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RESEARCH ARTICLE

ECONOMIC DEVELOPMENT AND HAPPINESS: A CROSS-NATIONS PATH ANALYSIS.

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Abstract

This paper analysis direct and indirect impacts of economic development indicators that consist of economic growth, human development and global competitiveness, on happiness. Cross-section data on economic growth, human development, global competitiveness and happiness were collected from 123 countries and employed to a path analysis model. The result showed that directly, in Path-1 the impact of economic growth on happiness was negative and significant. Indirectly, the impacts of economic growth on happiness varied depend on the path. In Path-7, P_{43}-P_{31}, the impact of economic growth on happiness through global competitiveness was positive and significant. In Path-8, P_{43}-P_{32}-P_{21}, the impact of economic growth on happiness through global competitiveness and human development was negative, but statistically was not significant. Finally, in Path-9, P_{42}-P_{21}, the impact of economic growth on happiness through human development was negative but statistically was not significant. The implication of this finding was that economic growth no longer important factor in development, especially when development aimed to make people happy.

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Introduction

Happiness has become one of important indicators of social progress. Happiness is now the ultimate goal of development. United Nations Development Programme updated the World Happiness Report 2016 which is a landmark survey of the state of global happiness (Helliwell, J. *et al*, 2016). The report was released on March 20th on UN Happiness Day. The first World Happiness Report was published in April 2012, in support of the High Level Meeting at the United Nations on happiness and well-being, chaired by the Prime Minister of Bhutan. The report outlined the state of world happiness, causes of happiness and misery, and policy implications highlighted by case studies. In September 2013 the second World Happiness Report offered the first annual follow-up and reports are now issued every year.

According to Hornby (1985), happiness is a mental or emotional state of well-being defined by positive or pleasant emotions ranging from contentment to intense joy. The Merriam Webster online dictionary defines happiness as a state of well-being or contentment, a pleasurable or satisfying experience. Happy mental states may also reflect judgments by a person about their overall well-being (Anand, P., 2016). Happiness is a fuzzy concept and can mean many different things to many people. Related concepts are well-being, quality of life and flourishing. At least one author defines happiness as contentment (Graham, M. C., 2014). Some commentators focus on the difference

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between the hedonistic tradition of seeking pleasant and avoiding unpleasant experiences, and the eudaimonic tradition of living life in a full and deeply satisfying way (Deci, E.L. & Ryan, R. M., 2006). Algoe, S. & Haidt, J., (2009) say that happiness may be the label for a family of related emotional states, such as joy, amusement, satisfaction, gratification, euphoria, and triumph.

It has been argued that happiness measures could be used not as a replacement for more traditional measures, but as a supplement (Weiner, E. J., 2007). Several scales have been used to measure happiness, such as: the SHS (Subjective Happiness Scale) is a four-item scale, measuring global subjective happiness (Lyubomirsky, S. & Lepper, H. S., 1999).The PANAS (Positive and Negative Affect Schedule) is used to detect the relation between personality traits and positive or negative affects at this moment, today, the past few days, the past week, the past few weeks, the past year, and generally (on average). The SWLS (Satisfaction with Life Scale) is a global cognitive assessment of life satisfaction developed by Diener, E, *et.al*, (1985).

Economic development indicator initially starting with economic growth, then human development focused and competitiveness. The first development indicator related to happiness indicated by Gross Domestic Product (GDP), which is the measure of economic growth (Frey, B. S. & Stutzer, A., 2001). Economic growth is the increase in the inflation-adjusted market value of the goods and services produced by an economy over time. It is conventionally measured as the percent rate of increase in real gross domestic product (real GDP), usually in per capita terms (IMF, 2012). Growth is usually calculated in real terms to eliminate the distorting effect of inflation on the price of goods produced. Since economic growth is measured as the annual percent change of gross domestic product (GDP), it has all the advantages and drawbacks of that measure. The rate of economic growth refers to the geometric annual rate of growth in GDP between the first and the last year over a period of time. Implicitly, this growth rate is the trend in the average level of GDP over the period, which implicitly ignores the fluctuations in the GDP around this trend. An increase in economic growth caused by more efficient use of inputs is referred to as intensive growth. GDP growth caused only by increases in the amount of inputs available for use is called extensive growth.

