meanwhile, the dependent variable of economic growth is obtained from the worldbank in the form of a percentage. This research uses Stata 17 software. This research uses multiple linear regression analysis.

Ghozali (2018) multiple linear regression analysis is used to examine the influence of multiple independent variables on a single dependent variable. This analytical model is applied when the study involves more than one independent variable affecting a dependent variable. In this research, the model is used to assess the impact of digital payment, digital skills, and the number of internet users on economic growth. The equation is:

$$Y = \alpha + \beta 1X1 + \beta 2X2 + \beta 3X3 + e$$

Where :

X1 = Digital payment

X2 = Digital skill

X3 = Number of internet users (%)

X4 = Economic growth (%)

Classical assumption test is carried out with the aim of knowing whether the regression model is a problem or not in order to meet the Best Linear Unbiased Estimator (BLUE) rules (Ajija, et al. 2011). Multicollinearity test to see the existence of a perfect linear relationship between several or all variables that explain the regression variables Gujarati, 2010). Heteroscedasticity test is a condition where all disturbances in the population regression function have unequal variances. The normality test in this study uses Shapiro Wilk, because it is generally used on samples with small numbers. The normality test aims to determine whether the data is normally distributed or not. If the data is normally distributed, the sig value criterion is> 0.05, otherwise if the sig value <0.05 then the data is not normally distributed (Ismail, 2022). Meanwhile, the linearity test is conducted to evaluate whether the model specifications are appropriate or not (Widarjono, 2018).

Coefficient of Determination To see how well the regression line can use the coefficient of determination test. This test is useful for showing a match with the data. The regression line is said to be getting better if the number is close to 1 because it can explain the actual data. The opposite applies, the regression line is said to be bad if the number is away from 1 or close to 0 (Widarjono, 2018). The F-statistic test is a test to see whether all independent variables together have an effect on the dependent variable and the model is feasible to use or not. The trick is to look at the relationship between f count and f critical. If the value of f count is greater than f table then, Ha is accepted and H0 is rejected. On the other hand, if f count is smaller than f table then, Ha is rejected and H0 is accepted (Sugiyono, 2019)

The t test is determine whether there is a partial influence between the independent variable and the dependent variable. The relationship between t count and t table. If the t value is greater than the t table or the probability is less than 0.05, reject H0 and accept Ha so that it has a significant effect. If the t value is smaller than the t table or the probability is more than 0.05 then, accept H0 and reject Ha so that it has no significant effect (Gujarati, 1995).

4. Result and Discussion

Tabel 1. Regression

Source	SS	df	MS
Model	226.452	3	75.484
Residual	61.851	6	10.308
Total	288.304	9	32.033

y	coefficient	Std. err.	t	P>|t|	[95% conf.	interval]
x1	0.079	0.126	0.63	0.554	(-0.229)	0.388
x2	0.544	0.126	4.30	0.005	0.234	0.854
x3	(-0.278)	0.173	(-1.61)	0.159	(-0.702)	0.145
_cons	-6.599	6.075	(-1.09)	0.319	-21.466	8.267

Source : Stata 17, processed (2025)

Digital payment variables have no significant effect on economic growth in ASEAN. The test results show a coefficient of 0.079 with a probability of 0.554 (prob> 0.05). This is not in line with research by Maharani et al (2023) where digital payment variables have a significant positive effect on economic growth. As well as research conducted by Hayati et al (2024) also found that variable digital payment has a positive and significant effect on economic growth.

Digital skill variables have a significant positive effect on economic growth in ASEAN. The test results show a coefficient of 0.554 with a probability of 0.005 (prob <0.05). This means that every increase in digital skills by 1 point will increase economic growth by 0.554 percent. This is consistent with Abdillah's research (2024) that digital skills can have an effect on increasing economic growth.

