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Do Digital Literacy and Digital Entrepreneurship among University Students Contribute to Digital Economy?

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Abstract

Covid-19 pandemic accelerated the digital transformation that affected people, including university student. The research intention is to know the contribution of digital literacy and digital entrepreneurship to digital economy among university student. The study used PLS-SEM and the data was collected through online questionnaire. The questionnaire was distributed among university students in Jakarta in which 103 respond and filled it. The result of the research that digital literacy influenced both digital entrepreneurship and digital economy, digital entrepreneurship influenced digital economy.

Keywords
digital economy; digital literacy; digital entrepreneurship

I. Introduction

Covid-19 pandemic accelerate the digital transformation of economy, education, business, economy, and society as a whole. Gisbert, González & Esteve, (2016) argued that in the transformation every citizen today should have a certain level of digital skill to live and contribute in the society. The digital acceleration as experienced by communities in Indonesia responded differently. Some communities able to adjust and make the best of the digital transformation, while others having difficulties to deal with it. The condition is called digital divide that in the pandemic context could determine the effort effectiveness to combat the Covid-19 (Beaunoyer, Dupéré, & Guitton, M. J. 2020). Study by Tewathia, Kamath, & Ilavarasan, (2020) indicated that fundamental inequalities lead to unequal distribution of resources, it will affect to unequal access to digital technology, and resulted in unequal participation in the economy and society. The study also found that the level of education among household members will affect the ownership, skill, and usage of digital asset. Covid 19 pandemic caused all efforts not to be as maximal as expected (Sihombing and Nasib, 2020). The outbreak of this virus has an impact especially on the economy of a nation and Globally (Ningrum *et al*, 2020). The presence of Covid-19 as a pandemic certainly has an economic, social and psychological impact on society (Saleh and Mujahiddin, 2020).

University students are a social class that is perceived as most educated and ready to live with and further develop digital transformation. They are relatively well positioned to enter job market characterized by intense usage of digital technology. The expectation or the assumption of the university student's role in accelerated digitized world requiring three clarifications. Firstly, recognizing that university students in Indonesia come from different social background, a confirmation of whether university students do have required digital literacy. Secondly, accepting the impact of covid-19 pandemic on economy will be long-lasting, there is a question whether university students are embracing digital entrepreneurship, and lastly, whether university students are the key elements to lead for digitized economy as indicated by Tewathia, Kamath, & Ilavarasan, (2020).

II. Review of Literatures

2.1 Digital Literacy

Digital literacy is crucial for students in today's world. It promotes student's competitiveness and provide better opportunities in the digital world (Baterna, Mina, & Rogayan, 2020). Digital literacy as a concept is built on media literacy. While media literacy encouraged the student to be critical consumer of the media, digital literacy required students to be responsible contributor in the digital media by using wise, safe, and ethical means (Pangrazio, Godhe, & Ledesma, 2020). Buckingham (2015) expand the understanding of digital literacy to covers representation, language, production, and audience. Digital world not a neutral world but there are alternatives of reality that someone can represent. Digital literate means people must recognize and critically assess the representation of digital world. Digital literacy also implies the ability to master the digital language to communicate within digital society. Another element of digital literacy is the capacity to produce data and information for the digital audience.

Moon & Bai (2020) identify four components of digital literacy, they are technical skills, information usage, communication, and creation. Technical skills emphasize the ability to handle various digital tools and use it optimally. Information usage covers the ability to access information, process it, and use it for problem solving in responsible and ethical manner. Communication is the ability to participate in networked environment of digital world, engage in public discussion on social life, and develop connection with people through digital platform. Creation is the highest component of digital literacy in which people can actively and consistently produce ideas, innovation, and initiatives to deal with social problems, pursuing public interests, and promote public goods.

The impact of digital literacy is not homogenous. Context in which digital literacy evolving is matter (Reddy, Sharma, & Chaudhary, 2020). In area with good digital infrastructure that enable people to access, digital literacy will flourish and provide leverage of economic development. But it is not always the case. Digital literacy can lead to widening the digital divide in the country with wide inequality such as Indonesia. Based on the discourse on digital literacy, the first hypothesis used in the study.

Hypothesis 1: Digital literacy has positive influence on digital economy. Higher digital literacy will contribute to more digitized economy.

