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The Impact of Information and Communication Technology (ICT) on Regional Economy in Indonesia 2012-2018

Dyah Makutaning DEWI[1], Ika Yuni WULANSARI[2]

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Abstract

Purpose: Research aims to analyze the influence of ICT on regional economic growth in Indonesia Provinces are grouped using Klassen's typology, which divides four quadrants based on economic growth and GRDP per capita. Considering similarity characteristics, four typology categories are finally simplified into two named categories: the "rapidly developed and growing" region and the "relatively lagged" region. **Research design, data and methodology:** The study uses panel data of 33 provinces in Indonesia from 2012 to 2018. It employs panel regression analysis to determine the impact of ICT on the regional economic growth of both regions. **Results:** The study reveals the percentage of households that own computer and the percentage of households who have accessed the internet in the last three months have a positive and significant influence on the GRDP per capita in the "relatively lagged" region. Meanwhile, mean years of schooling has a positive and significant impact on both regions. **Conclusions:** In the "rapidly developed and growing" region, only mean years of schooling has a positive and significant effect on GRDP per capita, whilst in the "relatively lagged" region, percentage of households that own computer, percentage of households who have accessed the internet in the last three months, and mean years of schooling have a positive and significant impact on GRDP per capita in Indonesia.

Keywords : Information Technology Environment in Indonesia, Economic Growth, Klassen's typology

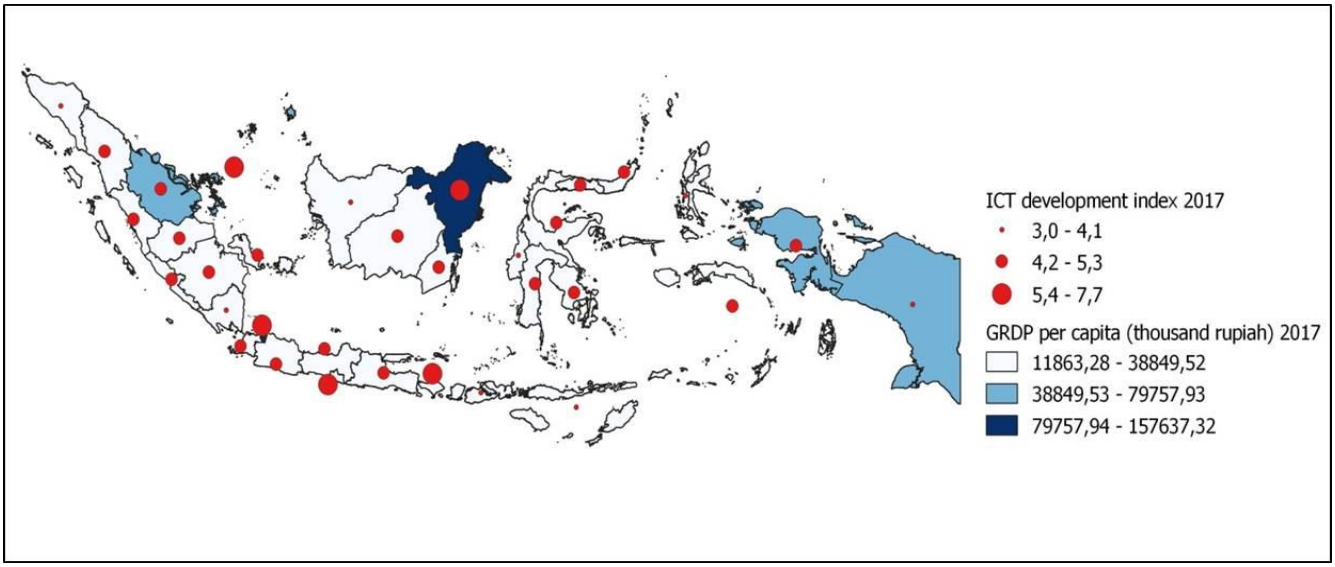
JEL Classification Code : O12, O33, O38

1. Introduction

Economic growth is an important matter that needs to be considered by various parties. This is because economic growth is an indication of the success of economic development in a region. Sukirno (2004) states that in showing and comparing the prosperity of an area, data on per capita income is needed in its own currency or it could be in US dollars if it is to be used for comparison purposes. Therefore, Gross Domestic Regional Product (GRDP) per capita is more precisely used to measure regional economic growth in Indonesia.

The difference in economic conditions in some provinces is undoubtedly not separated from many factors. Today, the development of Information and Communication Technology (ICT) is growing very rapidly. According to Todaro (2003), technological advancement is the most important source of economic growth. Therefore, the development of the ICT role is irreplaceable. Ministry of Communication and Information of the Republic of Indonesia (2017) explains that the contribution of the information and communication sector to economic growth is still relatively small in Indonesia. However, the contribution has increased from 2010 to 2018, and the growth of this sector has exceeded the economic growth and has even doubled by 8 per cent for three consecutive years to be precise from 2015 to 2017.

