

The Determinants of Regional Competitiveness in Indonesia

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Abstract - This study aims to map the competitiveness of regions and to examine the influence of health, education, infrastructure, institutional, and information and communication technology (ICT) on competitiveness both directly and through government spending and private investment. The data used are cross section 33 provinces in Indonesia and time series 2010-2016. Standardized scores were used to calculate competitiveness scores based on four indicators: productivity, GRDP per capita, employment and household consumption expenditure per capita. The simultaneous equation model is used to analyze the effect of the driven factors on competitiveness. The study indicates that provinces with high competitiveness are dominated by provinces based on natural resources and / or provinces based on industry and services sectors. The driven factors that have a significant effect on competitiveness are the level of labor education, the availability of infrastructure and ICT. Health and institutions factors have not effectively contributed directly to improving competitiveness. The results of this study require the workforce to improve the quality of education and skills in order to contribute to improve productivity and employment. The availability of infrastructure and ICTs is important to attract investments that ultimately drive increased competitiveness.

Index Terms - regional competitiveness, standardized score, simultaneous equation model, human capital, ICT

I. INTRODUCTION

The demand for increasing competitiveness is supported by all the capabilities and resources that exist into something that can not be negotiable in order to survive and win the competition in the era of globalization. Therefore, economic policy should be aimed at increasing competitiveness in order to become a winner and not a loser.

World Economic Forum (WEF, 2017) in the publication of Global Competitiveness Report 2016-2017 reported the competitiveness of Indonesia again weakened. Indonesia's competitiveness position is ranked 41st of 138 countries surveyed. The WEF report noted that Indonesia's position fell four levels compared to last year's ranking in 37th place. This position has continued to decline since 2014 which is ranked 34th. Compared to other Asian countries, Indonesia's competitiveness remains under Singapore (2nd), Japan (8th), Hong Kong (9th), Malaysia (25th), Thailand (34th), and South Korea (26th).

The decline in Indonesia's competitiveness ranking from previous years is mainly related to the quality of health services and basic education that are still relatively low, labor market efficiency is still less due to labor policy, and the low utilization of information and communication technology. While the most basic issues that get the spotlight from WEF are corruption,

inefficiency of government bureaucracy and infrastructure constraints. Therefore, the weakening of Indonesia's competitiveness at global level must be systematically and critically anticipated. Reduced competitiveness will have an impact directly or indirectly on various aspects of the life of Indonesian people, especially the economic aspects. A set of systemic nationalities should be prepared in order to improve competitiveness.

While in the current era of regional autonomy in which each region has the authority to regulate its own region, the competitiveness of the nation depends on the competitiveness of the region. This challenge should further be interpreted as a demand for each region to improve the competitiveness of each region. It is also driven by the dynamic dynamics of economic, social, political and cultural changes in the contemporary world that are increasingly shaped by pursuing and enhancing competitiveness not only at the national level but also at the regional level. Therefore, the policy of regional autonomy and fiscal decentralization in Indonesia should have implications for the regional capability in enhancing its regional competitiveness as a determinant of the success of national development.

II. LITERATURE REVIEW

The idea of regional competitiveness has been the subject of a conceptual debate over the past few years. Concerning the concept of regional competitiveness, there are three major issues emerging among economists and policy makers. First, how to define regional competitiveness and the factors that influence it; Second, what indicators should be used to measure it; Third, how regional competitiveness is improved.

After the initial study of Porter (1990) linking national competitiveness with productivity that is a nation's ability to innovate, the attention of many parties has shifted to competitiveness at the local level. From this perspective, Porter's biggest contribution is his view of competitiveness at the micro level (company) that can be applied to territorial units, be it city, region or country. Furthermore, Porter (2007) suggests using prosperity, measured by living standards and gaps to measure regional competitiveness. Prosperity is defined as per capita income decomposed into two factors: labor productivity and employment. The factors that affect labor productivity are skill, capital and the amount of productivity factor, while job opportunity is affected by working hours, unemployment, and labor force participation rate.