Theories and models of economic growth among others: Classical Growth Theory of Ricardian which is originally Thomas Maltus theory about agriculture (Bjork, G.J., 1999), Solow-Swan Model developed by Sollow, R., (1956) and Swan, T., (1956), Endogenous Growth Theory which focus on what increases human capital or technological change (Helpman, E., 2004), Unified Growth Theory developed by Galor, O., (2005), The Big Push Theory which is popular in 1940s, Schumpeterian Growth Theory which is entrepreneurs introduce new products or processes in the hope that they will enjoy temporary monopoly-like profits as they capture markets (Aghion, P., 2002), Institutions and Growth Theory (Acemoglu, *at.al*, 2001), Human Capital and Growth Theory (Barro & Lee, 2001).

Economic growth had been a single development indicator for many years before the concept of human development was introduced. Human development is a concept within a field of international development. The human development approach, developed by the economist Mahbub Ul-Haq (2003), is anchored in Nobel Laureate Amartya Sen's work on human capabilities (Sen, 2005). It involves studies of the human condition, with its core being the capability approach. The inequality adjusted Human Development Index is used as a way of measuring actual progress in human development by the United Nations Development Programme (1997). It is an alternative approach to a single focus on economic growth, and focused more on social justice, as a way of understanding progress. The concept of human developments was first laid out by Zaki Bade, a 1998 Nobel Laureate, and expanded upon by Nussbaum (2000; 2011), and Alkire (1998). Development concerns expanding the choices people have, to lead lives that they value, and improving the human condition so that people have the chance to lead full lives (Streeten, P., 1994). Thus, human development is about much more than economic growth, which is only a means of enlarging people's choices. Fundamental to enlarging these choices is building human capabilities. Capabilities are the substantive freedoms people enjoy; to lead a kind of life they have reason to value (World Health Organization, 2016). Human development disperses the concentration of the distribution of goods and services that underprivileged people need and center its ideas on human decisions (Srinivasan, T.N., 1994). By investing in people, we enable growth and empower people to pursue many different life paths, thus developing human capabilities. The most basic capabilities for human development are to lead long and healthy lives, to be knowledgeable, to have access to the resources and social services needed for a decent standard of living, and to be able to participate in the life of the community. Without these, many choices are simply not available, and many opportunities in life remain inaccessible.

The United Nations Development Programme (1997) has been defined human development as the process of enlarging people's choices, allowing them to lead a long and healthy life, to be educated, to enjoy a decent standard of living, as well as political freedom, other guaranteed human rights and various ingredients of self-respect. One measure of human development is the Human Development Index (HDI), formulated by the United Nations Development Programme (2015a). The index encompasses statistics such as life expectancy at birth, an education index calculated using mean years of schooling and expected years of schooling, and gross national income per capita. Though this index does not capture every aspect that contributes to human capability, it is a standardized way of quantifying human capability across nations and communities. Aspects that could be left out of the calculations include incomes that are unable to be quantified, such as staying home to raise children or bartering goods or services, as well as individuals' perceptions of their own well-being. 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 (United Nation Development Program, 2015b).

Basically, the fundamental goal of economic development policy is to enhance competitiveness, which is reflected in the productivity with which a nation or region utilizes its people, capital, and natural endowments to produce valuable goods and services (Porter, 2009). However, competitiveness has been defined diversely. Scholars and institutions have been very prolific in proposing their own definition of competitiveness. According to Institute for Management Development (2003), competitiveness was a field of economic knowledge, which analyses the facts and policies that shape the ability of a nation to create and maintain an environment that sustains more value creation for its enterprises and more prosperity for its people. Competitiveness is the ability of a country to achieve sustained high rates of growth in GDP per capita (World Economic Forum, 1996). But According to Feurer, R. and Chaharbaghi, K., (1995) competitiveness is relative, not absolute. It depends on shareholder and customer values, financial strength which determines the ability to act and react within the competitive environment and the potential of people and technology in implementing the necessary strategic changes. National competitiveness refers to a country's ability to create, produce, distribute and/or service products in international trade while earning rising returns on its resources (Scott, B. R. and Lodge, G. C., 1985). Competitiveness includes both efficiency (reaching goals at the lowest possible cost) and effectiveness (having the right goals). It is this choice of industrial goals which is crucial. Competitiveness includes both the ends and the means towards those ends (Buckley, P. J. *et.al*, 1998).