2.2 Digital Entrepreneurship

Soltanifar and Smailhodžić (2021) identify three entrepreneurial behaviors which are proactiveness, innovativeness, and risk taking. These behaviors will lead to discovery, evaluation, and exploitation of opportunities as the key characteristics of an entrepreneur. In the digitized environment that currently shaped by covid-19 pandemic, entrepreneurship transform into digital entrepreneurship defines as ability discover, evaluate, and exploit opportunities offered by digital technology adoption to develop the existing and/or new business model (Young et al., 2020). Complement with the study, Muafi et al (2020) identify components of digital entrepreneurship, which are motivation, stakeholder, process, and business form.

Young et al (2020) conceptualize the factors contribute to development digital entrepreneurship, they are digital entrepreneurship mindset, digital literacy, and digital learning aptitude. Various studies showed that digital literacy have a positive effect on entrepreneur behavior, performance, or intention (Mudasih, Subroto, & Susanti, 2021; Mugiono, Prajanti, & Wahyono, 2020; Sariwulan et al, 2020; Salsabila, 2019). The studies support the formulation of second hypothesis on the study as following.

Hypothesis 2: Digital literacy has positive influence on digital entrepreneurship. Higher digital literacy will encourage more students develop digital entrepreneurship.

2.3 Digital Economy

Transformation of digital economy is facilitated by the development of information and communication technology (ICT) and accelerated by Covid-19 pandemic lay the foundation of digital society. Young et al (2020) identify three key features of digital transformation: surge in available knowledge and digital resources, new channels of communication and knowledge sharing, emergence of new type of skill set to deal with the ICT. Bukht and Heeks (2019) identify there are two key steps within digital economy terminology, they are digitization and digitalization. Digitization is the process of converting all data and information from analogue into digital form. Digitalization is to use digitized data in the economic activity.

The impacts of digital economy in Asian context including diminishing transaction barrier, reducing marketplace friction, effective and inclusive value chain (Li, et al, 2020). The pace of digital economy transformation is determined by the ability of new breed of enterprises and entrepreneurs which are digital enterprise and digital entrepreneurs to capitalize digital platform, digital commerce, digital lifestyle, and fintech. Based on it, a third hypothesis is formulated as follows.

Hypothesis 3: Digital entrepreneurship has positive influence on digital economy. Higher digital entrepreneurship activities will accelerate digital economy.

2.4 Variables and Indicators

Based on the literature review, the study selected three variables which are digital economy as independent variables, digital literacy as independent variables, and digital entrepreneurship as mediating variables. The indicators for each variable are formulated as following.

Table 1. Constructs and Indicators

Construct	Indicators
Digital Economy	• Frequency of purchasing by using digital platform • Frequency of using financial transactions by using digital platform • Frequency to access data/information/news by using digital platform
Digital Literacy	• Looking for data/information through digital platform • Sharing knowledge and/or information through digital platform • Store, manage, and disseminate knowledge and/or information through digital platform • Use the knowledge/information from digital platform to enrich, apply, combine, design the existing knowledge/information
Digital Entrepreneurship	• Digital entrepreneur is perceived as prospective career for the future

	• Having ideas to start digital entrepreneurship • Looking for information to start and manage digital enterprise • Recognizing the challenges to develop digital entrepreneurship • Identify the potential digital based product and services • Recognizing the steps to initiate digital entrepreneurship

III. Research Methods

The characteristics of the research is using three variables (multivariate), confirmatory by confirming of finding from previous study, and also exploratory by developing indicators and finding relations among variables based on the context. Based on the characteristics, the method of the research is partial least square structural equation modelling (PLS SEM), the analysis is using smartPLS application (Wong, 2013; Sarstedt, Ringle, & Hair, 2017; Hair *et al*, 2017). The research model is as shown in following diagram.

