**< What are the factors and results of cultural diversity?>**

**Abstract**

In globalized world, there are various countries with different cultures. Each country has great dependency to other countries and influences on other countries. In this situation, we had a question about which factors have influence on cultural diversity and which factors are influenced by it. Using R, we tried to find the correlation coefficient of each potential factor and using data with high correlation coefficient, we conducted regression analysis to find statistically significant factors. After analyzing data, we found that some variables like Total Fertility Rate, HDI(Human Development Index), and Life Expectancy have significant relationship with cultural diversity of each country. But it was hard to find which factors influence on GI, Cultural Diversity Index, because calculation of GI is complicated. This result gives us inspiration and expectation about the future of Korea in the globalized world.

**(1) Introduction**

Now we are living in a globalized world. Because of that, it becomes very easier to experience other countries` culture. For example, we can watch other countries` movies in our house eating Korean food. Also during semesters like ISS, we can study with foreign students from many countries. In this situation, members of our group 'Variety', were curious about how much Korea is globalized and which factors are influencing on how much countries are globalized. It was even more attractive to think about the theme related to globalization, because we were taking an ISS course with a lot of foreign students. To measure globalization, we found index about cultural diversity. The basic question of group`s project is ' Which factors influence on cultural diversity and what is the result of it?' There was a previous study about cultural diversity saying that there is a positive relationship between cultural diversity and per capita income growth. But we wanted to find other factors that influence on cultural diversity.

To verify that question, we tried to find datasets that seemed to be related with cultural diversity. To select appropriate datasets, we had a brainstorming session. First, we thought that economic status of each country would influence on cultural diversity. And, data related to population of each country would be related to the cultural diversity. Also we gathered data about equality of gender, and data about global relationship such as world peace index. After gathering datasets from lots of sources, we discussed how to analyze datasets and how to make progress in future study. We decided to use R to find correlation coefficient and conduct regression analysis.

**(2)Methods**

1) Gathering and Filtering Data

We first gathered some datasets that seemed to be related with cultural diversity. We found an index of cultural diversity in a thesis paper in 2013, so we found other datasets of year 2013 as far as possible. Here are examples of datasets.

Consumer Price, Crime Rate, Economic Freedom, Gender Inequality, Global Peace,

GNI/person, Human Development, Life Expectancy, Total Fertility Rate, Urbanization Rate

Then, we filtered these datasets because there were many N/As interrupting our analysis. We made excel files that have only two variables, GI and one variable. Then we deleted all countries that don’t have values.(picture1) With this step, we could get several “csv” files.

2) Correlation analysis

With several “csv” files that only have two variables, we analyzed correlation. We selected some variables that have correlation with cultural diversity and pass correlation test. We focused on two values, coefficient(more than 0.2) and p-value(less than 0.05). Here are lists of variables selected.(picture2)

Gender Inequality, Global Peace, Human Development, Life Expectancy,

Total Fertility Rate, Urbanization

3) Regression analysis

We found out some variables that had correlation with cultural diversity. With these datasets, we wanted to know what the factors and results of cultural diversity are. We first tried to draw one linear equation that had a cultural diversity index as a dependent variable, and other indexes as independent variables. To do this process, we had to filter the data that had a lot of N/As again. We deleted nations that had more than 9 N/As, and deleted indexes that had more than 40 N/As. After deleting several lines, we filled N/As with approximated average values of each index.(picture3) At first, we made a linear equation having all the variables as independent variables. Then, with the code “step” and “summary(lm model)”, we found out some meaningful variables. We tried to find any linear relationship of these selected variables, but it was not easy.(picture4) Moreover, it was not a good method because we used approximated average values instead of exact values to replace N/As with something.

Next, we decided to analyze linear relationship with cultural diversity and other variables one by one. This time we used all divided “csv” files again. In doing regression analysis, we used packages “car” and “lmtest”. We investigated some figures to identify linear relationship. We judged that variables were related with cultural diversity only if the results of R make an output with r-squared value near 0.3, p-value less than 0.05. In addition, we tested these linear equations with three tests, Shapiro.test, bptest, dwtest. We just cared figures of bptest and dwtest, because we heard that normality could not be gained easily in real datasets.

**(3)Result**

The result of our research says that, some variables are related with cultural diversity. Of these variables, three variables were thought to be the results of cultural diversity. All these three variables had passed all conditions except normality. Here are glorious variables.(picture5)

Human Development, Life Expectancy, Total Fertility Rate

We really wanted to find factors that affect cultural diversity, but we couldn’t find any variable that passes all conditions. To solve this problem, we gathered other datasets additionally. This is the list of new datasets.

Happy Planet Index, Wellbeing, Economic Participation Rate, World Corruption

These datasets were all correlated with cultural diversity, but we couldn’t find any variable that has linear relationship with it.(picture6)

**(4)Discussion**

With this result, we guessed that cultural diversity didn’t have necessarily good influence on country. Three variables that influence cultural diversity were Life Expectancy, Total Fertility Rate, and Human Development. We interpreted this result that when one country has more various cultures in it, it could make Life Human Development and Life Expectancy become less, and Total Fertility Rate higher. We thought that cultural diversity could have some bad effects on countries.

