The Role of HR in the Development of the Digital Economy in East Java: *Overlapping Generations Approach*

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Abstract

The globalization era can indicate that at certain times of technology development is becoming increasing rapid. Technology has spread throughout the world, even developing countries like Indonesia. In Indonesia, especially Java is the region that is the fastest to accept technological developments. East Java Province which has a dense population can be a major factor of use technology. Internet , smartphone users at this time are not only as communication media , can also support the economic activities. E-commerce and E-Banking have now become activities and routines in the community. Based on this, the purpose of this study is to analyze and explain what age range the population is more dominant and productive in using E-commerce and E-Banking as a digital economy. The concept of population as human resources in this study uses the Overlapping Generations approach. The method used is ECM regression analysis. Use of these methods to analyze short and long term. The results of the analysis s internet and smartphone usage indicate that adults in the short and long term tend to E-Banking. While the proportion of young people both in the short and long term dominates E-commerce. This is because young people use a digital economy for more productive activities

RESEARCH BACKGROUND

The digital economy has grown rapidly over the last few decades. This is due to infrastructure in communication such as *smartphones* and the rapid development of the internet (Kwak *et al* , 2018). With the development of increasingly widespread communication media, especially in the State of Indonesia, it is also supported by a high proportion of the population. Indonesia's population of more than 250 million people, an archipelagic country, and gross domestic product (GDP) is a bigger opportunity among ASEAN

member countries (DBS Bank Research, 2016; Wahyudiono, 2017). The most densely populated areas are still concentrated in Java and Bali. East Java is an area with a fairly dense population.

Based on the proportion of the population by age group , this study was adjusted to the *Overlapping Generations* (OLG) framework. The OLG approach is a model that discusses the human generation with age growth and productivity. In the OLG model there are also young and old generations living together at the same time. Thus, the subjects used in this study were the first group of young people who had an age range of 15-64 years, while the second group of people with an age range of 65 years and over. The selection of the age range is adjusted to the characteristics of the population according to the Central Statistics Agency (BPS). The following chart compares the population by age and cellular telephone users in East Java.
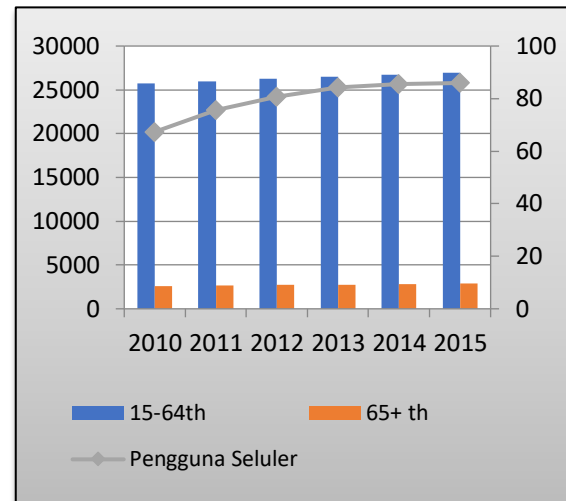

Image 1. Total population by age and cellular phone users in East Java. (Source: BPS, processed)

The population of East Java each year has increased by 39.29 million people in 2017 and has a population growth of around 0.56 percent compared to the previous year. The percentage of the population according to the age group 15-64 years has grown annually, as well as for the population aged +65 years (BPS East Java, 2017). Based on Figure 1 above, it shows that as the population increases, the use of cell phones can also increase. The largest internet users in Indonesia are concentrated in the Java island area, which is around 65 percent (Internet Service Providers Association Survey (APJII), 2016). East Java Province has the second largest internet user value after West Java, which is 9.8 percent (DBS Vickers, APJII, 2016). In addition to

internet users, active *smartphone users* in Indonesia are more than 100 million people, making them the world's fourth largest user after China, India and America. Based on the databoks reset (2016), internet users are dominated by the age group of 25-44 years.

