RESEARCHARTICLE

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Civilization, Education and Population Age Specific: A Comparison between Islamic and Non Islamic Countries

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One of civilization measurement is the economic system, therefore this research was focused on the economic system and the influenced factors, including education, population and try to compare two population specific age groups, with consideration that each age groups have different influence, and also try to compare countries with Muslim majority population and non-Muslims ones, based on the thought that Islam as a civilization has inspired the development of other civilizations. Using 110 countries in 2013 data, that were obtained from the World Bank, this was research conducted and those data processed by Multiple Linear Regression analysis techniques. The results of this study indicate that: first, at the significance level of 5 percent, population growth, education, and life expectancy effect on the economy positively, as well as the population ages 65 years and above, this phenomenon supported the fact that life expectancy positively affected the economy, it shows that longer population life cycle period of time contribute positively to the economy; second, the population ages 15-64 years had no effect on the economy at significance level of 5 percent, but has effect on the 10 percent level of significance; third, there was also a difference in term of the effect magnitude, whereas the population group ages 65 and above have a greater effect on the economy than the population group ages 15-64 years old, and fourth, there was no difference in GDP per Capita of OIC and non-OIC countries member.

Keywords: Civilization, Education, Population Age Specific

1. INTRODUCTION

The civilization can be defined as human social development, or as a process which the community in an area accomplish better stages in social development, or as a community, culture and lifestyles of a region. Based on those concepts, that is why civilization is one of the important topics to be discussed.

One of the subtopics often discussed in the study was the contradiction between the Western and Islamic civilizations. Thus, it became a trigger for conducting studies in this research, which reviewed civilizations as an economic system involving non physical capitals variables in the development and referred to the demographic theories approach. One of the biggest differences in the two civilization groups was the economic system held, particularly the financial system, where many of the OIC Member run an Islamic financial system, even some Members such as Iran and Sudan, claim that a financial system run has been Islamic completely[1]. On the other hand, the human capital variables as one of the non-physical capitals is still facing great challenges in Islamic majority countries in the Organization of Islamic Cooperation (OIC), though some of these countries have attempted to do a continuous progress in human development, starting from improving the education quality in order to revise and improve the standard of living[2].

Based on some phenomena above, therefore, the objective of this research was to analyze the variables of civilization, education, and population groups with specific age structure, as well as several other variables, through a comparison approach between the Islamic majority countries and the non Islam majority countries.

2. THEORY

Thought that civilization as a process which society in an area accomplish better stages in social development, is an interpretation in line with the opinion of Fukazawa in 2009[3] stated that the social development experience three stages, namely the "primitive", "semi civilized", and "civilized".

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Civilization grows because they have expansion media, such as the powerful military, or religious, political and economic organizations accumulated surplus and invest in the constructive production[4]. Civilization can be measured through a variety of indicators, including the economic, politics and culture systems. Vanhanen in 2007 has investigated by testing hypothesis using three different indicators in measuring civilization, namely: per capita income, the level of democratization level and the level of human development. Based on the research results, civilization inequalities in human conditions are inevitability in the cultural differences between the civilizations.

Civilization, Economy and the Affecting Factors

The economic system or economy of a country, as one of the measuring instruments of civilization, plays an important role in the advancement of the nation, where one indicator often used is the national production which the development can be seen through GDP per-capita[6-7] and it is influenced by many factors.

Based on the demographic theories approach, the growth of economic increase is affected by the demographic transition, working population (in general) and women working population (in particular), human capital and savings. Reducing birth rates, changes in the productive age structure will affect the national production[8].

The national production is not only influenced by physical capital but also human capital[9-10], so that another important factor affecting the national production is education[11] as measured by participation of secondary school rate, and life expectancy[12].

Other things that affect national production are the level of savings[13] that will create a conducive environment, the interest rate[12], government spending[14] especially for the welfare of society[8], as measured by expenditures (budgetary) for education and health.

3. METHODOLOGY

This research was conducted to test the civilization variables that are focused on the economic system and the affecting factors including education, and population. This study tried to compare the specific measurement of the two age groups with considerations that each age group has different influences, as well as to compare Islamic majority population countries (represented by the Members of the Organization of Islamic Countries) and non Islamic majority population countries, based on thought that Islam was considered as civilization which inspiring the development of other civilizations.