1 First Author and Corresponding Author, Badan Pusat Statistik, Indonesia. Email: 16.9096@stis.ac.id
2 Second Author, Lecturer, Politeknik Statistika STIS, Indonesia Email:ikayuni@stis.ac.id



Source: Statistics Indonesia (processed), 2017

Figure 1: Map of GRDP Per Capita and ICT Development Index in Indonesia in 2017

Figure 1 shows the uneven condition of ICT development index in Indonesia. Some provinces have ICT development index ratings that are not directly proportional to the GRDP per capita rating. Based on Figure 1, it can also be seen that provinces with high ICT development index are not only centred in Java Island but also outside Java Island. Cases in Java Island, for example, DKI Jakarta has an ICT development index of 7.61 and DI Yogyakarta has an ICT development index of 6.09, while cases outside Java Island, for example Bali has an ICT development index value of 5.81 and East Kalimantan has an ICT development index value of 5.92.

Table 1 shows the provinces that are in the top ten of the ICT development index. Overall, provinces that have an ICT development index rating are directly proportional to a GDP per capita ranking of only 48.48 per cent, while provinces that have an ICT development index rating are not directly proportional to a GDP per capita rating of 51.52 per cent.

Provinces that have an ICT development index ranking that is directly proportional to the GDP per capita ranking, for example, are DKI Jakarta, East Kalimantan, Riau, Riau Islands, and East Java. Some provinces that have ICT development index rankings that are not directly proportional to the GDP per capita ranking, for example, are DI Yogyakarta, Bali, Banten, North Sulawesi, and West Java.

Table 1: Ten Provinces with The Highest ICT Development Index Scores in Indonesia in 2017

Province	ICT Development Index Ranking	GRDP Per Capita Ranking
DKI Jakarta	1	1
DI Yogyakarta	2	25
East Kalimantan	3	2
Bali	4	12
Riau Islands	5	3
Banten	6	15
North Sulawesi	7	17
West Java	8	21
Riau	9	4
East Java	10	8

Source: Statistics Indonesia (2017)

GRDP per capita of a province can reflect the economic growth in that province. Theoretically, if ICT increases, economic growth will increase because ICT is a catalyst for economic growth (Bongo, 2005; Agustina and Pramana, 2019; Niebel, 2018, Pradhan et al., 2018). When viewed from the empirical facts of economic growth, the growth ranking of the ICT development index has a direct relationship with the ranking of economic growth in several provinces. However, some provinces are not directly proportional.

There is 39.39 per cent of provinces in Indonesia that have a growth ranking for the ICT development index that is directly proportional to the economic growth rank, for example North Sumatra, West Sulawesi, and North Maluku. However, there is 60.61 per cent of provinces that have growth rankings in the ICT development index that are not directly proportional to the economic growth rankings, for example Riau, Jambi and West Papua (see Table 2).

Table 2: ICT Development Index Growth and Economic Growth Ranking in 2012 and 2017

Province	ICT Development Index Growth Ranking	Economic Growth Ranking
Aceh	27	31
North Sumatera	21	21
West Sumatera	23	16
Riau	11	32
Jambi	25	18
South Sumatera	14	28
Bengkulu	20	19
Lampung	17	24
Bangka Belitung Islands	18	30
Riau Islands	32	20
DKI Jakarta	33	12
West Java	22	17
Central Java	10	22
DI Yogyakarta	31	25
East Java	6	15
Banten	28	14
Bali	26	10
NTB	2	3
NTT	1	26
West Kalimantan	12	23
Central Kalimantan	13	7
South Kalimantan	29	29
East Kalimantan	30	33
North Sulawesi	24	11
Central Sulawesi	4	1
South Sulawesi	16	2
Southeast Sulawesi	5	6
Gorontalo	7	5
West Sulawesi	3	4
Maluku	9	13
North Maluku	8	9
West Papua	19	27
Papua	15	8

The empirical facts above show that not all provinces exhibit phenomena that are in line with the theory. Indonesia is an island nation with a very varied level of development between provinces so in analysing the influence of ICT on economic growth it is necessary to categorise or group the provinces based on the level of GRDP per capita. The study divided provinces into groups based on Klassen Typology results. ICT development index ratings that are directly proportional or not directly proportional to the GRDP per capita rating cause indications of differences in the influence of ICT on economic growth in each province in each group. Therefore, this research aims to find out how ICT affects GRDP per capita in Indonesia in 2012-2018 by accommodate variations in regional economic groups.

The empirical facts above show that not all provinces show phenomena that are in line with the theory. Indonesia is an archipelagic country with a varied level of development between provinces, so that in analysing the influence of ICTs on economic growth it is necessary to group the provinces based on the level of economic development. The study divides provinces into groups based on the results of Klassen Typology. The ranking of the ICT development index, which is directly proportional or not directly proportional to the GDP per capita, causes an indication of the difference in the influence of ICTs on economic growth in each province. Therefore, this study aims to determine the influence of ICTs on GRDP per capita in Indonesia from 2012 to 2018 by accommodating variations in regional economic groups.