Indonesia is included in the largest market share in the Southeast Asia region regarding *e-commerce* (trading or buying and selling *online*). The *e-commerce* market share has the potential and opportunity to grow. With the development of the digital economy, it can also change the method of transactions. In this regard, it is necessary to provide infrastructure for electronic transactions (Baller *et al* , 2016; Kwak *et al* , 2018). *E-Commerce* can develop quickly and maybe faster than national culture, so more and more *platforms* can have an effect on the growth of *e-commerce* (Martinsos, 2002; Kwak *et al* , 2018). According to Kearney (2015) the activity that emerged earlier was electronic commerce (*e-commerce*). *E-Commerce competes with offline* transactions , where consumers are more familiar and accustomed to face-to-face practices. Thus , *e-commerce* is considered to be dependent on the nature of the emerging environment (Davis and North, 1971). Online

shopping as an alternative to in-store shopping makes many traditional retailers less attractive. The demand for traditional physical stores can be affected by the development of *e-commerce* (Zhang *et al* , 2016). The development of *e-commerce* (1998-2002) has an impact on traditional retail markets and can be a threat. Thus the declining role of traditional shops can cause shops to close. The increasing number of online stores and increasing online sales can threaten the performance and development of conventional stores (Xu, 2013; Zhang *et al* , 2016; Wahyudiono, 2017). There is an opinion that is not in line with that, according to Liu (2013) that policy makers will be able to assist and facilitate the development of the real market. Infrastructure and socioeconomics can create significant levels of variation in accepting *e-commerce growth* in different countries (Efendioglu and Yip, 2004; Kshetri and Dholakia, 2005; Kwak *et al* , 2018). In addition to *E-commerce,* the use of banking services and conducting financial transactions through the online system. *E-banking* is also in demand because of its information, design characteristics, ease of use and enjoyment (Yang *et al* , 2009; Rodrigues

et al , 2017). However, the lack of trust and the use of the system that is still minimal can also affect customers who are still reluctant to make financial transactions through the *e-banking system* (Luarn and Lin, 2005).

Apart from these barriers, the systems most vulnerable to identity theft are electronic systems . *E-commerce* and *E-Banking* that are developing at this time must have protection for *cybercrime* (Vukovi et al, 2018) . Identity theft, fraud and abuse are issues affecting the public regarding online systems. Side effects of the emergence of electronic media led to an increase in *cybercrime.* Technological innovations can affect unwanted activities. Online social networking sites that are increasingly popular can lead to misuse of personal information and identity theft. The development of internet users also clashes with efforts to secure online trade transactions.

Based on the condition of the dense population of Indonesia and East Java that can affect the number of internet users, this study therefore formulates a problem in what age range is the population more dominant and productive in using *E-commerce* and *E-Banking* as a digital economy. The concept of population as a human

resource is taken in this study using the *Overlapping Generations approach.*

THEORY REVIEW I

1. *Overlapping Generations Approach*

According to Meijdam (1998) in his research, he built an *overlapping generation* (OLG) model into a closed economic setting and showed the supply of labor as an endogenous factor. Blanchard's OLG model, in which young individuals always invest their capital resources to live in the future. On the other hand, according to Hendricks (1999) describes the accumulation of capital resources that have the maximum solution in the last period of time in a life cycle. Closed economic assumptions governing the population with OLG with two individual time periods in the absence of motivation. In the life cycle model, individuals are categorized into two periods, namely young and old (Yakita, 2003). During youth the individual allocates his time to work or to study, training. All individuals have equal access to technology. When he was young he also invested his earnings for old age in financial assets. Technological production in the economy is given the *aggregate constant return to scale* in the

production function for physical capital and labor efficiency.

1. Human Resources
2.1 East Java Population

With an area of 46 , 428, 57 km, East Java Province is administratively divided into 38 regencies/cities, with details of 29 regencies and 9 cities. The following are the names of districts / cities in East Java. The districts consist of: Bangkalan, Banyuwangi, Blitar, Bojonegoro, Bondowoso, Gresik, Jember, Jombang, Kediri, Lamongan, Lumajang, Madiun, Magetan, Malang, Mojokerto, Nganjuk, Ngawi, Pacitan, Pamekasan, Pasuruan, Ponorogo, Probolinggo, Sampang, Sidoarjo, Situbondo, Sumenep, Trenggalek, Tuban and Tulungagung. As for the cities, they consist of: Batu, Blitar, Kediri, Malang, Madiun, Mojokerto, Pasuruan, Probolinggo, and Surabaya.