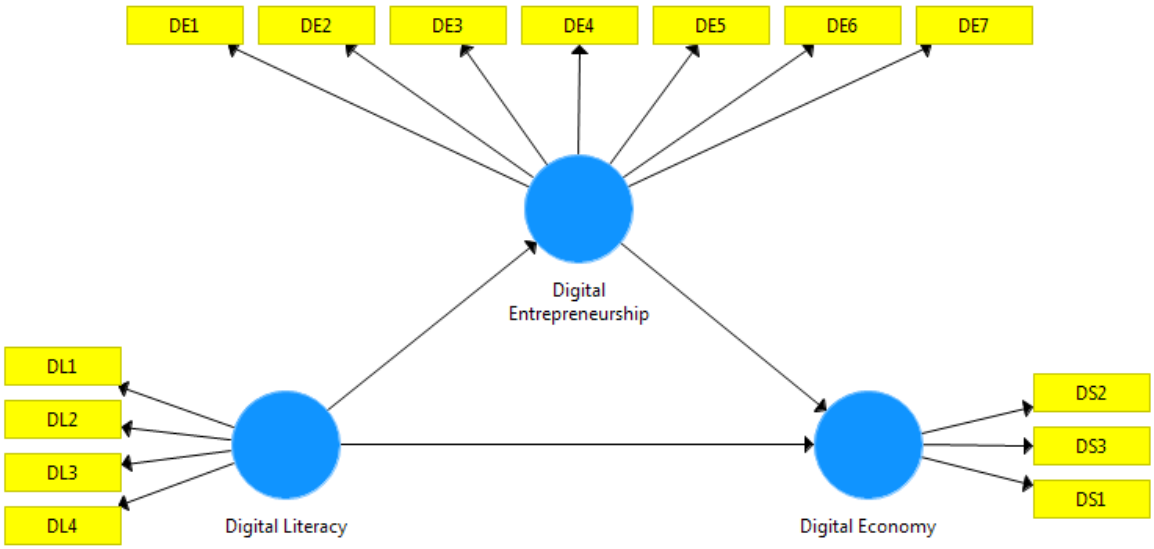

Figure 1. *Research Model*

The data is collected through online survey distributed among university students located in Jakarta Province. The questionnaire using five options of Likert scale. There are 103 filled survey questionnaires collected in period of six weeks. The respondents have age range of 17-25 years and still studying at the university.

IV. Results and Discussion

4.1 Results

Analysis of the data showed result as following

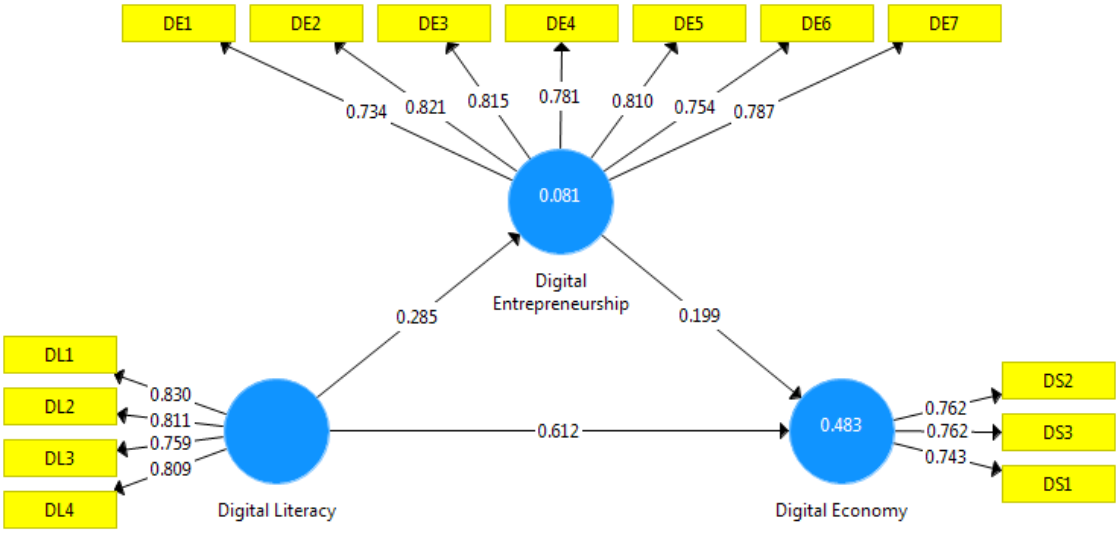

Figure 2. *PLS Model Estimation*

a. Reliability Test

Outer Loading Test. The test is conducted by looking at the loading factor value for each indicator of the variables. The result of PLS model estimation showed all indicators are above 0.7, so it is declared that the indicators meet reliable requirements.

Composite Reliability. The calculation made by smart PLS showed the result of composite reliability of the variables are exceeding 0.7 (0.8000 for digital economy, 0.919 for digital entrepreneurship, and 0.822 for digital literacy). It means the model meets requirements of composite reliability (Sarstedt, Ringle, & Hair, J. F., 2017).

b. Validity Test

Convergent Validity Test. It is conducted by looking for the values of Average Variance Extracted (AVE). The minimum value is 0.5 and the model showed the values are 0.571 (Digital Economy), 0.618 (Digital Entrepreneurship), and 0.644 (Digital Literacy). The result showed that the model is exceed the minimum requirement.