Meanwhile, Kitson et al. (2004) used three indicators to measure competitiveness ie regional productivity, employment rate; and living standards. According to Kitson, the basis of competitive advantage is the productive capital, human capital, social capital-institutional, cultural capital, infrastructure capital, and knowledge/creative capital. Kitson's view is in line with the empirical study of Lengyel et al. (2013) of 93 provinces in Central European countries showing human capital and social capital are factors that positively affect the competitiveness of the region. In this study competitiveness is proxied by GRDP per capita, labor productivity, and employment rate.

In contrast to previous competitiveness concepts, Bristow (2005) suggests from a macroeconomic point of view, while taking into account microeconomic aspects (enterprise level) and the output of a region (prosperity). This view reinforces that regional competitiveness and regional prosperity are actually interdependent understandings. According to Bristow, an area is competitive when the area has the conditions to enable it to improve the standard of living, or the ability to maintain the outcomes that have been achieved. The company's competitive advantages and regional environmental appeal for business, as well as the volume and extent to which human resources in the region are optimally utilized are important factors for shaping regional competitiveness. Therefore, the level of competitiveness can vary among regions within a geographical space, depending on growth-driven factors (Audretsch and Keilbach, 2004). Thus, between the macro and micro levels can be found the concept of regional competitiveness in which a region in the context of the state is not a company aggregation (Gardiner et al., 2004).

Meyer-Stamer (2008) states that the systemic competitiveness of a region is the ability of an area to generate high income and improve the livelihoods of people living in the area. In contrast to previous definitions focusing on the concept of productivity, Meyer's views are based entirely on the benefits derived by people living in an area. This indicates that there is a close relationship between competitiveness and prosperity. This means that competitive areas are not only related to outputs such as productivity, but also related to sustainable community welfare.

Furthermore, Delgadol et al. (2012) defines competitiveness as the expected output level per working-age population supported by the overall potential of a nation's resources. According to Delgado, factors that serve as a driver of competitiveness are: social infrastructure (health and education) and political institutions (the quality of political institutions and the rule of law); monetary and fiscal policy; and microeconomic environment. In addition, investment attractiveness also affects the competitiveness of a country. The results of empirical studies Delgado showed that each of the factors driving the competitiveness had a positive effect on output per worker.

Thus, it can be implicitly assumed that regional competitiveness should be derived from "bottom-up" activities by focusing on improving the local system. This perspective resembles the view of endogenous development theory, where place or region acts as a form of organization that coordinates and facilitates competitive advantage or sustainable competitiveness (Courlet and Soulage, 1995; Garofoli, 2002; Lawson & Lorenz, 1999; Maillat, 1998). Camagni (2002) further argues that the concept of

regional competitiveness is acceptable theoretically, because the role of region in providing a competitive environment for the enterprise and the process of knowledge accumulation.

Therefore, the region is increasingly considered to have an important role in economic development in the current global economic era (Amin, 1999; Malecki, 2007; Scott, 1995; Werker and Athreye, 2004). The focus on the region reflects the growing consensus that the region is the main spatial unit that competes to attract investment, and at the local level knowledge is disseminated and transferred, resulting in the agglomeration of industrial and service sector companies in the area.

Some views related to the issue of regional competitiveness, it is seen that basically the regional competitiveness is produced by the complex interaction between input, output, and outcome factors in each region (Kitson, 2004; Bristow, 2005; Delgado, 2012; Huggins, 2003; Lengyel, 2013; Dijkstra, 2011). Therefore, the success of an area over the other regions will be largely determined by how the interrelationship between these three things is in. In addition, regional competitiveness is also associated with non-economic factors such as the parameters of the political, social and cultural conditions of the community. The concept of competitiveness which is the interaction of input, output and outcome components, for example has been used by Huggins in calculating the regional competitiveness index U.K. (Huggins, 2003).

From the concepts and definitions of regional competitiveness above, there is a clear common ground between regional competitiveness and national competitiveness. The similarity of the view is that the ultimate goal of efforts to improve the competitiveness of an economy is to improve the welfare/standard of living of the people residing in the economy.