Talking about population, East Java is one of the provinces with the most population in Indonesia in 2010 with a population of 37,476,757 East Java (Dewa et al, 2015). The population of East Java has increased every year, and reached 39.29 million people in 2017 or it can be said to have a population growth of around 0.56 percent compared to the previous year. The percentage of the population according to the age group 15-64 years has grown annually, as well as for the population aged +65 years. In the last five years, the dependency ratio of the population in East Java Province has shown a downward trend. In 2012 it was recorded to slow down by 45.26 to 43.79 at the end of 2016 ((BPS Jawa Timur, 2017). Based on this data, the population structure of East Java in 2017 has a shape like an inverted barrel. This can be interpreted that the population aged productive and young people are more dominant than the elderly population. This condition is an opportunity and potential that needs to be empowered so that productivity can increase.

1. E-Commerce

Since the early 1990s the term " electronic commerce " was the first to be coined. The United States has significantly developed the e-commerce market and is a pioneer and leader in e-commerce (Zhang et al , 2016) . E-commerce transactions are the sale of products and services or services via the internet (Oliveira et al , 2017). E-commerce is a new concept, so it is important to encourage consumers to use e-commerce (Jones and Leonard, 2008; WT Way and Liu, 2016). Electronic commerce usually does not have human-

to- human interactions (Hasanein and Head, 2007; Lu, Fan and Zhou, 2016). *E-commerce* can be defined as a process of buying and selling products, services, and information that is carried out electronically by utilizing the internet network (Wahyudiono, 2017). Lack of trust is also one reason that consumers do not buy (Grabner-Krauter and Kaluscha, 2003; DJ Kim *et al* , 2015; JM Lee and Rha, 2016). The existence of a guarantee can affect trust in buying online (Bansal *et al* , 2015; Aimeur *et al* , 2016).

In this study there are several differences, where there are three approaches to *e-commerce:* The first relates to culture, which explains that traditional culture avoids uncertainty in internet use (Oxley and Yeung, 2001). Preference for traditional transaction practices (Poon and Swatman, 1999). The second is technical, namely the introduction of *online products and services* (Zhu *et al* , 2016). Finally, regarding regulations and policies, where government policies are needed to protect and secure the system of economic stability in the *online environment* (Wong, 2003). *E-commerce* occurs in the *online space* , so transaction behavior is different from *offline transaction systems.* Technology is very different from the need for social contact. Many technologies are rejected by users and replaced by other technologies (Bergek *et al* ., 2008). *E-commerce* activities are significantly characterized by dependence on the environment (Oxley and Yeung, 2001). Acceptance of *e-commerce technology* based on environmental analysis. Thateher *et al* (2006) analyzed the technical or socio-economic aspects.

1. *E-Banking*

People use *smartphones* to access financial products without having to go to the bank office . So that these activities can help expand banking services. Currently, there are still around 36 percent of the adult population who have a formal financial institution account. The development of *fintech* encourages changes in the banking industry from a traditional system (*bank driven*) to one based on financial technology (*customer driven*). *Fintech* has advantages over traditional banks. *Fintech* has the technology and innovation to reach customers who are less able to access traditional banking systems. In addition, it also has the advantage that transactions are more efficient due to operational costs and can provide cheap and affordable loan facilities.

Innovations in software design methods and the increasing number of internet users also have an impact on the growth of *e-banking,* changing traditional business and customer processes for banking activities or activities (Eriksson *et al* , 2008; Rodrigues *et al* , 2017). *Stakeholders* also plan and promote new forms of banking in the market to influence customers to use online banking (Nasri, 2011). *E-banking* allows customers to manage and control their financial accounts and transactions via the internet. *E-banking* began to grow in 2000 and has become one of the bank's main channels for product and service distribution (Amato-McCoy, 2005). Advances in information technology support the development of *e-banking* (Wong *et al* , 2009). The advantage of *e-banking* for bank customers is that it makes it easier to collect product or service information (Henning-Thurau *et al* , 2004; Shi and Lu, 2008; Rodrigues *et al* , 2017).