2. Literature Review

Statistics Indonesia (2015) states that to determine the pattern and structure of economic growth in each region, Klassen Typology analysis can be used. Klassen's typology divides the area based on two indicators, namely economic growth which is used as the vertical axis and GRDP per capita as the horizontal axis. Based on Figure 2, Klassen's typology divides the area into four quadrants. Quadrant I is a developed and fast-growing region that has a higher rate of economic growth than the national economic growth rate and has a higher GRDP per capita than the GDP per capita. Quadrant II is a developing region that has a higher rate of economic growth than the national economic growth rate and has a lower GRDP per capita than the GDP per capita. Quadrant III is a developed but depressed region that has a lower economic growth rate than the national economic growth rate and has a higher GRDP per capita than the GDP per capita. Whilst, Quadrant IV is a relatively disadvantaged region that has a lower economic growth rate than the national economic growth rate and has a lower GRDP per capita than the GDP per capita.

Criteria	GRDP Per Capita	
Economic Growth	**Quadrant II:** Developing region (*high growth but low income*)	**Quadrant I:** Developed and fast-growing region (*high growth and high income*)
	Quadrant IV: Relatively disadvantaged region (*low growth and low income*)	**Quadrant III:** Developed but depressed region (*high income but low growth*)

Source: Statistics Indonesia (processed), 2015

Figure 2: Klassen Typology

The ICT development index is a standard measure that describes the potential development of ICT, digital gaps, and describes the level of information technology development in a region. The higher the index value, the more optimal the potential and progress of ICT development in the region are. If the index value is lower, it indicates that ICT development in an area has not been optimal (Statistics Indonesia, 2017). In calculating the ICT development index, 11 indicators are needed, divided into three sub-indices: the access and infrastructure sub-index, the usage sub-index, and the skills sub-index. The access and infrastructure sub-index includes fixed telephone subscribers per 100 population, mobile phone subscribers per 100 population, international internet bandwidth per user, the percentage of households that own computers, and the percentage of households with internet access. The usage sub-index includes the percentage of the population using the internet, fixed broadband internet subscribers per 100 population, and wireless broadband internet subscribers per 100 population. Meanwhile, the skill sub-index includes mean years of schooling, the secondary gross enrollment rate (junior high school and high school equivalent), and the tertiary gross enrollment rate (higher education such as Diploma/Bachelor Degree).

Based on several previous studies, the role of ICT is vital in economic development. Lan-li Yi et al. (2010) states that ICT investment can drive economic growth. Saidi et al. (2014) concludes that the number of mobile phone and fixed landline users have a positive and significant impact on economic growth in Tunisia. More specifically, Purnama et al. (2018) states that ICT (which is represented by the rate of mobile phone use) has a significant impact on the regional economy in Indonesia. Elisa and Ichtiarto (2019) also conduct research by classifying provinces into two regions based on high and low economic growth. The result shows that the influence of ICT on the provincial classification of high economic growth is greater than the low economic growth provincial classification. Previous research has not looked at the specific effects of ICT on the

regional economy based on the typology of regional economic capacity. Indonesia is an archipelagic country with a varied level of economic development between provinces. Hence, it is important to analyze the impact of ICT on regional economic growth based on the Klassen typology of provinces.

3. Research Methods and Materials

This study uses panel data of 33 provinces from 2012 to 2018 in Indonesia. The data used in this study are GRDP per capita, the percentage of households that own computers, the percentage of households who have accessed the internet in the last three months, mean years of schooling, the ratio of the number of workers, and the ratio of capital expenditures. Data are collected from official publications of Statistics Indonesia.

The analysis methods used in this research are descriptive analysis and inferential analysis. Descriptive analysis is used to examine the results of provincial grouping based on Klassen's typology. Provinces are grouped using Klassen's typology, which divides four quadrants based on economic growth and GRDP per capita. Considering the similarity of characteristics, eventually, the four typology categories are simplified into two named categories "rapidly developed and growing" region and the "relatively lagged" region. In addition, graphs are used to generally describe the GRDP per capita and other variables in both groups.

Inference analysis uses panel regression analysis to determine the effect of ICT on economic growth in both groups. Therefore, this research uses two models based on the results of Klassen typology, namely "rapidly developed and growing" model and "relatively lagged" model. The model for "rapidly developed and growing" region is as follows:

$$log(pphigh)_{it} = \alpha + \beta_1 COMP_{it} + \beta_2 INT_{it} + \beta_3 MYS_{it} + \beta_4 WR_{it} + \beta_5 CE_{it} + u_{it} \quad (1)$$

Models for the "relatively lagged" region as follows:

$$log(pplow)_{it} = \alpha + \beta_1 COMP_{it} + \beta_2 INT_{it} + \beta_3 MYS_{it} + \beta_4 WR_{it} + \beta_5 CE_{it} + u_{it} \quad (2)$$

where $log(pphigh)$ is the proxy for economic growth of the "rapidly developed and growing" region and $log(pplow)$ is the proxy for economic growth of the "relatively lagged" region. Meanwhile, $pphigh$ and $pplow$ are measured by GRDP per capita. Moreover, $COMP$ is the percentage of households that own computers, INT is the percentage of households who have accessed the internet in the last three months, MYS is mean years of schooling, WR is the ratio of the number of workers, CE is the ratio of capital expenditure, and u is residual.

