E-Business, the impact of regional growth on the improvement of Information and Communication Development

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Abstract. ICT becomes a key element to improve industrial infrastructure efficiency and sustainable economic productivity. This study aims to analyze the impact of regional improvement on information and communication development in Indonesia. This research is a correlational study. Population of this research include 151 regions in Indonesia. By using a total sampling, there were 151 sample regions. The results show there are the strong impact of regional growth on increasing Gross Regional Domestic Product (GRDP) of Information and communication. It can be seen from all regional improvement sub variables that have a high correlation in increasing GRDP of Information and Communication in Indonesia. Only two sub-variables that have low correlation to GRDP of Information and Communication variable i.e. GRDP of Agriculture, Forestry and Fishing (0.01) and GRDP of Mining and Quarrying (-0.04). The correlation coefficient (R) is 0.981, means the variable of information and communication GRDP has a very strong correlation with regional growth variable. Thus the value of Adjusted R Square is 95.8%, means there are impact of regional growth variables in increasing GRDP of Information and Communication, while the increase of 4.2% of Information and Communication GRDP is influenced by other factors aside from regional improvement.
1. Introduction
Information and Communication Technology (ICT) is an important element for sustainable development. ICT becomes a key element for industrial infrastructure efficiency and for increasing productivity as a sustainable and competitive development foundation[1]. On the one hand, ICT can lead prices increased but on the other hand an overly high ICT development can lead the prices fall. The price reduction is usually influenced by the provision of free products and services, the ease of adherence to standardization, the Gross Regional Domestic Product (GRDP) which derived from the advancement of the internet that encourages a more free culture, the consumption based on the aspects of usefulness and happiness, but cannot be calculated in the GRDP data that measured income [2]. However, region growth can be measured from the GRDP of the region. To achieve a good GRDP, a region should be able to create value added for the production of goods and services. GRDP is one indicators to measure a region performance or as a reflection of a government's success in mobilizing the economic sectors. Information and communication development covers the information production and distribution, cultural products, inventory of tools to transmit or distribute the products, data or communications, information, information technology activities, data processing as well as other information services activities. ICT business fields consists of several industries, namely publishing, production of moving pictures, video, voice and music recording, broadcasting and programming (radio and television), telecommunication, programming, computer and information technology[3].
Regional economic growth reported by Central Bank of Indonesia (Bank Indonesia) shows the highest contribution to the national economy sequentially in Central Kalimantan province (9.5%), Southeast Sulawesi (8.4%), South Sulawesi (7.5%), North Maluku (7.5%), West Sulawesi (7.4%), Gorontalo (7.3%), Java (58%), Sumatera (22%) and Eastern Indonesia (KTI) at 20%[4]. This study aims to analyze the impact of regional improvement on information and communication development in Indonesia.

2. Methodology
This research used correlational study. Research variables include X Variable (regional growth) and Y Variable (information and communication development). Regression analysis is used to analyze the impacts on both variables. Population on this research include 151 regions in Indonesia. By using a total sampling there were 151 region as research sample. The data of research was analyzed by using Person Correlations, R test and multiple linear regression equations[5][6][7][8][9].

3. Result and Discussion
Analysis of the impact of regional growth on the information and communication development used multiple linear regression formula. The data include 151 of districts/cities in Indonesia with research variables and sub-variables as follows:

\[ Y = \text{GRDP of Information and Communication} \]
\[ X_1 = \text{GRDP of Agriculture, Forestry and Fishing} \]
\[ X_2 = \text{GRDP of Mining and Quarrying} \]
\[ X_3 = \text{GRDP of Manufacturing} \]
\[ X_4 = \text{GRDP of Electricity and Gas} \]
\[ X_5 = \text{GRDP of Water Supply, Sewerage, Waste Management and Remediation Activities} \]
\[ X_6 = \text{GRDP of Construction} \]
\[ X_7 = \text{GRDP of Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles} \]
\[ X_8 = \text{GRDP of Transportation and Storage} \]
\[ X_9 = \text{GRDP of Accommodation and Food Service Activities} \]
\[ X_{10} = \text{GRDP of Financial and Insurance Activities} \]
\[ X_{11} = \text{GRDP of Real Estate Activities} \]
\[ X_{12} = \text{GRDP of Business Activities} \]
\[ X_{13} = \text{GRDP of Public Administration and Defense; Compulsory Social Security} \]
\( X_{14} = \) GRDP of Education  
\( X_{15} = \) GRDP of Human Health and Social Work Activities  
\( X_{16} = \) GRDP of Other Services Activities