Discriminant Validity Test. The test is conducted by using Fornell-Larcker criteria in which a model considered having adequate discriminant validity when the exogenous variable values exceeding the correlation with other variables. The model showed the result in table 2 and showed the criteria is met.

Table 2. Discriminat Validity

	Digital Economy	Digital Entrepreneurship	Digital Literacy
Digital Economy	0.756		
Digital Entrepreneurship	0.373	0.786	
Digital Literacy	0.668	0.285	0.803

Source: processed primary data, 2021

c. Coefficient of Determinants

Coefficient of determinant of dependent variables (R^2) is 0.438 that can be interpreted as the influence of digital literacy and digital entrepreneurship to digital economy is 48.3%, while 51.7% is contributed by other variables not cover by the

research. Coefficient of determinant mediating variable which is digital entrepreneurship is 0.081 meaning the role of digital literacy to digital entrepreneurship is 8.1%.

Table 3. R Square

	R Square	R Square Adjusted
Digital Economy	0.483	0.472
Digital Literacy	0.081	0.072

Source: processed primary data, 2021

d. Significance and Coefficient Value of Inner Model Path

The model showed the value of internal model path as following 0.612 (effect of digital literacy to digital economy), 0.285 (effect of digital literacy to digital entrepreneurship) and 0.199 (effect of digital entrepreneurship to digital economy). The result indicates that the relation of digital literacy to digital economy is more than 0.35, therefore categorized as very significance. The relation of digital literacy to digital entrepreneurship and digital entrepreneurship to digital economy are more than 0.15, it is fall under category as medium of significance.

e. Checking Structural Path Significance

Structural path significance is checked by using two criteria which are T-statistic and P values. Using two tailed T-test with significance level of 5%, the accepted T-statistic is above 1.96 (>1.96). Using the similar criteria, the accepted P-values is less that 0.05 (<0.05). The checking as shown in the table 4 concluded that all structural path is meet the requirements and all hypothesis are supported.

Table 4. Significance of Structural Path

Relationship	*Original Sample*	*Standard Deviation*	*T Statistic*	*P-Values*	*Decision*
Digital Entrepreneurship -> Digital Economy	0.199	0.080	2.475	0.014	Supported
Digital Literacy -> Digital Economy	0.612	0.081	7.538	0.000	Supported
Digital Literacy -> Digital Entrepreneurship	0.285	0.074	3.859	0.000	Supported

Source: processed primary data, 2021

4.2 Discussion

The result of the research showed that the indicators of the variables are reliable and valid. It indicates that on digital economy, university students in Jakarta perceived it as purchasing items, conduct financial transaction, and looking for data and information by using digital platform. The finding supports the research by Young et al (2020). On digital literacy, the respondents saw it as ability to look for and share data and information through digital platform, and use the platform to manage and use it to develop knowledge and expand the information. In different terminology, Moon & Bai (2020) named four components of digital literacy as technical skills to optimize digital platform, use digital information, communicate it to digital audiences, and creating ideas by using digital resources. On digital entrepreneurship, the result of the research is in line with Soltanifar

and Smailhodžić (2021) that identify the entrepreneurial behaviors which are proactiveness, innovativeness, and risk taking; also, the characteristics that covering discover, evaluate, and exploit opportunities created by digital world.

All the hypotheses are meet the criteria and supported. The model is both reliable and valid. As already indicated in the study by Mudasih, Subroto, & Susanti (2021), Mugiono, Prajanti, & Wahyono (2020), Sariwulan et al, (2020), Salsabila (2019), digital literacy has strong influence on both digital economy and digital entrepreneurship. However, recognizing the coefficient of determinant of dependent variables is 0.438, meaning more than 50% of influence contribute by other variables, further study to identify other variables contribute to development of digital economy is recommended.

The contribution of digital entrepreneurship to digital economy showed the weakest. While it is still supporting the research by Young et al. (2020), it indicates further study to include university students in other areas, even including other social groups are necessary. The study can identify the actors of digital entrepreneurship that having strong and weak influence to digital economy acceleration.

V. Conclusion

The research indicates university student that will entering job market is digitally literate, having certain level of interest and involvement on digital entrepreneurship, and these two contribute to digital economy.

The research acknowledges its limitation and require further study specially to identify other variables influencing digital economy, including other areas other than Jakarta, and covering more diverse respondents.

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