This research was carried out using data in 2013 of 110 countries obtained from the World Bank, and were processed by Multiple Linear Regression analysis technique with STATA. The difference of this study compared to the previous studies are besides trying to compare the specific measurement of the two age groups, this research also conducted comparative studies through the use of variables that distinguish between the member countries and non-member countries of OIC, with the consideration of the previous research results showing that cultural differences influenced the civilization inequalities.

Other variables used in this research were per capita income as the dependent variable (ln GDP per Capita, Natural Logarithm of *GDP per capita* in 2013, *constant* 2010 US$), Civilization (OIC, member countries and non-member countries of OIC), population growth (PopulationGrowth, *Population Growth* in 2013, *Annual* %), Population (Population2, *Population* of age 15 – 64 years; Population3, *Population* of age 65 years and above, % *of Total*), Gross Enrollment Ratio, Secondary School (SGER, Secondary Gross Enrolment Ratio in 2013), Life Expectation (LifeExpectation, *Total Fertility Rate* in 2013 (*Births per Woman*)), and Gross Saving (GrossSavings, *Gross Savings* in 2013, % *of GDP*). The relationship between variables formulating model in this study was developed based on the hypothesis based on the theory review and previous research, as described before.

4. RESULTS AND DISCUSSIONS

For the first equation model for the specific *Population* measurement of the age15 – 64 years, based on the output of data processed,Table 1 showed that the result of a test statistic F was 72.47 and P-value was 0.0000, it can be concluded that there was a concurrent influences of Population Growth, SGER, LifeExpectancy, OIC, GrossSavings, and Population2 toward ln GDP (P-value < 0.05). To measure the Goodness-of-fit, the measurement of the Root Mean Square Error (RMSE) used. From the results of the output F test, RMSE measurement (or Root MSE) was 0.67152 (small), hence the regression model formed was good.

Table 1. Testing *F* result for coefficient significance of *Regression Model*.

F Statistic	72,47
P-value	0,0000*
Root MSE	0,67152

*Significance for significance level (α) was 5%.

Furthermore, based on the output of testing *t* result for coefficient significance of *Regression Model*, presented in Table 2, this test gave the conclusions that:

1. The P-value for the Population Growth variable was 0.013 (P-value < 0.05), it could be concluded that there was a significant influence of Population Growth variable toward ln GDP per Capita variable 0.1773497 (positive influence) meaning that if there was an increase in 1 unit of Population Growth variable then GDP per Capita variable would have multiplication of exp (0,1773497) = 1.1940486; Vice versa if there was a decrease of 1 unit of Population Growth variable then the GDP per Capita variable would have division of exp (0,1773497) = 1.1940486.
2. The P-value for the SGER variable was 0.013 (P-value < 0.05), it could be concluded that there was a significant influence of SGER variable toward ln GDP per Capita variable 0,0246915 (positive influence) meaning that if there was an increase in 1 unit of SGER variable then GDP per Capita variable would have multiplication of exp (0,0246915) = 1,0249989; vice versa if there was a decrease of 1 unit of SGER variable then the GDP per Capita variable would have division of exp (0,0246915) = 1,0249989.
3. The P-value for the Life Expectation variable was 0.000 (P-value < 0.05), it could be concluded that there was a significant influence of Life Expectation variable toward ln GDP per Capita variable 0,0828845 (positive influence) meaning that if there was an increase in 1 unit of Life Expectation variable then GDP per Capita variable would have multiplication of exp (0,0828845) = 1,0864163; vice versa if there was a decrease of 1 unit of Life Expectation variable then the GDP per Capita variable would have division of exp . (0,0246915) = 1,0249989.

4. The P-value for the OIC variable was 0.128 (P-value < 0.05), it could be concluded that there was no a significant influence of OIC variable toward ln GDP per Capita variable meaning that there was no difference of GDP per Capita variable to respondents OIC and non OIC.
5. The P-value for each Gross Saving and Population2 variables, P-value < 0.05, it could be concluded that there was no a significant influence of Gross Saving and Population2 variables partially/individually toward ln GDP per Capita variable meaning that if there was an increase/decrease of 1 unit of each GrossS aving and Population2 variables then the GDP per Capita variable would not be affected.