Based on Bank Indonesia's understanding that the Bank Indonesia National Clearing System (SKNBI) is an electronic fund transfer system that includes debit clearing and credit clearing where adjustments to each transaction are made nationally. The category of transactions in the SKNBI is of small value, namely transactions with a nominal value of less than 100 million rupiah. Clearing or LLG (Giro traffic) can be defined as inter-bank transfers, whether made via *mobile* , internet *banking* or through bank tellers. In this study, SKNBI is taken as a proxy for *E-Banking* . Credit transfer through clearing in the form of Electronic Financial Data (DKE). This is in accordance with research conducted by Istanto and Fauzie in 2014.

RESEARCH METHODS

This research is a type of quantitative research. Based on this type of research, this research emphasizes more on testing and measuring research variables in the form of numbers, as well as analyzing data using statistical tools. The analysis is also based on theories and literature review. This study uses secondary data obtained from: BPS Indonesia, BPS East Java, Bank Indonesia, KOMINFO, INDO DAPOER, East Java Regional Financial Economic Study (KEKR) and other reports. The research period is quarterly from 2005 to 2017 with the object of research being the province of East Java.

Table 1. Operational Definition

	Variable Name	Proxy	Information
Dependent Variable	*E-commerce*	Percentage of communication media	*Smartphone / Cellular* users processed during the study period
	E-Banking	SKNBI transaction volume	The number of electronic financial data (DKE) processed during the study period.
Independent Variable	Number of Young Population	Population aged 15-44 years	Age classification according to BPS
	Number of Older People	Population aged 45-60 years and over	Age classification according to BPS

Analysis Techniques

In this study using an analytical technique that is *Error Correction Model* (ECM). The ECM model is used to determine the short-term and long-term effect of the independent variable on the dependent variable (Gujarati and Porter, 2009; Istanto and Fauzie, 2014). Before performing ECM regression, it is necessary to test the data, namely the stationarity test and cointegration test.

Unit Root Test

Before estimating the ECM method, there is a pre-estimation test, one of which is the data stationarity test or the unit root test. Stationarity test is used in *time series data.* Gujarati and Porter (2009); Gujarati (2012) explained that the level of data stationarity was used to avoid *spurious regression* . In this study using the *Augmented Dickey Fuller* (ADF) *test method.* There are three levels in the stationary test, namely *level* , 1 st *difference* , and 2 nd *differences.* From

each of these levels can be compared with the values of = 1%, 5%, and 10%. So that the data is stationary if prob. statistic is less than , and vice versa.

Johansen Cointegration Test (*Johansen-Cointegration Test*)

This test is carried out to determine whether there is a relationship and balance in the long term or not. In this case the cointegration test uses the Johanson cointegration approach. Cointegration test on the model can be seen from the value of the *trace statistic* and the *maximum eigenvalue statistic* . If the value of the *trace statistic* and the *maximum eigenvalue statistic* is greater than the critical value, then it is cointegrated, and vice versa.

Error Correction Model (ECM)

This model is used to correct for the possibility of an imbalance (*disequilibrium*) in the short term. The approach in the ECM model began to emerge when econometricians wanted to specifically discuss the form of *time series.* Gujarati and Porter (2009) explain the mechanism of the ECM model indicating that there is a long-term balance between economic variables, even though in the short term there is no balance of ECM, it can be used to

harmonize behavior in the short and long term. The ECM model was popularized by Engle and Granger in 1987 (Widarjono, 2013; Istanto and Fauzie, 2014). The following is the Engle-Granger ECM Model adopted in this study.

$$\Delta Y_t = \alpha_{0t} + \alpha_1 \Delta X_t + \alpha_2 \Delta Z_t + \alpha_3 EC_{t-1} + \varepsilon_t \quad (1.1)$$

$$EC = Y_{t-1} - \beta_0 - \beta_1 X_{t-1} \qquad (1.2)$$

α_1 shows the short-term coefficient, β_1 shows the long-term coefficient, α_2 shows the imbalance correction. The imbalance correction coefficient α_2 is an absolute value that describes how quickly it takes to obtain or reach an equilibrium value.