Variable number of internet users has no significant effect on economic growth in ASEAN. The results show a coefficient of -0.278 with a probability of 0.159 (prob> 0.05). This is not in line with research by Rochmahwati (2023) that the number of internet users has a significant negative effect on economic growth in Java. This is due to the uneven internet network in all regions of Indonesia and the lack of socialization to the public regarding e-commerce, then the use of the internet is also not only in transactions, but also has a bad impact so that this can be the reason why the internet network has a negative effect. This is also not in line with research conducted by Sugihartid kk (2023) which found that the variable number of internet users has a positive and significant effect on economic growth. One form of technological development is internet users and is one of the factors driving economic growth.

This is because if internet users increase, the consumption needs of the community are now available in the scope of the internet

F-statistic probability has a value of 0.019 <0.05 (α = 5%), which means rejecting H0 so that the independent variables digital payment, digital skills, and the number of internet users simultaneously affect the dependent variable, namely economic growth. Adjusted R-Squared has a value of 0.678, this means that economic growth can be explained using digital payment variables, digital skills, and the number of internet users by 67.8% and for the remaining 32.2% explained by other variables.

Tabel 2. Normality Test

Variable	Obs	W	V	z	Prob>z
resid	10	0.95330	0.720	(-0.546)	0.70761

Source : Stata 17, processed (2025)

Probability value is 0.707 which means more than 0.05 so that the residuals are normally distributed.

Tabel 3. Multicollinearity Test

Variable	VIF	1/VIF
x3	7.60	0.131654
x1	6.43	0.155544
x2	2.20	0.453767
Mean VIF	5.41	

Source : Stata 17, processed (2025)

VIF is not more than 8. Therefore, the results in table 3 show that the independent variable data are not exposed to multicollinearity.

Tabel 4. Heteroscedastisity Test

chi2(1) = 1.13
Prob > chi2 = 0.2870
Source : Stata 17, processed (2025)

Probability is 0.287 which means more than 0.05 so that the regression model is free from heteroscedasticity.

Tabel 5. Uji Linieritas

F(3,3) = 6.74
Prob > F = 0.075
Source : Stata 17, processed (2025)

Probability is 0.075 which means >0.05 so that independent variable have relationship with dependent variable.

5. Conclusion

Digitalization plays an crucial role in economic growth in all countries including country groups, such as ASEAN. Moreover, it has entered the industrial revolution 5.0 which has become more technologically advanced. Therefore, digitalization needs to be optimized so that it can affect the economy both in the short and long term. Based on this, this study conducted data processing to see the effect of digitalization on economic growth in ASEAN. The digital payment variable has no significant effect on economic growth in ASEAN. The digital skill variable has a significant positive effect on economic growth in ASEAN. Variable number of internet users has no significant effect on economic growth in ASEAN.

6. References

Abdillah, F. (2024). Dampak Ekonomi Digital Terhadap Pertumbuhan Ekonomi di Indonesia.

Ajija, S., Sari, D., Setianto, R., & Primanti, M. (2011). Cara Cerdas Menguasai Eviews. Jakarta: Salemba Empat.

BENEFIT: Journal Of Business, Economics, And Finance, 2(*1*)

Bukht, R. and Heeks, R. (2017) Defining, Conceptualising and Measuring the Digital Economy.

Ghozali, Imam. 2018. Aplikasi Analisis Multivariate dengan Program IBM SPSS. 25. Badan Penerbit Universitas Diponegoro: Semarang.

Gujarati, D & Dawn. (2010). Dasar-dasar Ekonometrika. Jakarta: Salemba Empat. Gujarati, D. (1995). Ekonometrika Dasar. Jakarta : Erlangga.

Hayati, C., Hanifah, Sadiqin, A. (2024). Revolusi E-Commerce: Transaksi Digital dan Dampaknya Pada Pertumbuhan Ekonomi di ASEAN-5. Jurnal Ilmiah Poli Bisnis, 16(*2*)

Hoppe, F., May, T., & Lin, J. (2018). Advancing Towards ASEAN Digital Integration: Empowering SMEs to Build ASEAN's Digital Future

International Organisations Research Journal, 13, 143-172.