In recent years, the concept of competitiveness has emerged as a new paradigm in economic development. Competitiveness captures the awareness of both the limitations and challenges posed by global competition, at a time when effective government action is constrained by budgetary constraints and the private sector faces significant barriers to competing in domestic and international markets. The Global Competitiveness Report of the World Economic Forum (2010) defines competitiveness as "the set of institutions, policies, and factors that determine the level of productivity of a country". The term is also used to refer in a broader sense to the economic competitiveness of countries, regions or cities. Competitiveness is important for any economy that must rely on international trade to balance import of energy and raw materials. The European Union (EU) has enshrined industrial research and technological development (R&D) in her Treaty in order to become more competitive. The way for the EU to face competitiveness is to invest in education, research, innovation and technological infrastructures (Muldur, U., *et.al*, 2006; Stajano, A., (2010). The International Economic Development Council (IEDC) in Washington, D.C. published the "Innovation Agenda: A Policy Statement on American Competitiveness". International comparisons of national competitiveness are conducted by the World Economic Forum, in its Global Competitiveness Report, and the IMD (2003), in its World Competitiveness Yearbook (2003). The Global Competitiveness Report (GCR, 2014-2015) is a yearly report published by the World Economic Forum (2015). Since 2004, the *Global Competitiveness Report* ranks countries based on the Global Competitiveness Index (GCR, 2014-2015), developed by Xavier, M, S., and Artadi, E.V., (2004). The *Global Competitiveness Index* integrates the macroeconomic and the micro aspects of competitiveness into a single index.

The impact of technological progress, economic growth and human development on Indonesia's global competitiveness has been reported by Muchdie, *et.al*, (2016). The impact of technological progress and economic growth on human development, using Indonesian data, has also been analyzed by Muchdie (2016a). Using cross-nations data, Muchdie (2016b) has analyzed the correlation as well as the impact of economic growth and human development on global competitiveness.

The objective of this paper is to report a research that is aimed to study the impact of economic development indicators, such as economic growth, human development and global competitiveness on happiness, using a cross-nations path model.

Methods of Analysis

In analyzing the impacts of economic development indicators on happiness, this study employed path analysis model, that was developed by Sewall Wright, who wrote about it extensively in the 1920s and 1930s (Wright, S., 1921; 1934). It has since been applied to a vast array of complex modeling areas, including biology, psychology, sociology, and econometrics (Dodge, Y., 2003). Basically, the path model can be used to analysis two types of impacts: direct and direct impacts. The total impacts of exogenous variables are the multiplication (Alwin, D.F., & Hauser, R.M., 1975). In this study, the path model is depicted in Figure 1: where human development and global competitiveness were the exogenous variables.

Six hypotheses of direct impacts and three hypotheses on indirect impact to be tested were: first, economic growth had direct impact on the happiness (Path-1); second, economic growth had direct impact on global competitiveness (Path-2); third, economic growth had direct impact on human development (Path-3); fourth, human development had direct impact on global competitiveness (Path-4), fifth, human development had direct impact on happiness (Path-5), and sixth, global competitiveness had direct impact on happiness (Path-6). Indirectly, economic growth had indirect impact on the happiness, through global competitiveness (Path-7); economic growth had indirect impact through global competitiveness and human development (Path-8), and economic growth had indirect impact of happiness, through human development (Path-9).