From the equation model (1.1) above, the equation model used in this study is formulated as follows:

$$\Delta MEDCOM = \alpha_0 + \alpha_1 \Delta JPM_t + \alpha_2 \Delta JPT_t + \alpha_3 EC_{t-}1 + e_t \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(1.3)$$

$$\Delta SKNBI = \alpha_0 + \alpha_1 \Delta JPM_t + \alpha_2 \Delta JPT_t + \alpha_3 EC_{t-}2 + e_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(1.4)$$

$$EC_{t-}1 = COM_{t-1} - \beta_0 - \beta_1 \Delta JPM_{t-1} - \beta_2 \Delta JPT_{t-1} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(1.5)$$

$$EC_{t-}2 = SKNBI_{t-1} - \beta_0 - \beta_1 \Delta JPM_{t-1} - \beta_2 \Delta JPT_{t-1} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(1.6)$$

Information:

MEDCOM	= Communication Media
SKNBI	= SKNBI Transaction Volume
α_0	= constant
$\alpha_1 dan \alpha_2$	= short run coefficient
α_3	= unbalance correction coefficient
EC	= *Error Correction Term* which is a measure for imbalance `(*disequilibrium error)*
t	= time / research period

Testing EC_t is used to determine whether the ECM specification model in the study is valid or not. If the coefficient test is valid EC_t, then the specification of the ECM model used is valid.

ANALYSIS AND DISCUSSION
Data Analysis Results
Stationarity test

The unit root test used in this study uses ADF-Test at the *level, 1st difference* and *2nd difference* so that the data becomes stationary. If there is data that is not stationary at the level (0) or zero degree, then a further test will be carried out on the *1st difference* stationarity test and the test is continued until all the variables are stationary at the appropriate degree. After the data is stationary, all variables will be equalized or *generated.*

Table 2. Stationarity Test Results – ADF

| Variable | Stationarity Level | t-statistics | | | | Prob. |
| | | ADF value | Critical Value | | | |
			1%	5%	10%	
JPM	Level	-0.115349	-4.121990	-3.144920	-2.713751	0.9265 [X]
	1st Difference	-3.629134	-4.200056	-3.175352	-2.728985	0.0245 **
JPT	Level	-0.180383	-4.121990	-3.144920	-2.713751	0.9174 [X]
	1st Difference	-3.760674	-4.200056	-3.175352	-2.728985	0.0199 **
SKNBI	Level	-1.222671	-4.121990	-3.144920	-2.713751	0.6271 [X]
	1st Difference	-2.220399	-4.200056	-3.175352	-2.728985	0.2101 [X]
	2nd Difference	-4.026728	-4.026728	-3.212696	-2.747676	0.0148 **
MEDCOM	Level	-2.300379	-4.420595	-3.259808	-2.771129	0.1000 ***
	1st Difference	-3.175352	-4.200056	-3.175352	-2.728985	0.0451 **

[X]) is not stationary, *) is stationary at <1%, **) is stationary at <5%, ***) is stationary at <10%
Source: Processed Data from E-views

Based on Table 2 describes the results of the ADF test for each variable in the study. These results indicate that each variable has a different level of stationarity. The level of stationarity is seen from the ADF t-statistic value which has a value greater than the critical value (*critical value*). Variables JPM, JPT, SKNBI and MEDCOM which are not stationary at the level are decreased once at the degree of integration of one (I). So, it can be concluded that the variables JPM, JPT, and MEDCOM have been integrated in the *1st difference,* while SKNBI is integrated in the *2nd difference.*

Cointegration Test

1. SKNBI Cointegration Test

The results of the cointegration test of research variables are as shown in Table 3, the cointegration test between SKNBI, Young Population (JPM) and Older Population (JPT) takes into account the value of the *trace statistics* and *max eigen value* with *critical value values. Trace* comparison *statistics* and *max eigen value* has a value greater than *critical value* at the 1% and 5% levels. So, based on the test results show that the variables are cointegrated. So if the cointegrated variables indicate that there is a long-term relationship between the variables studied.

