The Role of Digital Literacy in Creating Demand for Domestic Production Through GDP Indicators in Indonesia

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Abstract

This study investigates the role of digital literacy in increasing domestic demand for domestic production using control indicators, internet users, domestic consumption, government spending, GDP.This study uses an annual time period from 2000 to 2020, this study uses "autoregressive vectors" to simulate causal relationships between variables during the study period. This study uses data provided by the World Bank and the Indonesian Central Bureau of Statistics. We found that economic growth has an impact on increasing government spending which encourages economic growth and increases domestic consumption which provides an impetus for increased production which in turn has an impact on increasing economic growth. However, economic growth does not encourage digital technology literacy. Although digital technology literacy encourages domestic consumption, it is identified that digital literacy has an impact on creating demand for goods and services produced domestically. So it can be said that although digital literacy does not provide a direct impetus to economic growth, it does provide an impetus for economic growth through increasing domestic consumption.

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Introduction

The concept of digital literacy was born considering the distribution and socialization of digital technology, especially the massification of personal computers and their relationship with graphical interfaces based on office metaphors (Munn, Hristova, & Magee, 2019). Prior to that, digital was associated with computing and its relationship with certain programming languages. Therefore, based on the high penetration of computers in the workplace, it is necessary to have basic skills in the use of computers related to knowing how to function in a digital environment with files, folders, trash cans, and desks (Nouri, Zhang, Mannila, & Norén, 2020). Thus, "digital literacy" focuses on basic skills and procedures, the use of production and information communication software, and office automation: word processing, spreadsheets, and presentations. The idea was born that children should use this technology. The Internet opens up before and after what the computer user understands (Iskandar, Sumarni, Dewanti, & Asnur, 2022).

From 2000 came the Internet boom, the .com enterprise boom, and digital use began to be emphasized, not only for production but for all information exchange and knowledge production (Glaeser, Kourtit, & Nijkamp, 2021). Entering the concept of information literacy has to do with the domain and skills to search for, select, organize, understand, evaluate and prioritize

information. Therefore, being digitally literate means having these skills in information management (Goodsett, 2020). In the next decade, the use of software has become widespread, the Internet has been in everything. Other themes started to emerge and come back the theme of programming again, that users have a certain understanding of programming (Cole, Pickard, & Stredler-Brown, 2019).

The year 2020 marks a milestone, the pandemic accelerates all-digital processes. For education, it means a paradigm shift in the way children teach and learn. There is currently a range of examples where new forms of delivering educational opportunities and digital themes are being sought (Rascão & Jamil, 2020). The pandemic has highlighted inequalities in education, as well as in digital literacy issues. Indeed, the pandemic has resulted in a forced transit to migrate from face-to-face to virtual and for them the actors of the educational process: teachers, students, parents and institutions, must develop at least the basic skills to devote themselves virtually environment. Managing tools is just as important as knowing how to read, write, add and subtract. There must be improvements, such as including the management of the use of technology as initial training for teachers (Bintliff, Holtzman, Ko, Barron-Borden, Thong, & Ardell, 2020). Digital technology is not only changing the education system but also the economy and increasing domestic production and increasing domestic consumption (Donthu & Gustafsson, 2020). Of course, this shows that digital technology can encourage demand for goods and services because of the ease of ordering and access from consumers to the market, namely the digital market known as the marketplace (Djakasaputra, Wijaya, Utama, Yohana, Romadhoni, & Fahlevi, 2021). This study investigates the role of digital literacy in increasing domestic demand for domestic production using control indicators, internet users, domestic consumption, government spending, GDP.

Literature Review

Around the 2000s the massive incorporation of information technology into the workplace began. Young adults from families nowadays need fast navigation and a strong processor. No longer is it possible to inherit old PCs. Recycling computers since the capitalist economy is obviously still developing (Borthakur & Govind, 2019). That there is a revolution in the practice of writing is undeniable. The creation of the keyboard, which has been around since 1874 when the Remington Company released the first typewriter on the market, was used to prepare for this change (Polt, 2018). This is crucial because it demonstrates that there may occasionally be a large lag between the availability of technology and its societal effects. Of course, ICT the usual abbreviation for Information and Communication Technology is more than just a keyboard (Dong & Mertala, 2021).