The stages of the panel regression used in this research are as follows:

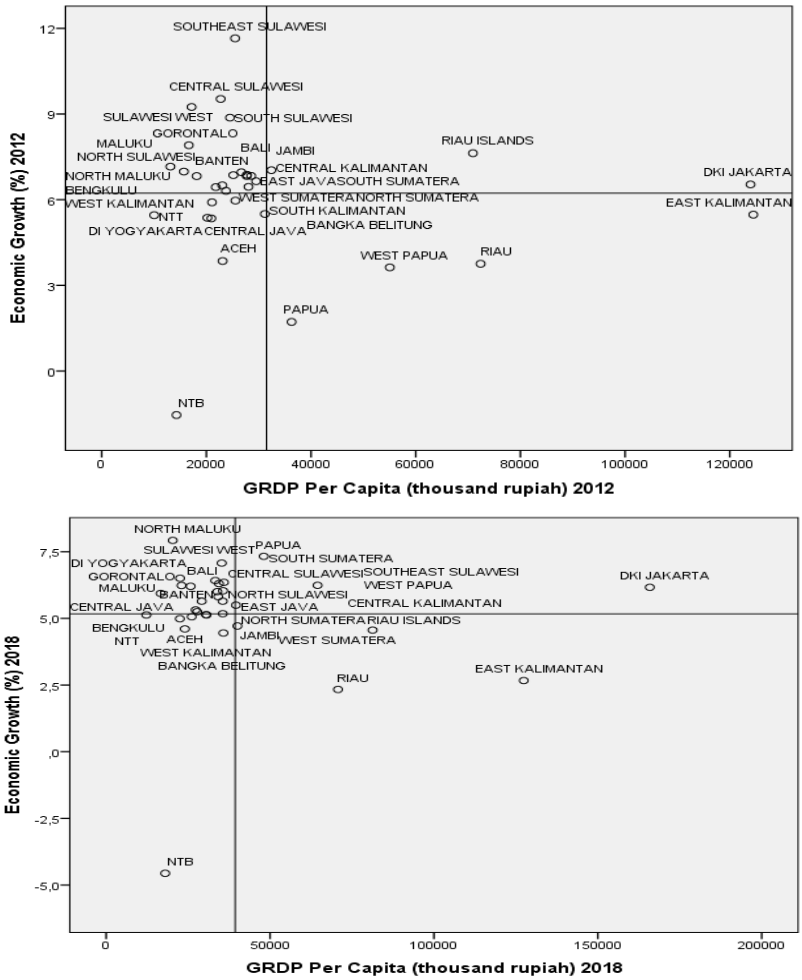
1) Formatting of the panel regression model.
   The first step to do is to form the panel data using independent variables and dependent variables.
2) Testing the presence of individual effect and time effect.
   At this stage, tests are conducted to see if the panel regression model has an individual effect or time effect or both, using Lagrange Multiplier tests. If the panel regression model has only one effect so the type of panel regression used is one-way. If it has both effects so that the type of regression panel used is two-way.
3) Selecting the best panel regression model.
   The selection of the best panel regression model is used for choosing between Common Effect Model (CEM), Fixed Effect Model (FEM), or Random Effect Model (REM). This study uses two steps of testing, the selection between CEM and FEM using Chow test, then the selection between FEM and REM using Hausman test.
4) Defining estimation method.
   In this research, the best panel regression model is REM then the estimation method used is Generalized Least Square (GLS).
5) Testing the regression assumptions.
6) Testing the goodness of fit.

4. Results and Discussion

As explained in the methodology, this study divides the provinces into two groups based on a typology of economic capacity, namely the "rapidly developed and growing" region and the "relatively lagged" region. Based on Figure 3, it can be seen that in 2012 and 2018, most provinces in Indonesia have relatively constant economic growth and GDP per capita. However, some provinces have improved economic development quite well. This is proven in 2012 there are nine provinces located in quadrant IV, namely Aceh, Bangka Belitung Islands, Central Java, D.I. Yogyakarta, West Nusa Tenggara, East Nusa Tenggara, West Kalimantan, South Kalimantan, and East Kalimantan. Nevertheless, in 2018, Central Java and D.I. Yogyakarta move to quadrant II while East Kalimantan move to quadrant III.