Next we discussed why we could not find significant factors that influence on cultural diversity index, GI. First, according to former study, we should calculate complex formula to get GI from lots of factors like religion and ethnic group. But we did not consider those factors as much. Next, when filtering data, there were countries having missing values. We first just filled those blanks with average values, and then we just deleted those countries when analyzing each variable one by one.

**(5)Conclusion & Future direction**

First, doing this analysis, we figured that passing all the tests with real data was really difficult. We felt disappointed when analysis was not progressed well. On the other hand, we were surprised by results when looking at plots having some correlation that can be observed with our eyes.

Second, the result of analysis did not correspond to our prediction. We first thought that cultural diversity would have good effects on countries, but the result says that it does not necessarily influence on countries in a good way. Therefore, we realized that when we argue something, we have to use data to make that argument justified.

Finally, making progress in analysis, we figured out potentiality in study of cultural diversity. There are a lot of indexes that seemed to be related with cultural diversity. Therefore, we thought that we had to do more work on this study until finding factors that influence on cultural diversity.

-Reference-

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- Population by religion, sex and urban/rural

- <http://data.worldbank.org/country>

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- About Index –

Global Peace Index

<https://en.wikipedia.org/wiki/Global_Peace_Index>

- The Global Peace Index (GPI) is an attempt to measure the relative position of nations' and regions' peacefulness.[1] It is the product of the Institute for Economics and Peace (IEP) and developed in consultation with an international panel of peace experts from peace institutes and think tanks with data collected and collated by the Economist Intelligence Unit.

he index gauges global peace using three broad themes: the level of safety and security in society, the extent of domestic and international conflict, and the degree of militarization.

- lower value, more peace

- visionofhumanity

Gender Inequality Index

<http://hdr.undp.org/en/content/gender-inequality-index-gii>

<https://en.wikipedia.org/wiki/Gender_Inequality_Index>

- The Gender Inequality Index (GII) is an index for measurement of gender disparity that was introduced in the 2010 Human Development Report 20th anniversary edition by the United Nations Development Programme (UNDP). According to the UNDP, this index is a composite measure which captures the loss of achievement within a country due to gender inequality. It uses three dimensions to do so: reproductive health, empowerment, and labor market participation.

- The GII is built on the same framework as the HDI and the IHDI — to better expose differences in the distribution of achievements between women and men. It measures the human development costs of gender inequality, thus the higher the GII value the more disparities between females and males. The GII values vary tremendously across countries, they range from 2.1 percent to 73.3 percent.

- near zero, equal, near 1, unequal

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Life Expectancy Index

<https://en.wikipedia.org/wiki/List_of_countries_by_life_expectancy>

Life expectancy equals the average number of years a person born in a given country would live if mortality rates at each age were to remain constant in the future.

- correlated with HDI in itself

Human Development Index

<https://en.wikipedia.org/wiki/Human_Development_Index>

<https://www.google.co.kr/search?q=happy+planet+index&oq=happy+planet+index&aqs=chrome..69i57j0l5.3208j0j4&sourceid=chrome&es_sm=93&ie=UTF-8#newwindow=1&q=human+development+index>

- The Human Development Index (HDI) is a composite statistic of life expectancy, education, and per capita income indicators, which is used to rank countries into four tiers of human development.

- The HDI was created to emphasize that people and their capabilities should be the ultimate criteria for assessing the development of a country, not economic growth alone. The HDI can also be used to question national policy choices, asking how two countries with the same level of GNI per capita can end up with different human development outcomes. These contrasts can stimulate debate about government policy priorities.

- The Human Development Index (HDI) is a summary measure of average achievement in key dimensions of human development: a long and healthy life, being knowledgeable and have a decent standard of living. The HDI is the geometric mean of normalized indices for each of the three dimensions.

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Total Fertility Rate

<https://en.wikipedia.org/wiki/Total_fertility_rate>

- The total fertility rate (TFR), sometimes also called the fertility rate, period total fertility rate (PTFR) or total period fertility rate (TPFR) of a population is the average number of children that would be born to a woman over her lifetime if:

1. She was to experience the exact current age-specific fertility rates (ASFRs) through her lifetime, and
2. She was to survive from birth through the end of her reproductive life.

It is obtained by summing the single-year age-specific rates at a given time.

Urbanization Rate

- There are two measures of the degree of urbanization of a population. The first, urban population, describes the percentage of the total population living in urban areas, as defined by the country.

- The second measure, rate of urbanization, describes the projected average rate of change of the size of the urban population over the given period of time.

World Corruption Index

<http://www.transparency.org/research/cpi/overview>

- What does a number mean to you? Each year we score countries on how corrupt their public sectors are seen to be. Our Corruption Perceptions Index sends a powerful message and governments have been forced to take notice and act.

- TRANSPARENCY INTERNATIONAL

Economic Participation Rate

<https://en.wikipedia.org/wiki/Workforce>

- The labour force participation rate, LFPR (or economic activity rate, EAR), is the ratio between the labour force and the overall size of their cohort (national population of the same age range).

- KOSIS

Happy Planet Index

<http://www.happyplanetindex.org/about/>

- The HPI measures what matters: the extent to which countries deliver long, happy, sustainable lives for the people that live in them. The Index uses global data on life expectancy, experienced well-being and Ecological Footprint to calculate this.

- The index is an efficiency measure, it ranks countries on how many long and happy lives they produce per unit of environmental input.

Well-being

- consisted in Happy Planet Index