

The Role of Education and Internet User for Encourage Indonesian Economic Growth in The Digital Era

Imro'atul Husna Afriani

English Education Study Program, University of 17 August 1945 Banyuwangi

Fina Amaliah Hidayanti

STIE Jaya Negara Tamansiswa Malang

Abstract

This study aims to examine patterns of data change on investment in education, technology, and economic growth in Indonesia. By examining the behavior of investment data in education, technology, and economic growth, it can be predicted the opportunities for encouraging economic growth in terms of education and technology so that it can be seen how big the role of education and technology is in driving economic growth in Indonesia. This study examines the relationship between internet users, education, and economic growth in Indonesia. To achieve this goal, the Quantitative Threshold Autoregressive method is used to predict data behavior so that the relationship between data behavior and the relationship between variables of internet users, education, and economic growth can be known. Internet users as an indication of internet technology literacy have an impact on the Indonesian economy. The push for internet users in Indonesia is on the supply side, where there has been an increase in production, including starting new internet-based businesses in Indonesia. Education plays a role in encouraging community productivity through increasing human capital and mastery of technology so that education and technological literacy as indicated by the increase in internet users in Indonesia encourage each other to increase Indonesia's economic growth.

Keywords: Internet, Economics, education

JEL Classification Code: C01,E44, E51

Introduction

Education in Indonesia has undergone various developments since the period of independence to be precise since 1945. Education in Indonesia is defined as a conscious and planned effort to create an atmosphere of learning and the learning process so that students actively develop their potential to have religious-spiritual strength, self-control, personality, intelligence, noble character, and skills needed by them, society, nation, and state. Through the learning process, various benefits can be obtained by students. These benefits include developing abilities and potential, as well as character building (Suharno

et al,2020). The character formation in question is creative, competent, independent, and responsible. Currently, the learning process has developed a lot, one of which is the home learning method.

In the process of carrying out education in Indonesia, Pancasila is the foundation of basic ideology. This foundation is binding and has legal force for the government and all Indonesian people. This is done considering the importance of education for the quality and quality of the nation. The Ministry of Education and Culture of the Republic of Indonesia is the government agency responsible for education in Indonesia. Some of the duties of this government agency include the implementation of early childhood education, basic education, secondary education, community education, and cultural management (Juneman et al,2012). Currently, the education system in Indonesia that is implemented is the National education system. This education system applies to all levels of education, from primary to tertiary education. Previously, compulsory education for Indonesians was set for 9 years, covering 6 years for primary school and 3 years for secondary school. However, it has now been increased to 12 years which includes 6 years for basic education, 3 years for junior secondary education, and 3 years for senior secondary education. The National education system aims to educate and provide academic knowledge, skills, and behavior. There are several education systems in Indonesia that have been implemented, which have had an impact on human resource development in Indonesia.

The advancement of technology also greatly impacts all aspects of our lives, including education. Thus, it is inevitable and undeniable that the adaptation of a non-technological life to a technological life requires a bridge. People who live in urban areas may already be able to master information technology for education quickly because the infrastructure is very adequate. The problem is different from people who still live in rural areas, where information technology infrastructure is not optimal, so there are many obstacles in its use. This equitable distribution of technology infrastructure must be done immediately. And with existing budget funds for the advancement of Indonesian education. All sectors in a country are inseparable from problems, including the education sector. In fact, until now there are still various educational problems in Indonesia that have not been resolved. This is very unfortunate because the field of education is one of the factors that can improve the quality of national human resources. Low human resources hampered the country's progress. This is because no matter how many natural resources Indonesia has, it will not affect the nation's growth if it is not managed by the right people. Without quality education, the dream of becoming a developed country is just wishful thinking (Sukendro et al,2020).

This study aims to examine patterns of data change on investment in education, technology, and economic growth in Indonesia. By examining the behavior of investment data in education, technology, and economic growth, it can be predicted the opportunities for encouraging economic growth in terms of education and technology so that it can be seen how big the role of education and technology is in driving economic growth in Indonesia.