Table 3. *Johanson -Cointegration Test* Results on SKNBI

Category	tiers	Score	Note. Cointegration
Trace-Statistic	1%	54.55421	
	5%	18.68016	
	10%	2.437643	Yes
City Value	1%	29.79707	
	5%	15.49471	
	10%	3.841466	
Max Eigen Value	1%	35.87405	
	5%	16.24252	
	10%	2.437643	Yes
Critical Value	1%	21.13162	
	5%	14.26460	
	10%	3.841466	

Source: Processed Data from E-Views

Null Hypothesis: ECT has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=2)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-2.905499	0.0737
Test critical values:	1% level	-4.121990	
	5% level	-3.144920	
	10% level	-2.713751	

(2a)
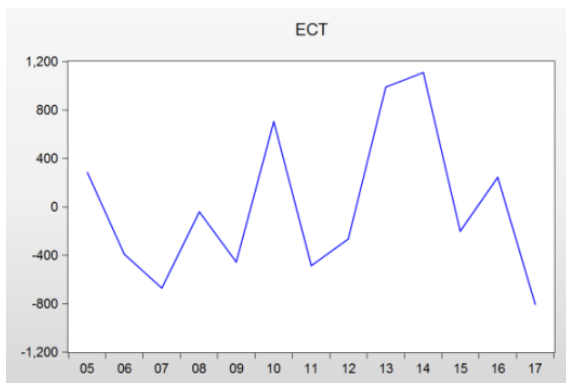
(2b)

Figures 2a and 2b. SKNBI Rasidual Cointegration Results
(Source: Processed Data from E-Viewsz

The residual must be stationary at the levels in order to be said to have cointegration. After doing the DF test to find out the residual results, from the test it was found that the residual was stationary at the level level. Indicated by the value of Prob. (0.0737) is less than the critical value of 5%. So it can be said that the data is cointegrated.

1. MEDCOM Cointegration Test

Table 4. *Johanson's Test* Results *Cointegration* on MEDCOM

Category	tiers	Score	Note. Cointegration
Trace-Statistic	1%	47.66119	
	5%	11.16167	
	10%	4.121633	Yes
City Value	1%	29.79707	
	5%	15.49471	
	10%	3.841466	
Max Eigen Value	1%	36.49951	
	5%	7.040040	
	10%	4.121633	Yes
Critical Value	1%	21.13162	
	5%	14.26460	
	10%	3.841466	

Source: Processed Data from E-Views

Null Hypothesis: D(ECT) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=2)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-3.315684	0.0401
Test critical values:	1% level	-4.200056	
	5% level	-3.175352	
	10% level	-2.728985	

(3a)
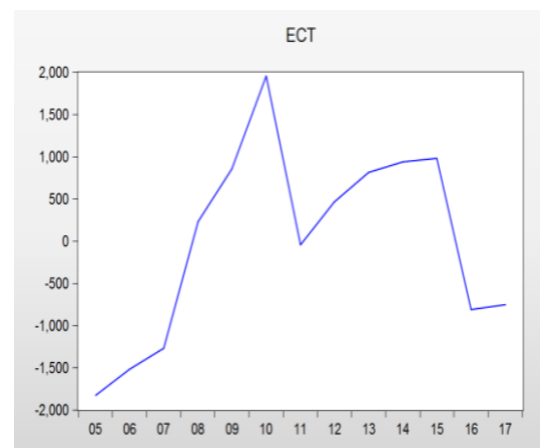
(3b)
Figures 3a and 3b. MEDCOM Rasidual Cointegration Result
(Source: Processed Data from E-Views)

The residual must be stationary at the levels in order to be said to have cointegration. After doing the DF test to find out the residual results, from the test it was found that the residual was stationary at the level level. Indicated by the value of Prob. (0.0401) is less than the critical value of 5%. So it can be said that the data is cointegrated.