Meanwhile, the concept and size of welfare has a very broad meaning that can not only be represented by the performance of economic growth alone, but by many economic and non-economic indicators that affect it. While the difference is centered on the scope of territory, where regional competitiveness covers the region (part of a country), while the national competitiveness includes the state. In any discussion of national competitiveness, either explicitly or implicitly, summarizes the relevance of adopting the concept of national competitiveness into the concept of regional competitiveness.

Based on various concepts of competitiveness above, it can be concluded that there is no consensus that explicitly defines competitiveness. Nevertheless, almost all experts have a common view of what should be done in order to improve competitiveness. Therefore, there are still many possibilities for experts and researchers to explore what are the determinants of competitiveness of a country or region.

Various things above shows how important the ability of the region in improving its competitiveness. The ability of the region to improve its competitiveness will depend largely on the ability of the region to determine the factors that can be used as a measure of competitiveness as well as the ability of regions to set policies to improve their economic competitiveness relative to other regions. In relation to the above facts regarding the condition of Indonesia's competitiveness, efforts are needed to identify the determinants of regional competitiveness and economic policies that are focused on promoting the transformation and acceleration of regional economic growth in Indonesia.

III. DATA AND RESEARCH METHOD

The overall data used in this study is secondary data by taking local socio-economic conditions in 33 provinces in Indonesia during the period 2010 until 2016, the last year with the completeness and availability of existing data. The main source of secondary data of this study came from the Central Bureau of Statistics.

Measurement of Competitiveness

The main results of the provincial competitiveness analysis in Indonesia are the competitiveness ratings among provinces and the analysis of factors affecting the competitiveness of provinces in Indonesia. There are two key formulas needed to rank and factor analysis affecting competitiveness, ie indicators that can indicate and indicate competitive levels of competitiveness and scores that can transform competing variables or indicators into competitiveness ratings area. Determination and selection of competitiveness variables is done through literature search and previous research findings.

Scoring used four indicators that are the regional competitiveness output variables, namely labor productivity, GRDP per capita, employment rate and household consumption expenditure per capita. Furthermore, the entire data of the four output variables is then transformed in such a way that it becomes "comparable". In this case the standardized score method is used which is the relative comparison to see how good the performance of a particular province compared with the average of the province as a whole. Therefore, the unit of measurement is no longer relevant. Standardized scores do not have a measurement unit because they only measure relative performance among provinces, regardless of indicator. Statistically, it measures how much the standard deviations of each province are from the average of the whole province. Thus, data standardization aims to equalize the unit of measurement of each variable, so that even if variables have different units of measurement in the beginning, the transformation makes all the variables comparable.

If a province has a zero standardized score, this means that the province's competitiveness indicator is on the average of the whole province. As for if having a negative score means the province is below average. Conversely, if it has a positive value, it means that the performance of the province's competitiveness is above the national average. The further the score is from zero, the further the performance of the provincial competitiveness of the national average. If a province has a high positive score, it means the province is above the national average. Next, calculate the total score of provincial competitiveness score of four indicators to determine the competitiveness ranking of 33 provinces in Indonesia.

The formula used is:

$$\text{Provincial Competitiveness Score} = 25\%(\text{SVI}_{ij}) + 25\%(\text{SVI}_{ij}) + 25\%(\text{SVI}_{ij}) + 25\%(\text{SVI}_{ij})$$

Where SVI_{ij} is the standardized value of indicator j for province i . The result of the overall calculation of the competitiveness score of the province is used to compare the competitiveness performance of each province in Indonesia, in addition to this competitiveness score is also used as the dependent variable in the empirical model.