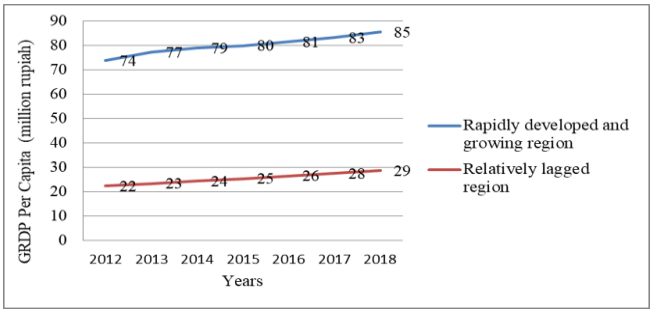
Economic growth is important in the development of a region. Economic growth can explain the economic development of a region by utilising the available resources. GRDP per capita is an indicator to determine the representative economic growth of a region because it can

determine the level of prosperity of the population in a province. Figure 4 shows the comparison of the average GRDP per capita in the "rapidly developed and growing" region and the "relatively lagged" region which continued to increase every year from 2012 to 2018. This indicates that economic conditions in both groups continue to improve. As a result of this increase, GDP per capita has also increased every year.



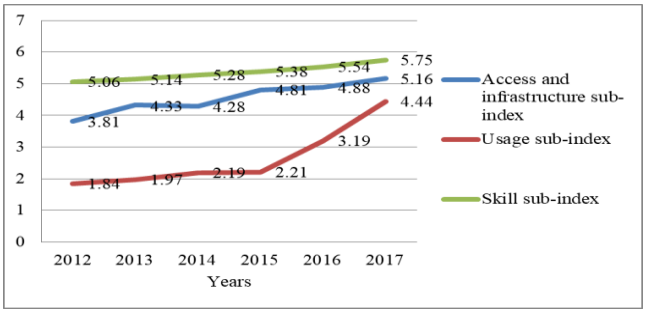
Source: Statistics Indonesia (processed), 2012 and 2018

Figure 3: Provincial Grouping Results by Klassen Typology in 2012 and 2018



Source: Statistics Indonesia (processed), from 2012 to 2018

Figure 4: The Comparison of average GRDP per capita in the "rapidly developed and growing" region and the "relatively lagged" region



Source: Statistics Indonesia (processed), from 2012 to 2017

Figure 5: The Trend of ICT Development Sub-Index in 2012-2017

An increase in each sub-index component supports the increase of ICT development index. The ICT development index consists of 3 sub-indices: access and infrastructure, usage, and skill. Based on Figure 5, it can be seen that the constituent sub-index of the ICT development index from 2012 to 2017 continues to increase. Of the three sub-indices, the skill sub-index contributes the highest portion. On the other hand, the usage sub-index contributes the lowest portion compared to others. This means that the use of ICT in the community is still minimal.

The access and infrastructure sub-index in this study is represented by the percentage of households that own computers. Based on Figure 6a and Figure 6b, from 2012 to 2018, the percentage of households that own computers in the "rapidly developed and growing" region and "relatively lagged" region tends to increase. The figure also shows the disparities between provinces. This shows that currently many people own computers, but ownership is not evenly distributed between provinces.

The usage sub-index is represented by the percentage of households that accessed the internet in the last three months. Based on Figure 6c and Figure 6d, from 2012 to 2018, the percentage of households that have accessed the internet in the last three months in the "rapidly developed and growing" region and "relatively lagged" region tends to increase as well. Interestingly, the increase is even more rapid in the "relatively lagged" region. This shows that many people have accessed the internet for various needs. However, there are still disparities between provinces.

The skills sub-index is represented by mean years of schooling. Based on Figure 6e and Figure 6f, from 2012 to 2018, the mean years of schooling in most provinces in Indonesia, both in the "rapidly developed and growing" region and the "relatively lagged" region continues to increase. This shows that public awareness of education and the quality of education in Indonesia is increasing.

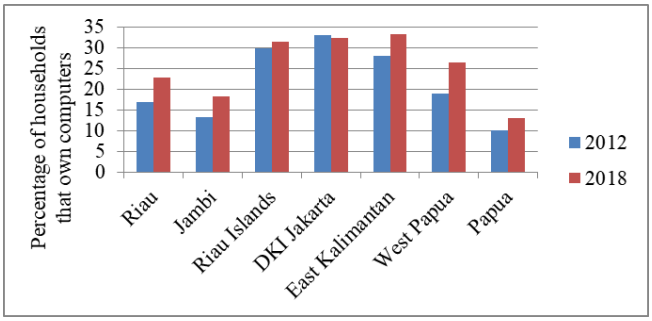


Figure 6 (a)

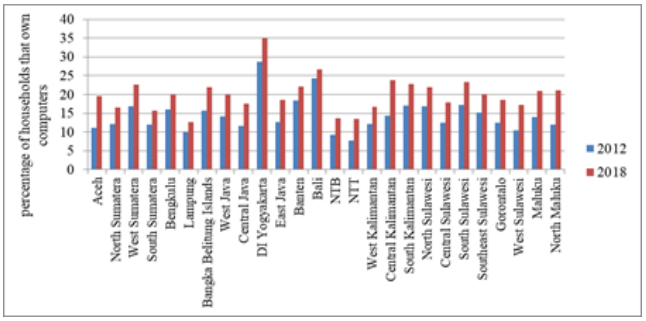


Figure 6 (b)