Literature Review

Education is the most important key for a country to be able to develop into a developed country that is prosperous and just. And, technology is able to create economic efficiency and increase competitiveness. The digital transformation currently occurring has greatly influenced the global economic system until finally the terminology "Digital Economy" emerged. What is the digital economy? In simple terms, the digital economy is an economic activity that runs on the basis of information technology / the internet (Habibi & Zabardast,2020). The digital economy can penetrate various boundaries and provide broader

economic opportunities. People from the middle to lower classes can even be involved in this digital economy. It can be seen that more and more MSMEs are taking advantage of existing digital facilities. In addition, many new jobs have been opened. Several new professions were even born thanks to this digital transformation. In Indonesia itself, the digital economy is quite massive and is worked on by the community. The government is also actively encouraging digital economic growth because it sees its potential for Indonesia's economic growth. The practice of Indonesia's digital economy is still dominated by the e-commerce sector. Indonesia still faces a number of challenges related to the digital economy. Transaction and investment processes in the digital economy are very vulnerable to being hacked. In addition, digital fraud is also quite a victim. There is a lot of homework to be done in Indonesia to address this cybersecurity problem.

E-commerce makes it very easy for foreign products to enter the Indonesian market. Local products face serious challenges in this regard. Local producers need government support in terms of coaching, ease of regulation, and other real assistance. The internet is the most important supporting infrastructure for the implementation of the digital economy. In order for the digital economy to continue to develop, professional and technology literate human resources are needed. This problem is quite evenly experienced by Southeast Asian countries which are still dominated by unskilled labor in their economic systems. This problem couldn't be solved in the blink of an eye. It takes the participation of many parties so that human resources in Indonesia can educate more about the practice of the digital economy. The government and educational institutions must be more proactive in seeking to improve the quality of human resources in response to efforts to improve the digital economy in Indonesia. Educational institutions, both tertiary institutions, and course institutions are the spearhead of education that can produce quality human resources. If the quality of human resources in Indonesia is not improved, Indonesia will only become a consumer and a sexy market for other countries (Rahayu & Day,2015).

The number of qualified human resources is expected to boost the number of new technopreneurs from Indonesia. Previously, business actors who were still on the SME scale with adequate education were also expected to be able to expand their reach internationally. Currently, many educational institutions are starting to take advantage of various online platforms to provide education. This is a positive step that needs to be continuously developed. Educational institutions that can provide online education will be able to reach more people. With this easy access, it is hoped that the community will be more proactive in improving their qualifications by learning again (Fatimah et al,2020).

Educational institutions must begin to adjust and be able to follow the acceleration of this 4.0 industrial revolution. The orientation of the educational program and curriculum must be in line with industry needs. Thus, people who receive education are truly ready to work in today's industrial environment. To maintain the quality of human resources, digital technology professional certification also needs to be done. Educational institutions must be able to help these human resources meet a number of qualifications required for professional certification. Thus, the number of professional human resources will continue to grow. Currently, a trend is being made in a number of short courses with more specific material. People tend to be interested in learning with this kind of system because they can learn what is really needed. In order to be more optimal in carrying out this role, educational institutions certainly need infrastructure support and better teacher quality. Education and technology have a loan scheme for educational institutions wishing to improve their education services. The Educational and Technology Institutional Scheme will greatly assist business development efforts, including business education. Improving the quality of educational institutions will certainly have an impact on the quality of human resources produced. The digital economy is the future. This sector will be the largest contributor to the global economy (Yaohua et al,2018).