Empirical Model

The model used to analyze the factors that affect the competitiveness of regions in Indonesia using simultaneous equation model. Health, education, infrastructure, institutions, and information dan communication technology (ICT) factors in this study are the input variables on regional competitiveness. Simultaneous equation in this research can be seen in the following functional equation:

$$\text{Ln}Y_1 = \alpha_0 + \alpha_1X_1 + \alpha_2X_2 + \alpha_3\text{Ln}X_3 + \alpha_4X_4 + \alpha_5X_5 + \mu_3 \tag{1}$$

$$\text{Ln}Y_2 = \beta_0 + \beta_1\text{Ln}Y_1 + \beta_2X_1 + \beta_3X_2 + \beta_4\text{Ln}X_3 + \beta_5X_4 + \beta_6X_5 + \mu_2 \tag{2}$$

$$Y_3 = \gamma_0 + \gamma_1\text{Ln}Y_1 + \gamma_2\text{Ln}Y_2 + \gamma_3X_1 + \gamma_4X_2 + \gamma_5\text{Ln}X_3 + \gamma_6X_4 + \gamma_7X_5 + \mu_1 \tag{3}$$

Where, Y_3 is score of provincial competitiveness, measured in index (score); Y_2 is private investment, measured in rupiah; Y_1 is government expenditure, measured in rupiah; X_1 is Life Expectancy, measured in years.; X_2 is percentage of workforce who have completed formal education of senior high school to university, measured in percent; X_3 is infrastructure is expressed by the consumption of electric energy per capita, measured in kWh; X_4 is Indonesian Democracy Index, measured on a scale of 0 – 100; X_5 is ICT Index, measured on a scale of 0 - 10; α_0, β_0 and γ_0 are constants; $\alpha_1, \dots, \alpha_n, \beta_1 \dots, \beta_n,$ and $\gamma_1 \dots, \gamma_n,$ are each as parameters to be estimated; $\mu_1, \mu_2,$ and μ_3 is random error terms.

IV. RESULTS AND DISCUSSION

Ranking of Provincial Competitiveness in Indonesia

The results of calculation of competitiveness score will provide a portrait of provincial competitiveness profile in Indonesia as a whole. These results indicate the relative position of a province against other provinces by taking into account all the supporting factors it has and how far the province is able to realize the potential of these factors. The ranking of provincial competitiveness in Indonesia as a whole 2010-2016 is shown by Table 1.

Table 1 Overall Competitiveness Ranking, Indonesian Provinces, 2010-2016

Provinsi	2010		2012		2014		2016	
	Rank	Score	Rank	Score	Rank	Score	Rank	Score
Aceh	26	-0,3775	33	-0,6972	32	-0,7854	33	-0,7619
Sumatera Barat	22	-0,2385	20	-0,2817	22	-0,2835	22	-0,2661
Sumatera Barat	18	-0,1804	21	-0,2823	21	-0,2754	18	-0,1465
Riau	4	0,7883	3	1,3009	4	0,9527	4	0,5769
Jambi	11	-0,0122	9	0,1676	11	-0,0615	10	0,0553
Sumatera Selatan	20	-0,2323	17	-0,1993	16	-0,1133	16	-0,1399
Bengkulu	17	-0,1733	18	-0,2046	17	-0,1521	17	-0,1406
Lampung	23	-0,3370	25	-0,3808	24	-0,3295	24	-0,3420
Kep. Ba-Bel	8	0,3035	7	0,3823	7	0,2559	5	0,4967
Kepulauan Riau	3	0,9361	4	1,1335	3	1,0574	3	0,9619
DKI Jakarta	1	1,9839	1	1,9494	1	2,3461	1	2,8377
Jawa Barat	32	-0,5890	31	-0,6150	30	-0,5520	31	-0,6386
Jawa Tengah	27	-0,4410	27	-0,4822	28	-0,4681	28	-0,4064
D I Yogyakarta	13	-0,1088	12	-0,0581	12	-0,0652	8	0,1076
Jawa Timur	12	-0,0884	16	-0,1740	15	-0,0977	14	-0,0456