Error Correction Model (ECM) Analysis

1. Analysis *of Error Correction Model* (ECM) on SKNBI Variables

Table 5. ECM Estimation Results the Effect of Young and Older Populations on the Development of SKNBI

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-84.14154	198.6299	-0.423610	0.6830
DJPM	-0.001092	0.000527	-2.072893	0.0719
DJPT	0.003533	0.001859	1.900551	0.0939
ECT	0.802682	0.314466	2.552524	0.0340
R-squared	0.508994	Akaike Info Criterion		15.95044
adj. R-Squared	0.324867	Schwarz criterion		16.11207
F-Statistics	2.764358	Durbin-Watson stat		1.307219

Source: Processed Data from E-Views

ECM Equation:
$$D(SKNBI) = -84.14154 - 0.001092*D(JPM) + 0.003533*D(JPT) + 0.802682*ECT$$

It shows that the ECT coefficient value in the model is significant and has a positive sign for the SKNBI estimation. The results of the ECM estimation above show that in the short and long term the variables used in this study have an effect but are not significant on the SKNBI. Value Adj. R-Squared of 0.325 or 32.5%, it can be said that the types of independent variables included in the model are less representative, it means that there are 50% more variables outside the model that are more influential.

The estimation results above also illustrate that in the short term and long term the number of young and old people both have an effect on the SKNBI but not significantly. While the more dominant influence is the number of elderly population.

Thus, based on the equation of the ECM method which produces the ECT coefficient that will be used to measure the period that deviates from balance. The ECT correction coefficient in absolute value describes how long it takes to reach equilibrium. The ECT coefficient value of 0.802 means the difference between the SKNBI and the balance value of 0.802 which can be adjusted for a minimum of 1 year.

2. *Error Correction Model* (ECM) Analysis on MEDCOM . Variables

Table 6. ECM Estimation Results the Effect of Young and Older Populations on MEDCOM Development

Variable	Coefficient	Std. Error	t-Statistic	Prob
C	49.97270	155.3408	2.896681	0.020
DJPM	-0.000316	0.000373	-0.849020	0.042
DJPT	0.000888	0.001554	0.571688	0.583
ECT	-0.054619	0.146415	-0.373044	0.071
R-squared	0.47113	Akaike Info Criterion	15.42212	
Adj. R-Squared	0.35241	Schwarz criterion	15.58375	
F-Statistics	2.88682	Durbin-Watson stat	1.382873	

Source: Processed Data from E-Views'

ECM Equation:
D(MEDCOM) = 49.97270 - 0.000316*D(JPM)
+ 0.000888*D(JPT) - 0.054619*ECT

It shows that the ECT coefficient value in the model is significant and has a negative sign for MEDCOM estimation. The results of the ECM estimation above show that in the short and long term the variables used in this study have an effect but are not significant on MEDCOM. Value Adj. R-Squared of 0.352 or 35.2%, it can be said that the types of independent variables included in the model are less representative, it means that there are 50% more variables outside the model that are more influential.

The estimation results above also illustrate that in the short and long term the number of young people has an effect on MEDCOM but it is not significant and the dominant influence is the number of young people. While the number of elderly population has less significant effect.

Thus, based on the equation of the ECM method which produces the ECT coefficient that will be used to measure the period that deviates from balance. The ECT correction coefficient in absolute value describes how long it takes to reach equilibrium. The ECT coefficient value of 0.054 means the difference between MEDCOM and the balance value of 0.054 which can be adjusted for less than 1 year.

CONCLUSION

Based on the estimation results, it can be concluded that in the short term and in the long term the number of young and old people have the same effect on the SKNBI but not significantly. While the more dominant influence is the number of elderly population. Based on the equation of the ECM method, the ECT coefficient value of 0.802 means the difference between the SKNBI and the balance value of 0.802 which can be adjusted for a minimum of 1 year. In the MEDCOM dependent variable, that in the short and long term the number of young people has an effect on MEDCOM but it is not significant and the dominant effect is the number of young people. While the

number of elderly population has less significant effect. In accordance with the equation of the ECM method which produces an ECT coefficient value of 0.054, it means that the difference between MEDCOM and the balance value is 0.054 which can be adjusted in less than 1 year .

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