Table 2. Testing *t* result for coefficient significance of *Regression Model*

Independent variables	Coefficient	Standard Error	T-Statistic	P-value
Population Growth	0,1773497	0,0702223	2,53	0,013**
SGER	0,0246915	0,0045172	5,47	0,000**
Life Expectation	0,0828845	0,0149951	5,53	0,000**
OIC	-0,2758971	0,179711	-1,54	0,128
Gross Saving	-0,0014611	0,0032908	-0,44	0,658
Population2	0,0283371	0,0154804	1,83	0,070*
Constanta	-1,36015	0,9843065	-1,38	0,170

**Significance for significance level (α) was 5%.
*Significance for significance level (α) was 10%.
The regression model involving all variables was formulated as:
lnGDP per Capita = -1,36015 + 0,1773497PopulationGrowth + 0,0246915SGER + 0,0828845 Life Expectation – 0,275897OIC – 0,0014611 Gross Saving + 0,0283371 Population2 + *e*
Further, based on the output result, the R-squared was 0.8130 meaning that the diversity of the ln GDP per Capita variable could be explained by Population Growth, SGER, Life Expectation, OIC, Gross Saving, and Population2 simultaneously were 81.30% and 18.70% the rest was explained by the error term (*e*) or other variables that not included into the regression model.

Table 3. Testing *F result* for coefficient significance of *Regression Model*.

Statistik F	78,84
P-value	0,0000*
Root MSE	0,64872

***Significance for significance level (α) was 5%.**
For the **second** equation model, for the specific *Population* measurement of the age 65 years and above, based on the data showed in Table 3, the result of F test statistic value was 72.47 and P-value was 0.0000 (Prob > F), it could be concluded that there was a concurrent influences of **Population Growth, SGER, Life Expectation, OIC, Gross Saving**, and **Population3** toward **In GDP per Capita**. (P-value < 0.05).

Table 4. Testing *t* result for coefficient significance of *Regression Model*.

Independent Variables	Coefficient	Standard Error	T-Statistic	P-value
Population Growth	0,2423246	0,0720564	3,36	0,001*
SGER	0,0246247	0,0043037	5,72	0,000*
Life Expectation	0,0714259	0,0150414	4,75	0,000*
OIC	-0,1378503	0,1738093	-0,79	0,430
Gross Saving	-0,0002356	0,0031774	-0,07	0,941
Population3	0,0625478	0,0190825	3,28	0,001*
Constanta	0,5484115	0,8222682	0,67	0,506

***Significance for significance level (α) was 5%.**
To measure the Goodness-of-fit, this research used the Root Mean Square Error (RMSE) measurement, which the model had good value if the measurement of RMSE had small score. From the results of the output F test, the Goodness-of-fit (RMSE) measurement (or Root MSE) was 0.64872 (small); hence the regression model formed was good.
From the data in Table 4, this test gave some findings that:
1. The P-value for the Population Growth variable was 0.001 (P-value < 0.05), it could be concluded that there was a significant influence of Population Growth variable toward ln GDP per Capita variable 0,2423246 (positive influence) meaning that if there was an increase in 1 unit of Population Growth variable then GDP per Capita variable would have multiplication of exp (0,2423246) =1.2742077; Vice versa if there was a decrease of 1 unit of Population Growth variable then the GDP per Capita variable would have division of exp (0,2423246) = 1.2742077.
2. The P-value for the SGER variable was 0.000 (P-value < 0.05), it could be concluded that there was a significant influence of SGER variable toward ln GDP per Capita variable 0,0246247 (positive influence) meaning that if there was an increase in 1 unit of SGER variable then the GDP per Capita variable would have multiplication of exp (0,0246247) = 1,0249304; vice versa if there was a decrease of 1 unit of SGER variable then the GDP per Capita variable would have division of exp (0,0246247) = 1,0249304.
4. The P-value for the Life Expectation variable was 0.000 (P-value < 0.05), it could be concluded that there was a significant influence of Life Expectation variable toward ln GDP per Capita variable 0,0714259 (positive influence) meaning that if there was an increase in 1 unit of Life Expectation variable then GDP per Capita variable would have multiplication of exp (0,0714259) = 1,0740386; vice versa if there was a decrease of 1 unit of Life Expectation variable then the GDP per Capita variable would have division of exp (0,0714259) = 1,0740386.
5. The P-value for the OIC variable was 0.430 (P-value < 0.05), it could be concluded that there was no a significant influence of OIC variable toward ln GDP per Capita variable meaning that there was no difference of GDP per Capita variable to respondents OIC and non OIC.
6. The P-value for Gross Saving variable was 0.914 (P-value < 0.05), it could be concluded that there was no a significant influence of Gross Saving variable toward ln GDP per Capita variable meaning that if there was an increase/decrease of 1 unit of Gross Saving variable then the GDP per Capita variable would not be affected.
7. The P-value for the Population3 variable was 0.001 (P-value < 0.05), it could be concluded that there was a significant influence of Population3 variable toward ln GDP per Capita variable 0,0625478 (positive influence) meaning that if there was an increase in 1 unit of Population3 variable then GDP per Capita variable would have multiplication of exp (0,0625478) = 1,0645453; vice versa if there was a decrease of 1 unit of