Ismail, S. (2022). Pengaruh Penggunaan Model Pembelajaran Berbasis Proyek "Project Based Learning" Terhadap Hasil Belajar Fisika Peserta Didik Kelas X IPA SMA Negeri 35 Halmahera Selatan Pada Konsep Gerak Lurus". Jurnal Ilmiah Wahana Pendidikan, 8(*5*)

Juhro, S., Trisnanto, B. (2018). Paradigma dan Model Pertumbuhan Ekonomi Endogen Indonesia Maharani, D., P. (2023). Pengaruh Digital Payment Terhadap Pertumbuhan Ekonomi Indonesia:

Maulana, A., Suryana, Y. (2024). Perkembangan Integrasi Digital untuk Mendorong Digitalisasi Ekonomi di Kawasan ASEAN. Global Mind, 5(*2*)

Putra, S., A. (2022). Dampak Perluasan Digital Payment terhadap Perilaku Para Pelaku Ekonomi Pada Era Digitalisasi Bisnis. Prosiding National Seminar on Accounting, Finance, and Economics (NSAFE), 2(*5*)

Radjamin, I., P., & Hermawan, J. (2024). Hubungan Antara Pengguna Internet, Produk Domestik Bruto Per Kapita dan Tingkat Ketenagakerjaan dalam Perspektif E-commerce. Jurnal Ilmiah MEA (Manajemen, Ekonomi, dan Akuntansi), 8(*2*)

Rochmahwati, M., R. (2023). Analisis Pengaruh Teknologi Digital Terhadap Pertumbuhan Ekonomi di Pulau Jawa, Jurnal Ilmu Ekonomi (JIE), 7(*03*)

Sudiantini, D., Ayu, M., A., Aswan, M., C., A., S., Prastuti, M., A., Aprilia, M. (2023). Transformasi Digital : Dampak, Tantangan, Dan Peluang Untuk Pertumbuhan Ekonomi Digital. Trending: Jurnal Ekonomi, Akuntansi dan Manajemen, 1(*3*)

Sugiyono. (2019). Metode Penelitian Kuantitatif, Kualitatif, dan R&D. Bandung: Alfabeta.

The ASEAN Secretariat. (2021). ASEAN Statistical Yearbook 2021. In ASEAN Statistics. Jakarta: ASEAN. https://www.aseanstats.org/publication/asyb-2021/

Wahyuningtyas, D., A., Sasana, H., Sugiharti, R., Rr. (2021). Analisis Pengaruh Perkembangan Ekonomi Digital Terhadap Pertumbuhan Ekonomi di Indonesia Tahun 1996-2019. DINAMIC: Directory Journal of Economic, 3(*1*)

Widarjono, A. (2018). Ekonometrika Pengantar Dan Aplikasinya Disertai Panduan Eviews + Disertai CD Data. Yogyakarta: UPP STIM YKPN.

Radjamin, I., P., & Hermawan, J. (2024). Hubungan Antara Pengguna Internet, Produk Domestik Bruto Per Kapita dan Tingkat Ketenagakerjaan dalam Perspektif E-commerce. Jurnal Ilmiah MEA (Manajemen, Ekonomi, dan Akuntansi), 8(*2*)

Juhro, S., Trisnanto, B. (2018). Paradigma dan Model Pertumbuhan Ekonomi Endogen Indonesia Maharani, D., P. (2023). Pengaruh Digital Payment Terhadap Pertumbuhan Ekonomi Indonesia:

Analisis Kawasan di Indonesia Selama Pandemi Covid-19. Ecoplan, 6(*2*)

Rochmahwati, M., R. (2023). Analisis Pengaruh Teknologi Digital Terhadap Pertumbuhan Ekonomi di Pulau Jawa, Jurnal Ilmu Ekonomi (JIE), 7(*03*)

Abdillah, F. (2024). Dampak Ekonomi Digital Terhadap Pertumbuhan Ekonomi di Indonesia.

BENEFIT: Journal Of Business, Economics, And Finance, 2(*1*)

Ismail, S. (2022). Pengaruh Penggunaan Model Pembelajaran Berbasis Proyek “Project Based Learning” Terhadap Hasil Belajar Fisika Peserta Didik Kelas X IPA SMA Negeri 35 Halmahera Selatan Pada Konsep Gerak Lurus”. Jurnal Ilmiah Wahana Pendidikan, 8(*5*)