Banten	31	-0,5547	29	-0,5451	27	-0,4177	27	-0,3939
Bali	6	0,3578	5	0,4889	5	0,5702	6	0,4308
N T B	25	-0,3583	30	-0,5634	31	-0,5881	29	-0,4182
N T T	29	-0,4496	28	-0,4843	29	-0,4901	30	-0,6047
Kalimantan Barat	14	-0,1314	13	-0,0876	14	-0,0882	21	-0,2282
Kalimantan Tengah	9	0,1107	8	0,1927	8	0,2435	11	0,0128
Kalimantan Selatan	10	0,1022	11	-0,0270	9	0,0980	19	-0,1624
Kalimantan Timur	2	1,9230	2	1,6945	2	1,5393	2	1,0644
Sulawesi Utara	30	-0,4595	26	-0,4104	25	-0,3860	23	-0,2666
Sulawesi Tengah	15	-0,1526	14	-0,1285	13	-0,0791	13	-0,0416
Sulawesi Selatan	28	-0,4479	23	-0,3515	19	-0,2355	15	-0,1374
Sulawesi Tenggara	16	-0,1637	15	-0,1733	20	-0,2533	12	-0,0341
Gorontalo	24	-0,3551	22	-0,3458	23	-0,3145	20	-0,2022
Sulawesi Barat	19	-0,2026	19	-0,2531	18	-0,2010	26	-0,3679
Maluku	33	-0,9219	24	-0,6761	33	-0,9789	32	-0,7264
Maluku Utara	21	-0,2345	32	-0,3644	26	-0,3941	25	-0,3460
Papua Barat	7	0,3425	6	0,3893	6	0,4832	9	0,0595
Papua	5	0,3623	10	0,0869	10	0,0640	7	0,2133

The portrait of provincial competitiveness in Indonesia as a whole is a representation of the performance of the indicators, the better the performance of these indicators, the higher the competitiveness of a province, whereas if the performance of the indicators is low, the lower the competitiveness of the province the. As mentioned earlier, the indicators of regional competitiveness in this study are output indicators consisting of labor productivity, GRDP per capita, employment rate, and household consumption expenditure per capita.

As shown by Table 1, DKI Jakarta Province is the province with the highest competitiveness ranking during 2010-2016. As the capital city of the country, DKI Jakarta is often a reflection of Indonesia's development progress. As a representation of the success of nation development, achievement of development result in DKI Jakarta become reference for development in other area. Tingginya competitiveness of DKI Jakarta is driven by the performance of regional economic indicators are relatively good compared with other provinces. The main factors for the formation of the competitiveness of the province of DKI Jakarta are labor productivity, per capita GRDP and per capita consumption expenditure is the highest in Indonesia, thus putting DKI Jakarta as the region with the highest competitiveness position.

Next, for the province of Kalimantan, which includes the top ten is East Kalimantan which meduduki ranked second, followed by Central Kalimantan and South Kalimantan in the rank of the 9th and 10th. The main factors for the formation of regional competitiveness in these three provinces are labor productivity, per capita GRDP and per capita consumption expenditure. Meanwhile, from Sumatra, Riau Islands Province, Riau Province and Bangka Belitung Islands Province is the top ten provinces of regional competitiveness in Indonesia. Riau Islands Province during the year 2010-2016 was ranked the 3rd, followed by Riau Province in 4th position, and Bangka-Belitung Islands Province ranked 4th and 5th. The main factor for the formation of the competitiveness of these three provinces is dominated by labor productivity indicators, per capita GRDP and per capita consumption expenditure of the population. While the provinces in eastern Indonesia have various competitiveness positions during the period 2010-2016. The provinces of Bali, West Papua and Papua are regions whose competitiveness levels are in the top ten positions during the study period. In 2016 Bali Province is ranked 6th, followed by Papua and West Papua in the position of the 7th and 9th. As a province of the world's major tourist destinations, the Balinese economy is largely supported by the tourism services industry, while the West Papua and Papua Provinces of the economy are sustained by natural resources owned by mining.