Research Methods and Materials

This study examines the relationship between internet users, education, and economic growth in Indonesia. To achieve this goal, the Quantitative Threshold Autoregressive method is used to predict data behavior so that the relationship between data behavior and the relationship between variables of internet users, education, and economic growth can be known. The hope is that knowing past behavior data can be an indicator of decision-making that can be taken in the future. In this study we used the autoregressive equation as follows:

$$AR_{(p)} = Y_t = c + \Phi_1 Y_{t-1} + \Phi_2 Y_{t-2} + \dots + \Phi_p Y_{t-p} + e_t$$

Where AR is Y and Yt is Y over time in a time series which is influenced by Yt-1 or Y over time in the past in period 1 and Yt-1 itself is also influenced by Yt-2 which is Y in the past in the period 2 and so on which is influenced by et which is the error term for the time in the study period. This study focuses on secondary data sourced from the world bank. With the econometric equation as follows:

$$Y_t = \beta_0 + \beta_1 IU_{t1} + \beta_2 Ed_{t2} + e_t$$

Where Y is a gross domestic product, t is a time period, β is constant, IU is Internet User, Ed is Education, and e is error term. All data are secondary data from world banks.

Results and Discussion

To see the data on the behavior of internet users, education, and GDP, an autoregressive threshold estimate was carried out. The following are the estimation results that we have done:

$$GDP = (26209.5176865 * INTERNET_USER - 23.5428467574 * EDUCATION) + (-27330.8835594 * INTERNET_USER + 46.2862768732 * EDUCATION) * @LOGIT(1.9355779565e-11 * (GDP(-3) - 247594662218)) + 239811571736$$

The estimation results from the first estimate can be seen in table 1 below:

Table 1. Estimation Result

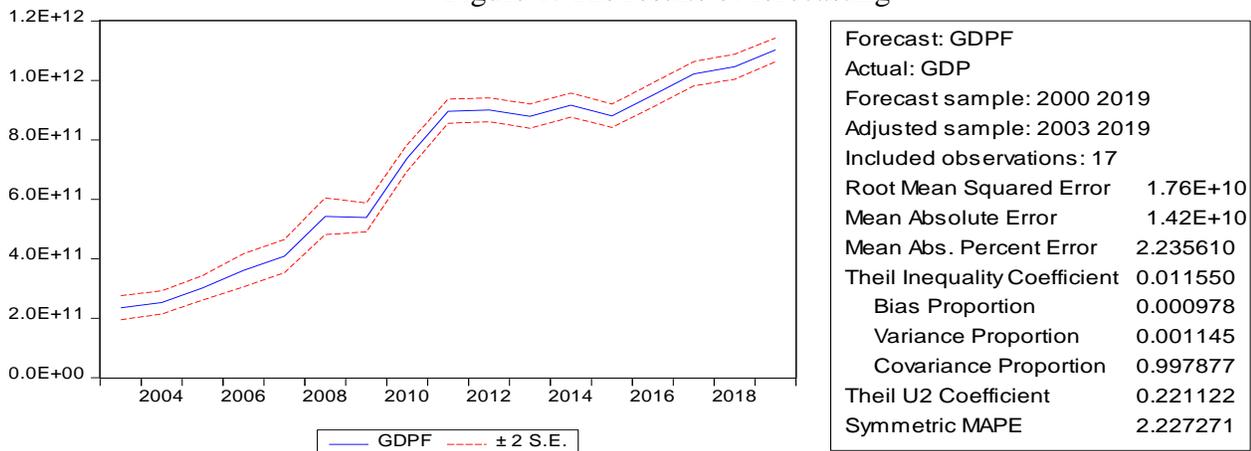
Variable	Coefficient	Std. Error	t-Statistic	Prob.
Threshold Variables (linear part)				
INTERNET_USER	26209.52	15114.8	1.73403	0.1136
EDUCATION	-23.54285	20.64118	-1.140577	0.2806
Threshold Variables (nonlinear part)				
INTERNET_USER	-27330.88	15150.47	-1.803963	0.1014
EDUCATION	46.28628	19.01342	2.4344	0.0352
Non-Threshold Variables				

C	2.40E+11	6.09E+10	3.938325	0.0028
Slopes				
SLOPE	1.94E-11	1.20E-11	1.614716	0.1374
Thresholds				
THRESHOLD	2.48E+11	8.15E+10	3.038669	0.0125
R-squared	0.997233	Mean dependent var		7.04E+11
Adjusted R-squared	0.995573	S.D. dependent var		3.03E+11
S.E. of regression	2.02E+10	Akaike info criterion		50.58655
Sum squared resid	4.07E+21	Schwarz criterion		50.92963
Log likelihood	-422.9856	Hannan-Quinn criter.		50.62065
F-statistic	600.6553	Durbin-Watson stat		1.747696
Prob(F-statistic)	0			

