

THE ROLE OF LEVEL OF INCOME AND EDUCATION ON DIGITAL DIVIDE: A LOOK AT JAKARTA WORK FORCE

Heddry Purba

Universitas Advent Indonesia

hpurba@unai.edu*

Francis Hutabarat

fmhutabarat@unai.edu

Abstract

Communication technologies is important in supporting economic, human, and social growth. However, its common knowledge that communication technologies are differ between countries. And the digital difference inside nations can be as high as that between countries). The objectives of this study are to assess the Indonesia home digital divide for its Jakarta workforce and to examine the demographic features, specifically: education and level of income as factors influencing digital divide. The study is descriptive and survey questionnaire is employed. Indonesian workers in Jakarta and graduates of the Indonesia Adventist University in Bandung are the study's subjects. There are 239 sample of the study. Frequencies, correlation, significant test, and regression test were used in the analysis. The study found that, simultaneously, there is a significant relationship between education and level of income on digital divide of Jakarta workforce. The study also indicates there is no significant relationship based on t-test between education and digital divide. On the other hand, level of income shows that it has significant result with t-test at 10% level of significant.

Keywords: *Education, level of income, digital divide*

INTRODUCTION

It is a regular thing since the origin of civilization to share information through communication, prompting a constant progression from sketches on the walls to the zettabytes that travel throughout the planet today. This massive communication data, as well as the ability to communicate it in real time, is the result of IT and Communication Technologies. Communication technologies is important in supporting economic, human, and social growth, claiming that technical progress is the second most powerful force after

economic progress, having moved more than ten per-cent of the world's population since 1990 out of poverty (World Bank, 2011). United Nations supported the notion and assure that communication technologies are ideal platforms for information sharing, skill development, and some electronic services, such as e-government, that can boost employability, health, and education (United Nation, 2014). However, it common knowledge that communication technologies are differ between countries. And the digital difference inside nations can be as high as that between countries (World Bank 2016). The objectives of this study are to assess the Indonesia home digital divide for its Jakarta workforce and to examine the demographic features, specifically: there are factors influencing digital divide. According to Elena-Bucea et al (2020), income is one of the factors. Income here can be interpreted as the amount of money received by someone within a certain period of time (can be one month) either from the main or side job. He added, the second factor is the level of education. This research was conducted by Erlindawati and Novianti (2020) state that the level of education is the main key to successful development and increase in work ability which can lead to changes in the field of knowledge, skills and this can form the basis of his ability in terms of digital awareness. The focus of this research object is workers in the field in Jakarta. This study refers to previous research conducted by Elena-Bucea et al (2020) shows that all variables have a significant positive effect on compliance with digital divide. The thing that distinguishes and updates this research from previous research is the difference and addition of independent variables, namely income level, education level. Adding two variables to the authors re-examined whether there was an effect of income level, level of education on the digital divide of professionals in Jakarta.

LITERATURE REVIEW

Digital Divide

Digital divide in its classification is considered volatile, but this is not due to lack of precision. It is not a novel concept, and it has evolved as a result of technological advancements (Gunkel 2003). Recent research on the digital divide has identified three

types of splits: access divides, use divides, and result/performance divides associated with communication technologies (Gladkova and Ragnedda, 2020; Lutz, 2019). As well as in previous studies by Alexander et al (2015) and Helsper et al (2015). The subject of digital disparities has taken on a material dimension since the dawn of the digital age. Furthermore, scientific research in this field has primarily focused on access and equipment issues. The "first-level digital divide," as it is known, is only one dimension of all numerical inequalities.

It is said that though everyone has computer as in free and in access it still would not be enough (Bowie, 2000). Castells (2002) also suggests an inequality of access of Internet as the digital divide definition. This is due to the disparities, and such is happening as gap between nations (Lutz (2019).

Level of income and Digital Divide

Level of income indicate the average per-person income for an area and to evaluate the standard of living and quality of life of the population (Ram, 1985). In practically all situations, income level appears to be significant; nevertheless, the significance of income equality is only occasionally noted. Although in low-income areas, income is probably more crucial. Level of income according to Elena-Bucea et al (2020) shows that level of income has a significant positive effect on compliance with digital divide.