Previously, keyboard typing defined a special learning instance called "typing". There are currently no private institutions of even dubious quality that promote typing (Hetzel, Dudley, Feit, & Kristensson, 2021). The alternating gaze between the screen and the keyboard multiplies the errors and contributes to a preference for the mouse over the keyboard which, in turn, contributes to underestimating the great advantages of this keyboard in relation to word processing (Pitt & Brumberg, 2018). Of all, using a keyboard to type was only one aspect of the computer revolution. The crucial factor is that everything transforms simultaneously, like the way the text is produced, the way the text circulates, and the materiality of the things that bear the written sign (Hosni, Shedeed, Mabrouk, & Tolba, 2019).

The current mode of production presupposes the concentration of functions in the same person, functions previously distributed among various trades (Aas, Jullum, & Løland, 2021). Ideas about the unity of the work and the identity of the author are also changing, ideas that have

become our habit since modern times. Both are directly connected to the material backing that helps to make this concept a reality (Abrams, Lalot, & Hogg, 2021). Literacy is frequently used in connection with ICT-related terms. Aside from files that have already been deleted or are in the process of being destroyed, information is no longer looked up in book indexes, dictionaries, or encyclopedias. To search for information in digital databases, it is required to understand how to employ keywords and fundamental logical operators. In education, it is not only seeking information but also doing something with it, turning information into knowledge (Senkbeil, 2018).

PC and Internet technologies provide access to an uncertain and uncontrolled space, screens and keyboards are used for viewing, reading, writing, listening, playing, and many simultaneous changes in literacy (Kennedy & Arnold, 2020). Today, every child, from home, will be able to connect to the best online education offerings, following their studies at their own pace, without having to travel to big cities (Armstrong-Mensah, Ramsey-White, Yankey, & Self-Brown, 2020). The computer requires permanent technical support; requires a permanent software update; they need a telephone line or cable that guarantees a connection to the Internet (Richart, Baliosian, Serrat, Gorricho, & Agüero, 2020). Computer technology and digital technology change everything from education, economy, and social and modern life today (Chapuzet & Bawono, 2021). Digital technology also opens up various opportunities from its emergence from various needs from the provision of digital technology itself to its impact on education that increases the efficiency of human capital (Sulisnaningrum, Widarni, & Bawono, 2022). Of course, this has an impact on national production.

Research Method

This study uses an annual time period from 2000 to 2020, this study uses "autoregressive vectors" to simulate causal relationships between variables during the study period. This study uses data provided by the World Bank and the Indonesian Central Bureau of Statistics. We use the control variables for Indonesia's economic growth (GDP), domestic consumption, government spending, and internet use with the following vector equation:

$EGt = \beta0 + \beta1COt + \beta2GEt + \beta3IUt + et$ eql 1

$COt = \beta0 + \beta1EGt + \beta2GEt + \beta3IUt + et$ eql 2

$GEt = \beta0 + \beta1EGt + \beta2COt + \beta3IUt + et$ eql 3

$IUt = \beta0 + \beta1EGt + \beta2COt + \beta3GEt + et$ eql 4

Description :

Where EG is Economic growth, CO is Consumption, GE is Government Expenditure, IU is Internet user, e is error term, β is the strength of the causal influence, t is time series, and eql is equation. For the "unit root test," the following equation was employed in this study:

$\Delta Y1 = \alpha0 + \beta0T + \beta1Yt\text{-}1 + \sum\_(i\text{-}1)^q\ \alpha1\Delta Yt\text{-}1 + et$

The variables Y, which is being looked at for its unit root, T which represents the "linear trend", imply the "lag difference," which is expressed as $\Delta Yt-1$, $\alpha0$ is displayed as the "constant term," and "t" which represents the "time trend." For the unit root test, the following are the null and alternate hypotheses:

null hypothesis: $\alpha=0$

hypothesis one: $\alpha\neq0$

Result and Discussion

Testing stationarity is required because vector testing needs stationary data. The ADF test was performed to determine if the data were stationary. Table 1 displays the test results.