The results of the analysis of 151 regions using Pearson Correlations, R test and multiple linear regression equations can be seen in Table 1, Table 2 and Table 3 below:

**Table 1. Pearson Correlations.**

| GRDP of Information and Communication (Y) | 1.000 |
|------------------------------------------|-------|
| GRDP of Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles (X7) | 0.93  |
| GRDP of Financial and Insurance Activities (X10) | 0.92  |
| GRDP of Other Services Activities (X16) | 0.90  |
| GRDP of Water supply, Sewerage, Waste Management and Remediation Activities (X5) | 0.87  |
| GRDP of Human Health and Social Work Activities (X15) | 0.83  |
| GRDP of Public Administration and Defense; Compulsory Social Security (X13) | 0.82  |
| GRDP of Construction (X6) | 0.81  |
| GRDP of Accommodation and Food Service Activities (X9) | 0.79  |
| GRDP of Education (X14) | 0.79  |
| GRDP of Real Estate Activities (X11) | 0.75  |
| GRDP of Manufacturing (X3) | 0.68  |
| GRDP of Transportation and Storage (X8) | 0.68  |
| GRDP of Business Activities (X12) | 0.59  |
| GRDP of Electricity and Gas (X4) | 0.46  |
| GRDP of Agriculture, Forestry and Fishing (X1) | 0.01  |
| GRDP of Mining and Quarrying (X2) | (0.04)|

Table 1 shows that almost all regional growth sub-variables have a high correlation with the GDRP of information and communication variable, there are only 2 (two) variables that have low correlation with GRDP of Information and Communication variable i.e, GRDP of Agriculture, Forestry and Fishing (0.01) and the GRDP of Mining and Quarrying (-0.04).

**Table 2. Model Summary.**

| R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|----------|-------------------|---------------------------|
| .981* | .963     | .958              | 477.81556                 |

a. Predictors: (Constant), GRDP of Other Services Activities, GRDP of Agriculture, Forestry and Fishing, GRDP of Mining and Quarrying, GRDP of Electricity and Gas, GRDP of Transportation and Storage, GRDP of Water supply, Sewerage, Waste Management and Remediation Activities, GRDP of Construction, GRDP of Accommodation and Food Service Activities, GRDP of Manufacturing, GRDP of Real Estate Activities, GRDP of Public Administration and Defence; Compulsory Social Security, GRDP of Human Health and Social Work Activities, GRDP of Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles, GRDP of Financial and Insurance Activities, GRDP of Business Activities, GRDP of Education.

b. Dependent Variable: GRDP of Information and Communication.

Table 2 shows that the correlation coefficient (R) is 0.981, meaning that GRDP Information and Communication variable has a very strong correlation with regional growth variable. Thus the value of Adjusted R Square is 95.8%, means there are impact of regional growth variables in increasing
GRDP of Information and Communication, while the increase of 4.2% of Information and Communication GRDP is influenced by other factors aside from regional improvement. This shows the strong regional growth impact on the increase of Information and Communication GRDP.