Meanwhile, the position of competitiveness in the region of Sulawesi Island occupies the position of competitiveness of diverse regions. South Sulawesi province as the largest province in Sulawesi ranked 19th in 2016 down one level compared to the previous year. The other provinces are ranked 12th and 13th respectively for Southeast Sulawesi and Central Sulawesi provinces. Meanwhile, three provinces of North Sulawesi, West Sulawesi and Gorontalo are ranked the top ten lowest. West Sulawesi which in 2015 was ranked 17th down eight levels in the year 2016 that is at the 25th rank. While the province of North Sulawesi which in 2015 was ranked 31st of 33 provinces, in 2016 increased to the 23rd position in 2016. Similarly, Gorontalo Province increased regional competitiveness in 2016 in the 20th position of the position to-25 in the previous year. Furthermore, other provinces in the top ten lowest on mapping of regional competitiveness during this study were occupied by West Nusa Tenggara, East Nusa Tenggara, Maluku, North Maluku, Lampung, Aceh, Central Java, Banten and West Java. The main factors of low competitiveness of these areas are in labor productivity indicators, per capita income, and employment rate.

Based on the mapping of provincial competitiveness rankings in Indonesia in 2010-2016, the regions that occupy the top ten positions are dominated by resource-rich areas such as: East Kalimantan Province, Riau Islands Province, Riau Province, Islands Bangka Belitung, Papua and West Papua Provinces. While other areas that include the top ten rank competitiveness of provincial regions in Indonesia are areas with more economic base in the industrial and service sectors, including: DKI Jakarta Province, Bali Province and D.I. Yogyakarta.

Regression Result

The estimate results of the research can be seen in Table 2:

Tabel 2 The Estimate Results

Directions of Effect			Estimate	t-Statistic	Prob.
X ₁	--->	Y ₁	0,068*	2,800	0,005
X ₂	--->	Y ₁	-0,002	-0,384	0,701
X ₃	--->	Y ₁	0,152	1,579	0,114
X ₄	--->	Y ₁	-0,013	-1,620	0,105
X ₅	--->	Y ₁	0,086	1,245	0,213
X ₁	--->	Y ₂	0,076*	2,100	0,036
X ₂	--->	Y ₂	0,038*	5,014	0,000
X ₃	--->	Y ₂	0,392*	2,767	0,006
X ₄	--->	Y ₂	-0,016	-1,391	0,164
X ₅	--->	Y ₂	0,386*	3,804	0,000
Y ₁	--->	Y ₂	1,464*	15,157	0,000
X ₁	--->	Y ₃	0,015	0,917	0,359
X ₂	--->	Y ₃	0,013*	3,628	0,000
X ₃	--->	Y ₃	-0,064	-1,000	0,317
X ₄	--->	Y ₃	-0,003	-0,574	0,566
X ₅	--->	Y ₃	0,331*	7,139	0,000
Y ₁	--->	Y ₃	-0,076	-1,256	0,209
Y ₂	--->	Y ₃	0,073*	2,491	0,013

*) Significant at at 5% level
 $R^2Y_1 = 0,152$; $R^2Y_2 = 0,647$ $R^2Y_3 = 0,584$

The direct effect of health factors on regional competitiveness shows an insignificant effect. This means that any change in Life Expectancy Rate will not affect changes in regional competitiveness. This result is not in accordance with the initial hypothesis that the degree of health directly affects positively and significantly to the performance of regional competitiveness. This result is also inconsistent with the findings of Bloom and Canning (2008) study which states that there is a strong correlation between good health levels and high economic growth. Statistically it is estimated that any increase of Life Expectancy at birth will increase economic growth, if other growth factors remain.

The direct effect of educational factors on regional competitiveness shows a significant and positive influence. This means that any increase in the number of educated workers will increase the competitiveness of the region. This means that the better the quality of labor education will be the higher the productivity of the region. This result is in accordance with the views of Huggins and Izushi (2013) which states that the educational aspect is a factor driving the increasing quality of human capital through the transfer of knowledge as the main capital of the economy which in turn fosters sustainable economic growth. The high level of education of the workforce will be able to influence the dynamics of changes or the quality of socio-economic life of the population of a region which in turn increases the competitiveness of the area.