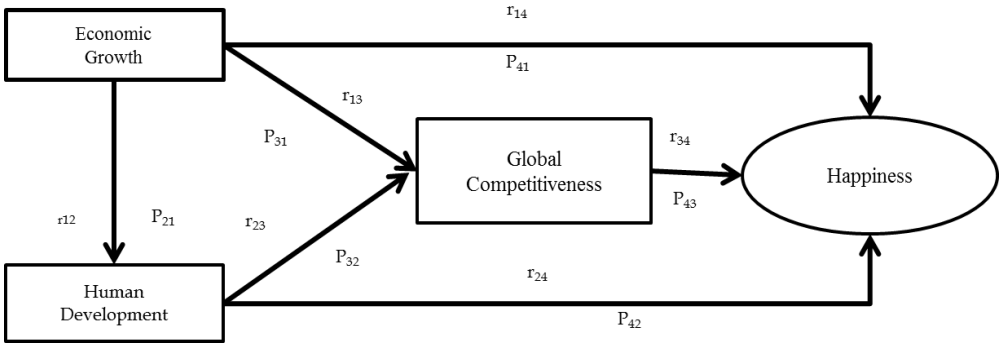

Figure 1: Path Model to Analysis the Impact of Economic Development on Happiness

Path coefficients were calculated by solving these path equations; given that the coefficients of correlation have been calculated. P_{41} was direct impact of economic growth on happiness; P_{31} was direct impact of economic growth on global competitiveness; P_{21} was direct impact of economic growth on human development; P_{32} was direct impact of human development on global competitiveness, and P_{42} was direct impact of human development on happiness. Indirect impact of economic growth on happiness, through global competitiveness was in Path-7 (P_{43} - P_{31}); Path-8 (P_{43} - P_{32} - P_{21}) was indirect impact of economic growth on happiness, through global competitiveness and human development; Path-9 (P_{42} -P_{21}) was indirect impact of economic growth on happiness, through human development.

Table1 1: Path Equations

1). $r_{12} = p_{21}$ Direct efect (DE)	4). $r_{14} = p_{41} + p_{42}\, r_{12} + p_{43}\, r_{13}$ Direct effect + Indirect effect (IE)
2). $r_{13} = p_{31} + p_{32}\, r_{12}$ Direct effect (DE) + Indirect efect (IE)	5). $r_{24} = p_{41}\, r_{12} + p_{42} + p_{43}\, r_{23}$ Direct effect (DE) + Indirect effect (IE) + Spurious (S)
3). $r_{23} = p_{31}\, r_{12} + p_{32}$ Spuriuos effect (S) + Direct effect (DE)	6). $r_{34} = p_{41}\, r_{13} + p_{42}\, r_{23} + p_{43}$ Direct effect (DE) + Spurious (S)

Source: http://faculty.cas.usf.edu/mbrannick/regression/Pathan.html

Happiness was measured by happiness index, economic growth was measured by the growth of GDP, human development was measured by the human development index and competitiveness was measured by global competitiveness index. Data on the happiness index from 156 countries was downloaded from UNDP (2016) World

Happiness Report, Chapter 2: The Distribution of World Happiness written by John F. Helliwell, Haifang Huang and Shun Huang. Data are available at http://worldhappiness.report/wp-content/ uploads/ sites /2/2016/03/HR-V1Ch2_web.pdf. Data on economic growth from 178 countries downloaded from World Bank (2016) Annual Gross Domestic Product Growth (%) and available at http: //data. worldbank.org/indicator/NY.GDP.MKTP.KD.ZG. Data on human development index from 155 countries download from UNDP (2016) Human Development Report 2015: Work for Human Development Web Version and was accessed at http://hdr.undp.org/en/data. Data on global competitiveness index from 138 countries were downloaded from http://reports.weforum.org/global-competitiveness-index/.

Problems of missing data have been solved by deleting countries with incomplete data. Finally, data on happiness, global competitiveness, human development, and economic growth used in this study were from 123 countries.

Results and Discussion

Figure 2: depicts the dynamic of economic growth, human development index, global competitiveness index and happiness index from 123 countries being studied. The lowest economic growth happened at Siera Leone (-20.3%) and the highest economic growth was at Mauritania (15.5%). Ten countries with the highest economic growth were Mauritania, Iran Islamic Republic, Ethiopia, Ireland, India, Mali, Cambodia, Dominican Republic, Tanzania, and China. Ten countries with the lowest economic growth were Guinea, Greece, Botswana, Kuwait, Moldova, Trinidad and Tobago, Burundi, Brazil, Venezuela RB and Sierra Leone. Average growth in terms of statistical mean was 2.91% (Bahrain), median 2.9% (Bahrain), and mode 3.0% (Thailand).