**Table 3. Multiple Linear Regression Equations.**

| Variable                                                                 | Unstandardized Coefficients |
|-------------------------------------------------------------------------|-----------------------------|
| (Constant)                                                              | 94.968                      |
| PDRB Agriculture, Forestry and Fishing (X₁)                            | -0.019                      |
| PDRB Mining and Quarrying (X₂)                                         | 0.008                       |
| PDRB Manufacturing (X₃)                                                | -0.005                      |
| PDRB Electricity and Gas (X₄)                                          | -0.892                      |
| PDRB Water supply, Sewerage, Waste Management and Remediation Activities (X₅) | 8.043                       |
| PDRB Construction (X₆)                                                 | 0.109                       |
| PDRB Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles (X₇) | 0.027                       |
| PDRB Transportation and Storage (X₈)                                   | 0.125                       |
| PDRB Accommodation and Food Service Activities (X₉)                    | 0.073                       |
| PDRB Financial and Insurance Activities (X₁₀)                         | 0.050                       |
| PDRB Real Estate Activities (X₁₁)                                     | -0.462                      |
| PDRB Business Activities (X₁₂)                                         | -0.600                      |
| PDRB Public Administration and Defence; Compulsory Social Security (X₁₃) | -0.070                      |
| PDRB Education (X₁₄)                                                  | 0.695                       |
| PDRB Human Health and Social Work Activities (X₁₅)                     | -0.676                      |
| PDRB Other Services Activities (X₁₆)                                   | 1.112                       |

Multiple linear regression equation, as follows:

\[
Y = -94.968 - 0.019 X₁ + 0.008 X₂ - 0.005 X₃ - 0.892 X₄ + 8.043 X₅ + 0.109 X₆ + 0.027 X₇ + 0.125 X₈ + 0.073 X₉ + 0.050 X₁₀ - 0.462 X₁₁ + 0.600 X₁₂ + 0.070 X₁₃ + 0.695 X₁₄ + 0.676 X₁₅ + 1.112 X₁₆
\]

\[
Y = \text{GRDP of Information and Communication}
\]

\[
X₁ = \text{GRDP of Agriculture, Forestry and Fishing}
\]

\[
X₂ = \text{GRDP of Mining and Quarrying}
\]

\[
X₃ = \text{GRDP of Manufacturing}
\]

\[
X₄ = \text{GRDP of Electricity and Gas}
\]

\[
X₅ = \text{GRDP of Water supply, Sewerage, Waste Management and Remediation Activities}
\]

\[
X₆ = \text{GRDP of Construction}
\]

\[
X₇ = \text{GRDP of Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles}
\]

\[
X₈ = \text{GRDP of Transportation and Storage}
\]

\[
X₉ = \text{GRDP of Accommodation and Food Service Activities}
\]

\[
X₁₀ = \text{GRDP of Financial and Insurance Activities}
\]

\[
X₁₁ = \text{GRDP of Real Estate Activities}
\]

\[
X₁₂ = \text{GRDP of Business Activities}
\]

\[
X₁₃ = \text{GRDP of Public Administration and Defense; Compulsory Social Security}
\]

\[
X₁₄ = \text{GRDP of Education}
\]

\[
X₁₅ = \text{GRDP of Human Health and Social Work Activities}
\]

\[
X₁₆ = \text{GRDP of Other Services Activities}
\]
Based on the multiple linear regression equation above, it can be seen that the variables X_2, X_5, X_6, X_7, X_8, X_9, X_{10}, X_{14}, X_{16} have a positive impact on increasing GRDP of Information and Communication, while the variables X_1, X_3, X_4, X_{11}, X_{12}, X_{13}, X_{15} have a negative impact on decreasing GRDP of Information and Communication.

4. Conclusion
There is the strong impact of regional growth on increasing GRDP of information and communication. It can be seen from all regional improvement variables that have a high correlation in increasing GRDP of Information and Communication in Indonesia. Only two sub-variables that have low correlation to GRDP of Information and Communication variable i.e. GRDP of Agriculture, Forestry and Fishing (0.01) and GRDP of Mining and Quarrying (-0.04). The correlation coefficient (R) is 0.981, means the variable of information and communication GRDP has a very strong correlation with regional growth variable. Thus the value of Adjusted R Square is 95.8%, means there are impact of regional growth variables in increasing GRDP of Information and Communication, while the increase of 4.2% of Information and Communication GRDP is influenced by other factors aside from regional improvement.

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