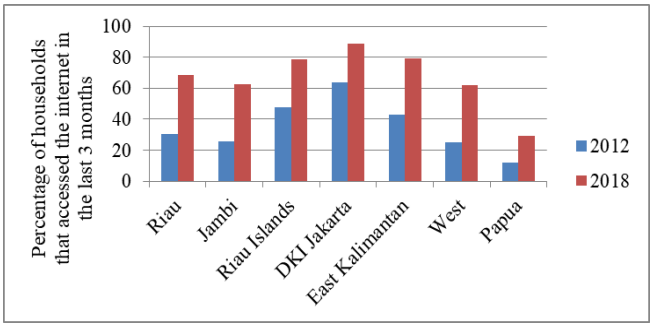


Figure 6 (c)

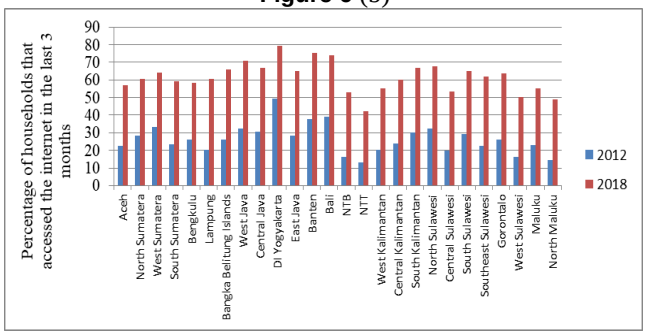


Figure 6 (d)

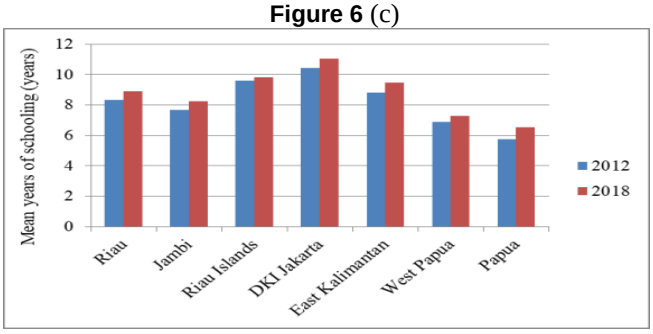


Figure 6 (e)

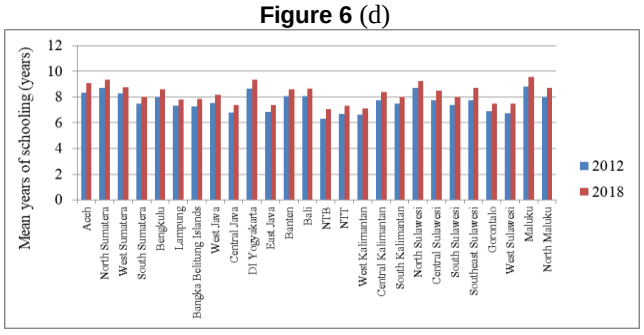


Figure 6 (f)

4.1. Panel Regression Model Diagnostics

In this study, three panel models are used for estimation, namely CEM, FEM, and REM for the two groups of regions. Those three models can be used to determine the impact of independent variables, one of which is ICT on GRDP per capita in both regions. Furthermore, to obtain the best model, several test stages are carried out which are presented in Table 3.

Based on Table 3, the preferred model is the One-Way Random Effect Model (REM) with the Generalized Least Square (GLS) method of estimation for both "rapidly developed and growing" region and "relatively lagged" region. After the best model is selected, the heteroscedasticity and autocorrelation problems have been resolved so that the classical assumption tests required are normality and non-multicollinearity testing. The Jarque Berra test shows a p-value of more than 0.05 so there is no violation of the normality assumption for both regions. Furthermore, the non-multicollinearity test using a correlation matrix shows that the correlation value is not more than 0.9, so refer to Farrar and Glauber (1967) there is no violation of the non-multicollinearity assumption for both regions.

Table 3: Diagnostics of Panel Regression in Both Regions

Diagnostics	Null Hypothesis	Rapidly Developed and Growing Region		Relatively Lagged Region	
		Results	Conclusion	Results	Conclusion
Lagrange Multiplier test for individual effect	No individual effect	p-value < 2.2e-16	There are individual effects	p-value < 2.2e-16	There are individual effects
Lagrange Multiplier test for time effect	No time effect	p-value = 0.9375	No time effect	p-value = 0.8258	No time effect
Chow test	CEM is better than FEM	p-value < 2.2e-16	FEM is better than CEM	p-value < 2.2e-16	FEM is better than CEM
Hausman test	REM is better than FEM	p-value = 0.6847	REM is better than FEM	p-value = 0.8647	REM is better than FEM

4.2. Panel Regression Model Estimation

After all assumption tests are fulfilled, the best panel regression model estimates are presented in Table 4.