Table 1. ADF's Unit Root Test on Indonesian EG, CO, GE, and IU data

Variable	Unit Root	The ADF Test Stat.	Prob.	Description
Economic Growth (EG)	Level	-0.538217	0.7543	
	First Diff	-1.911156	0.3235	
	Second Diff	-3.228321	0.0342	Stationer
Consumption (CO)	Level	-1.731231	0.2112	
	First Diff	-1.722145	0.3539	
	Second Diff	-3.185216	0.0263	Stationer
Government Expenditure (GE)	Level	-2.613241	0.0843	
	First Diff	-4.922315	0.0031	Stationer
Internet User (IU)	Level	5.415212	0.1213	
	First Diff	-0.243371	0.8231	
	Second Diff	-7.773121	0.0000	Stationer

In contrast to the GE data, which were stationary on the first difference, the EG, CO, and IU data were stationary on the second difference. In this instance, the EG data exhibits stable behavior at the second difference in comparison to the original data, and the ADF test demonstrates that the crucial value is less than the alpha value. CO data that is stationary in the second difference. Additionally stationary at the second difference is the IU data. After doing the stationarity test we carried out a sensitivity test for the right lag length using the Akaike Information (AIC) criteria with the results presented in table 2.

Table 2. AIC value for Indonesian EG, CO, I, and IU data from Lag 0 to 4

leg length	LogL	LR	FPE	AIC	SC	HQ
0	-118.5717	NA	71.51661	14.61711	14.11321	14.63212
1	-61.77271	93.22451*	0.225171	9.643132	10.62218	9.732371
2	-44.71145	17.10346	0.252406	9.495464	11.25992	9.561771
3	-14.51271	14.15312	0.213113*	7.122113	10.11132	8.071731
4	1671.213	0.000000	NA	-201.1126*	-178.4177*	-201.4113*

The optimal Lag test results presented in Table 2 show that the Lag variable is in AIC, SC, and HQ at lag 4, therefore lag four will be chosen.VAR (Vector Autoregressive) model is used for estimation in vector analysis in this study after carrying out the optimum lag test with the results presented in table 3.

Table 3. Vector Model Analysis

	EG	CO	GE	IU

EG	-0.637113	-0.322813	0.176451	-0.542441
	(0.61453)	(0.71215)	(0.11336)	(0.81127)
	[-1.05112]	[-0.52311]	[0.92612]	[-0.76114]
CO	-1.012712	-1.175621	0.184318	-0.497171
	(0.53442)	(0.58612)	(0.14117)	(0.63526)
	[-1.85117]	[-2.01532]	[1.21112]	[-0.71123]
GE	0.344121	1.121531	0.341226	1.671145
	(1.21413)	(1.31122)	(0.34141)	(1.34115)
	[0.21724]	[0.83152]	[0.97134]	[1.14227]
IU	-0.37179	-0.53112	-0.04234	0.46132
	(0.33112)	(0.37121)	(0.11211)	(0.44316)
	[-1.11261]	[-1.47825]	[-0.48231]	[1.12231]
C	-8.24214	-7.43154	2.83172	-2.45271
	(4.51213)	(5.11410)	(1.22151)	(5.35131)
	[-2.12527]	[-1.73547]	[2.17723]	[-0.35141]
R-squared	0.73251	0.65723	0.73522	0.94317
Adj. R-squared	0.63211	0.42211	0.71351	0.91559

The relation between EG and EG itself was negative and insignificant. The relationship between EG and CO was significantly negative. The relation between EG and GE is significantly positive. The relation between EG and IU was significantly negative. The relation between CO and EG was negative and not significant. The relation between CO and CO itself is not significantly negative. The relation between CO and GE was positive, not significant. The relation between CO and IU was significantly negative. As a triangulation of vector analysis in table 3, a Granger causality test was carried out with the results presented in table 4.

Table 4. The Granger Causality Analysis

H0:	F-Stat.	Prob.
CO not Granger EG	0.14840	0.9585
GE not Granger EG	2.45983	0.1297
IU not Granger EG	2.88365	0.0946
GE not Granger CO	1.09884	0.4196
IU not Granger CO	2.73718	0.1052
IU not Granger GE	1.09984	0.4192

Based on the Granger test, of the relationship between CO and EG, GE and EG, IU and EG, GE and CO, IU and CO, and IU and GE, none of them has a probability above five percent. Given that the significance threshold (p-value) is less than or equal to 0.05, the findings of the Granger causality analysis using the EG, CO, GE, and IU variables show that there is no one-way link. This means that there is a causal connection between the various variables.

Conclusion

Economic growth has an impact on increasing government spending which encourages economic growth and increases domestic consumption which provides an impetus for increased production which in turn has an impact on increasing economic growth. However, economic growth does not encourage digital technology literacy. Although digital technology literacy encourages domestic consumption, it is identified that digital literacy has an impact on creating demand for goods and services produced domestically. So it can be said that although digital literacy does not provide a direct impetus to economic growth, it does provide an impetus for economic growth through increasing domestic consumption.

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