Source : Data world Bank Compiled

It can be seen that the relationship between GDP per capita and internet users and education is positive, where internet users have a positive effect on the linear threshold and education at a non-linear level. This means that in Indonesia, the internet's impulse to produce or the economy is as shown by GDP. The boost to production as a result of the increase in internet users can be marked by the emergence of e-commerce, which is a product of technological innovation that is marketed intensively in various mass media including the internet. Education plays a role in increasing human capital which has an impact on increasing production and mastery of technology. Where when there is an increase in production, the Indonesian people will be more absorbed in the production sector so that internet usage is reduced as indicated by the reversal of the direction of internet users from positive on the linear side to negative on the non-linear side. The encouragement of internet users and education on the production side can be seen from the forecasting results in the following graph:

Figure 1. The results of forecasting



Source : Data world Bank Compiled

From the forecast results shown in Figure 1, it can be seen that the per capita GDP graph tends to increase from time to time, this indicates a technological boost in economic growth followed by an education boost as the estimation results.

Conclusions

Internet users as an indication of internet technology literacy have an impact on the Indonesian economy. The push for internet users in Indonesia is on the supply side, where there has been an increase in production, including starting new internet-based businesses in Indonesia. Education plays a role in encouraging community productivity through increasing human capital and mastery of technology so that education and technological literacy as indicated by the increase in internet users in Indonesia encourage each other to increase Indonesia's economic growth.

References

- Fatimah, Y.A., Govindan, K., Murniningsih, R., Setiawan, A. (2020). Industry 4.0 based sustainable circular economy approach for smart waste management system to achieve sustainable development goals: A case study of Indonesia. *Journal of Cleaner Production* Volume 269, 1 October 2020, 122263. <https://doi.org/10.1016/j.jclepro.2020.122263>
- Habibi, F., Zabardast, M.A. (2020). Digitalization, education and economic growth: A comparative analysis of Middle East and OECD countries. *Technology in Society*, Volume 63, November 2020, 101370. <https://doi.org/10.1016/j.techsoc.2020.101370>
- Juneman., Meinarno, E.A., Rahardjo, W. (2012). Symbolic Meaning of Money, Self-esteem, and Identification with Pancasila Values. *Procedia - Social and Behavioral Sciences*, Volume 65, 3 December 2012, Pages 106-115. <https://doi.org/10.1016/j.sbspro.2012.11.099>
- Rahayu, R., Day, J. (2015). Determinant Factors of E-commerce Adoption by SMEs in Developing Country: Evidence from Indonesia. *Procedia - Social and Behavioral Sciences*, Volume 195, 3 July 2015, Pages 142-150. <https://doi.org/10.1016/j.sbspro.2015.06.423>
- Suharno, Pambudi, N.A., Harjanto, B. (2020). Vocational education in Indonesia: History, development, opportunities, and challenges. *Children and Youth Services Review*, Volume 115, August 2020, 105092. <https://doi.org/10.1016/j.childyouth.2020.105092>
- Sukendro, S., Habibi, A., Khaeruddin, K., Indrayana, B., Syahrudin, S., Makadada, F.A., Hakim, H. (2020). Using an extended Technology Acceptance Model to understand students' use of e-learning during Covid-19: Indonesian sport science education context. *Heliyon*, Volume 6, Issue 11, November 2020, e05410. <https://doi.org/10.1016/j.heliyon.2020.e05410>
- Yaohua, R., Muyu, L., Weihu, C., Xianyu, C. (2018). Efficiency, Technology and Productivity Change of Higher Educational Institutions Directly under the Ministry of Education of China in 2007-2012. *Procedia Computer Science*, Volume 139, 2018, Pages 598-604. <https://doi.org/10.1016/j.procs.2018.10.204>