Table 4: Estimation of Panel Regression

Independent Variables	Rapidly Developed and Growing Region		Relatively Lagged Region	
	Coefficient	Prob.	Coefficient	Prob.
(Intercept)	7.1322	< 2.2e-16 *	6.8803	< 2.2e-16 *
COMP	-0.0003	0.8874	0.0032	0.0022*
INT	-0.0002	0.6078	0.0016	1.492e-08 *
MYS	0.1148	1.638e-06 *	0.0447	0.0097*
WR	-0.3893	0.0630	0.0566	0.4415
CE	1.8650	0.0664	-0.3093	0.4488
R-squared	0.6373		0.8461	
Adj. R-squared	0.5951		0.8417	
Prob. *Wald* χ^2 test	7.18e-15		< 2.22e-16	

*Significance at α = 5%

Based on Table 4, the Adj. R-squared of the "rapidly developed and growing" region model shows a value of 59.50 per cent. It shows that the percentage of households that own computer, the percentage of households who have accessed the internet in the last three months, mean years of schooling, the ratio of the number of workers, and the ratio

of capital expenditures are able to explain the GRDP per capita in "rapidly developed and growing" region by 59.50 per cent and the rest is explained by other variables not involved in the model. Meanwhile, the Adj. R-squared in the "relatively lagged" region shows a value of 84.17 per cent. It shows that the percentage of households that own computer, the percentage of households who have accessed the internet in the last three months, the mean years of schooling, the ratio of the number of workers, and the ratio of capital expenditures are able to explain the GRDP per capita in "relatively lagged" region by 84.17 per cent. The rest is explained by other variables not involved in the model. The equations obtained from both models are as follows:

1) Model for "rapidly developed and growing" region:

$$\widehat{logpphigh}_{it} = 7.1322 - 0.0003COMP_{it} - 0.0002INT_{it} + 0.1148MYS^{*}_{it} - 0.3893WR_{it} + 1.8650CE_{it}$$

2) Model for "relatively lagged" region:

$$\widehat{logpplow}_{it} = 6.8803 + 0.0032COMP^{*}_{it} + 0.0016INT^{*}_{it} + 0.0447MYS^{*}_{it} + 0.0566WR_{it} - 0.3093CE_{it}$$

Furthermore, based on Table 5, East Kalimantan has the largest average GRDP per capita compared to all provinces in the "rapidly developed and growing" region. This is because the economic growth in East Kalimantan is driven by the mining sector and supported by investment in the country, especially in the mining sector. In contrast, the lowest average GRDP per capita in the "rapidly developed and growing" region is Jambi. This is because the mining and agriculture sectors that are the main sectors in Jambi's economy at any given time are experiencing problems. Based on Statistics Indonesia (2017), in quarter III and IV in 2015 to quarter I, II, and III in 2016, cumulatively the mining sector has a contribution to the economy of Jambi only by 0.58 per cent. The contraction of the mining and quarrying sectors is caused by declines in natural gas production. Then, in the agricultural sector and the plantation subsector, local rubber prices decrease in 2016 (Bank Indonesia, 2016). Continuously, the agricultural sector experienced a slowdown due to the decrease in external demand for rubber commodities in 2018.

East Java has the largest average GRDP per capita when all independent variables in the equation are considered constant (ceteris paribus) compared to all provinces in the "relatively lagged" region (Table 5). This is because the economy in East Java is supported by two main sectors, namely the processing and trade industry and retail. In the first quarter of 2015, economic growth in East Java is supported by the trade sector. This is due to the improving performance of inter-regional trade in the province (Bank Indonesia, 2015). In the third quarter of 2016, improvement in the performance of the manufacturing industry was driven by increased public consumption, increased investment and increased demand from outside the region (Bank Indonesia, 2016).

Maluku has the lowest average GRDP per capita compared to all provinces in the "relatively lagged" region. This is due to economic and social inequalities in Maluku caused by low accessibility in the service of economic and social facilities and infrastructure, especially in rural areas. In addition, with the archipelago characteristics, Maluku requires greater development costs to build supporting infrastructure such as transportation and energy (Bappenas, 2015).

When viewed partially, the percentage of households that own computer and the percentage of households who have accessed the internet in the last three months have no significant effect on GRDP per capita in the "rapidly developed and growing" region. In some provinces such as Riau, West Papua, and Papua, GRDP per capita are more influenced by the mining sector. For example, Papua has a mining sector that has contributed more than 50 per cent of the economy to copper, gold, oil and gas commodities (Bappenas, 2015).

In contrast, the percentage of households that own computer has a positive and significant effect in the "relatively lagged" region. Sakiru et al. (2019) show that ICT (the computer users as the proxy indicator) can support economic growth in Malaysia. Table 5 shows that if there is a 1 per cent increase in the percentage of households owning computers it will increase the GRDP per capita by 0.0032 per cent if other independent variables are constant. This is because today many households have computers. Based on Statistics Indonesia, from 2012 to 2018, the percentage of households owning computers in the "relatively lagged" region tends to increase every year. Dianari (2018) states that the use of computers and the internet in business makes it easy for people to find opportunities to innovate and cheap in obtaining information. This suggests that access to the computer can boost economic growth through business innovation.