Based on the description above, the hypothesis is:

H1: Level of income and digital divided has significant correlation

Education and Digital Divide

Education is an attainment of person in basic and specific areas. Basic areas includes elementary and high school level. Graduate and post graduate are specific areas attained by personal preference. (Elena-Bucea et al, 2020). Education is one of the factors that intervenes in the use and access communication technologies (Tyers-Chowdhury & Binder, 2021). Even Marín Raventós and Campos (2016) and Trucco (2013) revealed their study in Latin America context. Based on the description above, the hypothesis is:

H2: Education and digital divided has significant correlation

METHODOLOGY

Quantitative data is what was employed in this study. Quantitative data includes measurements made using statistical methods that have been used before as well as data in the form of numbers from original sources. Indonesian workers in Jakarta and graduates of the Indonesia Adventist University in Bandung are the study's subjects. The author of this study employed a probability sampling technique with simple random sampling as the sampling strategy. According to simple random sampling, a method of selecting samples of people from a population at random without taking into account the population's pre-existing stratum (Sujarweni, 2018) using the Yamanae Isaac and Michael formula in Sugiyono (2018) with a 90% confidence level with a value of $e = 10\%$. This study's data sources were primary data, and the data collection techniques used were a) literature review, and b) questionnaire. Data analysis was aided by a computer program, specifically the Statistical Package for the Social Sciences (SPSS) version 17 application. Frequencies, correlation, significant test, and regression test were used in the analysis. The hypothesis test employs data analysis techniques such as multiple linear regression, the f test, the t test, and the coefficient of determination.

Table1. Variables Definition

Variables	
Level of Income	Respondent level of income comprise of level 1 employee, level 2 supervisor, level 3 managerial, 0 others.
Education	Respondent education background comprise of 1 high school, 2 diploma, 3 bachelors, 4 post graduate
Digital Divide	Respondent level of digital divide

RESULTS

Frequecies

Table 2. Education

	Frequency	Percent
Valid 1	5	2.1
2	22	9.2
3	132	55.2
4	80	33.5
Total	239	100.0

The research found that out of 239 respondent, 55,2% is bachelor degree holder. 2,1% of respondent is high school graduate, and those with post graduate degrees is 33,5% of the respondent given in this study.

Table 3. Level of Income

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Others	67	28.0	28.0	28.0
1.00	68	28.5	28.5	56.5
2.00	16	6.7	6.7	63.2
3.00	88	36.8	36.8	100.0
Total	239	100.0	100.0	

The research found that out of 239 respondent, 28,5% has level 1 income which is an employee. 6.7% has level 2 income which is supervisor level of income. And 36.8% of respondent has level 3 income. While there are 28% specified their income level as others.

Correlation

Table 4. Correlations

		Digital Awareness	Education	Work
DIG	Pearson Correlation	1	.102	.136*
	Sig. (2-tailed)		.115	.035
	N	239	239	239
EDU	Pearson Correlation	.102	1	.210**
	Sig. (2-tailed)	.115		.001
	N	239	239	239
INC	Pearson Correlation	.136*	.210**	1
	Sig. (2-tailed)	.035	.001	
	N	239	239	239

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

On correlation between variables, the table indicated there are low correlation between digital divide and education (.102) and between digital divide and level of income (.136). In terms of correlation between education and level of income, the study found that there is low correlation with $r = .210$.

Significant Test

Table 5. Significant Test

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.561	2	.281	2.928	.055 ^a
	Residual	22.611	236	.096		
	Total	23.172	238			

a. Predictors: (Constant), EDU, INC

b. Dependent Variable: DIG

The study found that, there is a significant relationship based on F-test between education, work and digital divide. The result shows that F-test 2.928, with significant level of 0.055 at 10%.

Regression Test

Table 6. Regression

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	.733	.096		7.663	.000
INC	.030	.016	.120	1.823	.070
EDU	.035	.030	.077	1.172	.242

a. Dependent Variable: DIG

The study found that, there is no significant relationship based on t-test between education and digital divide. The result shows that t-test 1.172, with significant level of 0.242 at 10%. On the other hand, level of income shows that it has significant result with t-test 1.823, and significant level of .070 at 10%.

The study found the regression equation of the study:

$$\text{DIG} = 0.733 + 0.30 \text{ INC} + 0.035 \text{ EDU}$$

CONCLUSION

Based on the result of the study, the study concluded that, there is a significant relationship between education and level of income on digital divide of Jakarta workforce at 10% significant level. The study also indicates there is no significant relationship based on t-

test between education and digital divide. On the other hand, level of income shows that it has significant result with t-test at 10% level of significant.