Population3 variable then the GDP per Capita variable would have division of exp (0,0625478) = 1,0645453.

The regression model involving all variables was formulated as:

ln GDP per Capita = 0,5484115 + 0,2423246 Population Growth + 0,0246247SGER + 0,0714259 Life Expectation – 0,1378503OIC – 0,0002356 Gross Saving + 0,0625478 Population3 + *e*

The Goodness-of-fit, or Coefficient of Determination (R-squared) of this model was 0.8255, meaning that the diversity of the ln GDP per Capita variable could be explained by Population Growth, SGER, Life Expectation, OIC, Gross Saving, and Population3 simultaneously were 82.55% and 17.45% the rest was explained by the error term (*e*) or other variables not included into the regression model.

According to the previous discussion of the results, this research showed that at the level of significance 5 percent, population growth, education, life expectancy and the population aged 65 years and above had positive effects to the economy. One of the reasons was that the influence of the life expectancy age which showed the life cycle of the population in a longer period, it contributed positively to the economy. While the population aged 15-64 years had no effect to the economy at the significant level of 5 percent, but had effect on the significance level of 10 percent.

Table 5. The Comparison of OLS Regression

Independent Variable	OLS Estimates (1) Specification 1	P-value	(2) Specification 2	P-value
Population Growth	0,1773497	0,013**	0,2423246	0,001**
SGER	0,0246915	0,000**	0,0246247	0,000**
Life Expectation	0,0828845	0,000**	0,0714259	0,000**
OIC	-0,2758971	0,128	-0,1378503	0,430
Gross Saving	-0,0014611	0,658	-0,0002356	0,941
Population2 (aged 15-64)	0,0283371	0,070*	-	-
Population3 (aged 65 above)	-	-	0,0625478	0,001**
Constanta	-1,36015	0,170	0,5484115	0,506
R-squared	0,8130	-	0,8255	-
Adj R-squared	0,8018	-	0,8150	-

**Significance for significance level (α) was 5%.

*Significance for significance level (α) was 10%.

In addition, not only there was different influence in terms of the significance level, but also there was a difference in the influence magnitude, the results of this study showed that the group of population aged 65 years and above had a bigger influence to the economy than the group of population aged 15-64 years. Furthermore, the finding of this research showed that there was no difference in variable GDP per Capita for the OIC and Non-OIC respondents. This was affected by economic system globally or Islamic finance in different parts of the world, such as in Europe, and in the majority of the OIC members. The application of Islamic economic system still mixed with the economic system or the financial system other than Islam.

5. CONCLUSIONS

The results of this study indicated that: (1) at the significance level of 5 percent, population growth, education, and life expectancy effect on the economy positively, as well as the population aged 65 years and above, this phenomenon supported the fact that life expectancy positively affected the economy, it showed that longer population life cycle period contributed positively to the economy, (2) the population aged 15-64 years had no effect on the economy at significance level of 5 percent, but had effect on the 10 percent of significance level, (3) there was also a difference in terms of the effect magnitude, whereas the group of population aged 65 and above had a greater effect on the economy than the group of population aged 15-64 years old, and (4) there was no difference in GDP per Capita of OIC and non-OIC member countries. Therefore, the recommendations for the Government of OIC member countries are to fix and improve the condition of the economy or the financial system, specifically the Islamic financial system, more seriously as a part of efforts to reach better economy.

Furthermore, in term of research we also suggest to do further research using different variables, indicators, approaches, analysis techniques and research designs, in order to find a number of new research results that are useful in expanding and developing the science used as media in solving the existing problems.

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