Meanwhile, the percentage of households who have accessed the internet in the last three months has a positive and significant impact on GRDP per capita in the "relatively lagged" region. Georgiou (2009) shows that internet users have a positive effect on economic growth in Western Europe. Table 5 shows that if there is an increase of 1 per cent of households who have accessed the internet in the last three months it will increase GRDP per capita by 0.0016 per cent if other independent variables are constant

so that it can play a role in the growth of e-commerce and digital economy. For example, based on Statistics Indonesia (2017), D.I. Yogyakarta has the highest percentage of households that have accessed the internet in the last three months for the purchase / sale of goods / services in 2017, about 20.25 per cent and experienced a change in quadrant position from quadrant IV in 2012 to quadrant II in 2018. Therefore, the internet is able to improve the regional economy, one of which is through the role of e-commerce.

Mean years of schooling has a positive and significant effect on GRDP per capita in both groups. If there is an increase of one year of mean years of schooling then it will increase the GRDP per capita by 0.1148 per cent in the "rapidly developed and growing" region and 0.0447 per cent in the "relatively lagged" region if other independent variables are constant. The mean years of schooling increase during the period 2012 until 2018 in both regions. It proves that the community believes that education is important and can drive the progress of the nation. In addition, the government has now tried to provide services for equal access and quality of education and address the problems contained in the implementation of education development.

One of the government's efforts is through the provision of sufficient local funds for education. Based on the Publication of Regional Education Balance of the Ministry of Education and Culture of the Republic of Indonesia, for example, in 2018, Bangka Belitung Island, which is included in the "relatively lagged" region, has regional funding of 332.36 billion while in the previous year it was only 303.3 billion.

Table 5: Individual Effect of Panel Regression Results

No	Rapidly Developed and Growing Region		No	Relatively Lagged Region	
	Province	Effect		Province	Effect
1	DKI Jakarta	0.1347	1	Aceh	-0.0386
2	Jambi	-0.2562	2	Bali	0.0270
3	East Kalimantan	0.1893	3	Banten	0.0537
4	Riau Island	-0.0836	4	Bengkulu	-0.1006
5	Riau	-0.0295	5	D.I. Yogyakarta	-0.1667
6	West Papua	0.0317	6	Gorontalo	-0.0577
7	Papua	0.0136	7	West Java	0.0201
			8	Central Java	0.0279
			9	East Java	0.1763
			10	West Kalimantan	0.0447
			11	South Kalimantan	0.0449
			12	Central Kalimantan	0.0994
			13	Bangka Belitung Island	0.1462
			14	Lampung	0.0495
			15	Maluku	-0.2625
			16	North Maluku	-0.1368
			17	NTB	-0.0725
			18	NTT	-0.2565
			19	West Sulawesi	-0.0235
			20	South Sulawesi	0.0752
			21	Central Sulawesi	0.0697
			22	Southeast Sulawesi	0.0616
			23	North Sulawesi	0.0137
			24	West Sumatera	0.0030
			25	South Sumatera	0.1308
			26	North Sumatera	0.0716

However, two other variables, namely the ratio of the number of workers and the capital expenditure ratio, do not significantly influence GRDP per capita in both regions at a 5 per cent significance level. Due to current conditions, some companies prefer to use technology over labour (Sugianto, 2018). In relation to the capital expenditure ratio, it is one of the important things in regional development. However, especially for the "relatively lagged" region, private investment is still minimal (Bappenas, 2015).

Model of "relatively lagged" region is better than "rapidly developed and growing" region. This is because the independent variables used in research in the "relatively lagged" region are able to explain the GRDP per capita of 84.17 per cent and the rest is explained by other independent variables not involved in the model. Meanwhile, the independent variables used in the "rapidly developed and growing" region are able to account for 59.50 per cent variability of GRDP per capita and the rest are explained by other independent variables not involved in the model.

5. Conclusions

Based on the results of the previous discussion, it can be concluded that (1) From 2012 to 2018 GRDP per capita in the "rapidly developed and growing" region and "relatively lagged" region increased every year. However, there is a GRDP per capita gap between provinces in their respective regional groups. Percentage of households that own computer and the percentage of households who have accessed the internet in the last three months, and the mean years of schooling tends to increase each year, (2) In "rapidly developed and growing" region, only the mean years of schooling has a positive and significant effect on GRDP per capita at the level of significance α = 5 per cent, (3) In "relatively lagged" region, percentage of households that own computer and the percentage of households who have accessed the internet in the last three months, and the mean years of schooling has a positive and significant impact on GRDP per capita at the level of significance α = 5 per cent, (4) The independent variables used in this study are able to describe GRDP per capita. However, the independent variables in the "relatively lagged" region model are better able to explain GRDP per capita than in the "rapidly developed and growing" region model.

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