The direct effect of infrastructure on competitiveness shows insignificant and opposite effects. However, per capita power consumption indirectly affects local competitiveness through private investment in a positive and significant way. This means any increase in electricity consumption will increase private investment. Increased investment will then increase the competitiveness of the region. This result is in accordance with the findings of Prasetyo (2009) study which states that infrastructure in the form of availability of electric energy infrastructure has a positive and significant impact on economic growth in Indonesia. This increase in economic growth will then increase the income of the population and wider employment opportunities, which in turn will improve the performance of regional competitiveness.

The results show that the institutional factors represented by the Indonesian Democracy Index (IDI) have no significant effect on regional competitiveness in Indonesia either directly or through government spending and private investment. This indicates that democratic conditions in Indonesia reflecting the dynamics of democratic development in Indonesia have not been effective in promoting economic growth both locally and nationally. This result is inconsistent with Rowen's (1990), Sen (2001), and Barro (1996) views that there is a positive relationship between economic development and freedom (democracy). Democracy can stimulate economic growth, because democracy is able to motivate people to work and invest that will drive economic growth. On the other hand, the results of the study favor Lipset's (1959) and Bhagwati (1995) views that countries with a democratic system will be vulnerable to social conflicts and uncertainties that negatively impact investment and economic growth. Therefore, economic growth is a prerequisite for the opening of opportunities for democratization in the future. This result is in line with the view of Alhumami (2010) which states that the democratic system in Indonesia does not contribute to economic growth because it is hindered by the practice of gradual and continuous corruption so as not to create a conducive climate for business activities, investment, as well as the exchange and traffic of domestic and foreign capital.

The effect of ICT on regional competitiveness shows a significant and positive influence both directly and through government spending and private investment. This indicates that the influence of ICT on the competitiveness of regions can be seen from its contribution to inputs of production factors such as investment and employment absorption. In addition, ICT also serves as a driving force for competitiveness through increased productivity of sectors utilizing or using ICT products and services. These results are consistent with the views of Cirera et al. (2016) stating that ICTs can facilitate productivity growth by utilizing production factors more efficiently and facilitating the adoption of other technologies.

V. CONCLUDING REMARKS

Based on the analysis and discussion that has been described previously, it can be concluded as follows:

1. Regions with high competitiveness are generally dominated by provinces with economic base that are sourced from natural resource wealth and / or areas that have economic activity based on industrial sector and service sector. While provinces that have low real competitive position are generally regions with economic base that relies on primary sector (especially agriculture).
2. Increasing life expectancy of the population reflects that the quality of human resources of a region as the capital of the economy. Healthy quality human resources will improve productivity. Increased productivity has an impact on increased output and extensive employment opportunities that will provide opportunities for people to earn a better income so that their welfare increases.
3. Qualified workforce with various skills to attract business people to invest in an area. Increased investment flows to an area will increase the stock of capital which in turn increases output. An educated workforce also has an impact on increased productivity that will drive income levels up. Increased incomes have an impact on increasing public consumption spending to maintain welfare and quality of life.
4. Infrastructure approached by per capita electricity consumption affects the competitiveness of provinces in Indonesia only through private investment. The increasing flow of investment to the region has an impact on the increase of economic activity. Therefore, adequate electricity infrastructure is needed to encourage the regional economy which in turn improves competitiveness.
5. The condition of democracy in Indonesia during the observation period has not effectively contributed to the improvement of provincial competitiveness in Indonesia. This indicates that the dynamics of democratic development in Indonesia has not been effective in promoting economic growth both locally and nationally. The democratic system in Indonesia does not contribute to economic growth because it is hindered by the practice of tiered and continuous corruption that is unable to create a conducive climate for business activities, investment, as well as the exchange and traffic of domestic and foreign capital.
6. The availability and accessibility of ICTs has a greater effect than other factors on regional competitiveness. The contribution of ICT to the competitiveness of provinces in Indonesia is driven by increased private investment. This indicates that the application of ICT by business people in Indonesia has had an impact on increasing productivity, employment, and income. ICTs enable higher levels of productivity through innovation processes as these are innovation inputs to increase output and ultimately lead to higher corporate performance.

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