The study recommends that use of education and an increase in level of income to minimize the digital divide. The higher of one's education, the more the likelihood that he or she can use communication technologies. The same goes to level of income, that the higher the level of income can help in ones attaining ability to handling communication technologies. The study can also be used for reference for future research.

REFERENCES

- Alexander, J.A., van Deursen, A.J. and Helsper, E.J. (2015), "The third-level digital divide: who benefits most from being online?", *Communication and Information Technologies Annual*, Vol. 10, pp. 29-52.
- Anca Elena-Bucea, A., Cruz-Jesus, F., Oliveira, T., & P. S. Coelho. (2020). Assessing the Role of Age, Education, Gender and Income on the Digital Divide: Evidence for the European Union. *Information Systems Frontiers*.
<https://doi.org/10.1007/s10796-020-10012-9>
- Bowie, N.A. (2000), "The digital divide: making knowledge available in a global context", *Schooling for Tomorrow: learning to Bridge the Digital Divide*, OECD publishing
- Erlindawati, E., & Novianti, R. (2020). Pengaruh Tingkat Pendidikan, Pendapatan, Kesadaran Dan Pelayanan Terhadap Tingkat Motivasi Masyarakat Dalam Membayar Pajak Bumi Dan Bangunan. *IQTISHADUNA: Jurnal Ilmiah Ekonomi Kita*, 9(1), 65-79.
- Gladkova, A. and Ragnedda, M. (2020), "Exploring digital inequalities in Russia: an interregional comparative analysis", *Online Information Review*, Vol. 44 No. 4, pp. 767-786
- Gunkel, D. J. (2003). Second thoughts: Toward a critique of the digital divide. *New Media & Society*, 5(4), 499–522. <https://doi.org/10.1177/146144480354003>

- Helsper, E.J., van Deursen, A.J. and Eynon, R. (2015), *Tangible Outcomes of Internet Use. From Digital Skills to Tangible Outcomes Project Report*, Oxford Internet Institute, Oxford.
- Lutz, C. (2019), “Digital inequalities in the age of artificial intelligence and big data”, *Hum Behav and Emerg Tech*, Vol. 1, pp. 141-148.
- Marín-Raventós, G.; Calderón-Campos, M. Typifying Mechanisms for Gender Digital Equity in Latin America. In *ICT for Promoting Human Development and Protecting the Environment*;
- Mata, F.J., Pont, A., Eds.; *Springer Professional*: New York, NY, USA, 2016; pp. 159–170. 35.
- Ram, R. (1985). The role of real income level and income distribution in fulfillment of basic needs, *World Development*, Volume 13, Issue 5, [https://doi.org/10.1016/0305-750X\(85\)90023-3](https://doi.org/10.1016/0305-750X(85)90023-3).
- Sugiyono. (2018). *Metode Penelitian Kombinasi (Mixed Methods)*. Bandung: CV Alfabeta.
- Sujarweni, V.W. (2018). *Metodologi Penelitian Bisnis dan Ekonomi Pendekatan Kuantitatif*. Yogyakarta: Pustakabaru Press.
- Trucco, D. (2013). The Digital Divide in the Latin American context. In *The Digital Divide the Internet and Social Inequality in International Perspective*; Ragnedda, M., Muschert, G.W., Eds.; Routledge: New York, NY, USA, 2013; pp. 253–283
- Tyers-Chowdhury, A.; Binder, G. (2021). What We Know about the Gender Digital Divide for Girls: A Literature Review. UNICEF Gender and Innovation Evidence Briefs-Insights into the Gender Digital Divide for Girls. Available online: <https://www.unicef.org/eap/media/8311/file/What%20we%20know%20about%20the%20gender%20digital%20divide%20for%20girls:%20A%20literature%20review.pdf>

United Nations. (2014). E-Government Survey 2014. United Nations EGovernment Survey 2014. New York: United Nations. doi:[https:// doi.org/10.1016/S1369-7021\(02\)00629-6](https://doi.org/10.1016/S1369-7021(02)00629-6).

World Bank. (2011). Information & communication technologies sector strategy. Washington, DC: World Bank

World Bank. (2016). World development report 2016: Digital dividends. Washington, DC: World Bank.