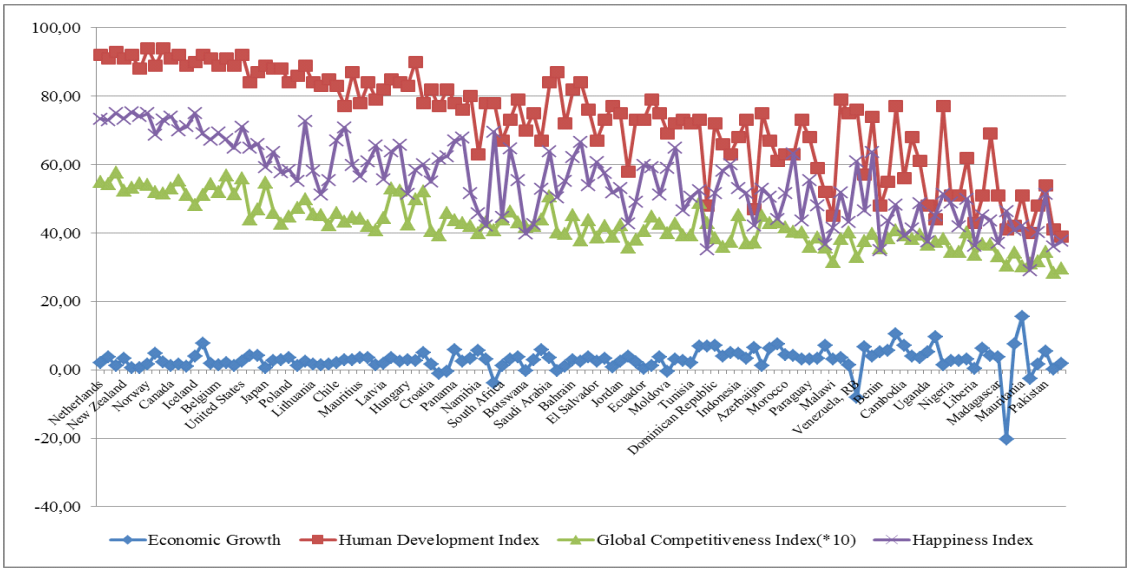

Figure 2: Economic Growth, Human Development, Global Competitiveness and Happiness

The highest human development index was in Australia (94.00) and the lowest human development index was in Chad (39.00). Ten countries with highest index of human development were: Norway, Australia, Switzerland, Netherlands, Denmark, Germany, Ireland, United States, Sweden, and New Zealand. Ten countries with lowest human development index were: Haiti, Senegal, Malawi, Ethiopia, Liberia, Mali, Sierra Leone, Guinea, Burundi, and Chad. Average index of human development in terms of statistical mean was 72.99 (Jamaica, Colombia, Tunisia, Dominican Republic, and Belize), median was 76.00 (Mexico, Georgia, Turkey, Jordan, Macedonia, Azerbaijan, and Ukraine), and mode was 73.00 (The Netherland, Sweden, New Zealand, and Australia). The highest global competitiveness index was 5.76 (Switzerland) and the lowest global competitiveness index was 2.84 (Guinea). Ten countries with highest index of global competitiveness were: Switzerland, Singapore, United States, Germany, Netherlands, Japan, Finland, Sweden, United Kingdom, and Norway. Ten countries with lowest index of global competitiveness were: Liberia, Madagascar, Venezuela RB, Haiti, Malawi, Burundi, Sierra Leone, Mauritania, Chad, and Guinea. The average index of global competitiveness in term of statistical mean was 4.27 (Georgia, Jordan, Hungary, Macedonia, Colombia, Rwanda, Mexico), median was 4.22 (Slovak Republic, Georgia, Cyprus, Peru, Jordan) and mode was 4.39 (Turkey, Panama, Philippines, South Africa, Malta). The lowest index of

happiness was in Burundi (29.05) and the highest index of happiness was in Denmark. Ten countries with highest index of happiness were: Denmark, Switzerland, Iceland, Norway, Finland, Canada, Netherlands, New Zealand, Australia and Sweden. Ten countries with lowest index of happiness were: Cambodia, Chad, Uganda, Madagascar, Tanzania, Liberia, Guinea, Rwanda, Benin, and Burundi. Average index of happiness in terms of statistical mean was 55.4 (Paraguay), median was 55.23 (Cyprus, Latvia, Croatia, Romania, Jamaica, and Paraguay), and mode was 58.35 (Poland, Ethiopia, Lithuania, Korea Republic, Peru, Moldova, and Bolivia).

Figure 3 (left panel): presents Scatter Diagram between economic growth and happiness that shows a negative trend. It means that economic growth had negative correlation on happiness. The higher the economic growth of a country will be the higher the index of happiness of the country. Regression coefficient resulted by regression analysis was positive, -0.55. The regression coefficient was not statistically significant as t-calculated (1.86) was smaller than t-table (1.98) n=123, at 95% significant level, and P-value (0.07) were more than 0.05.

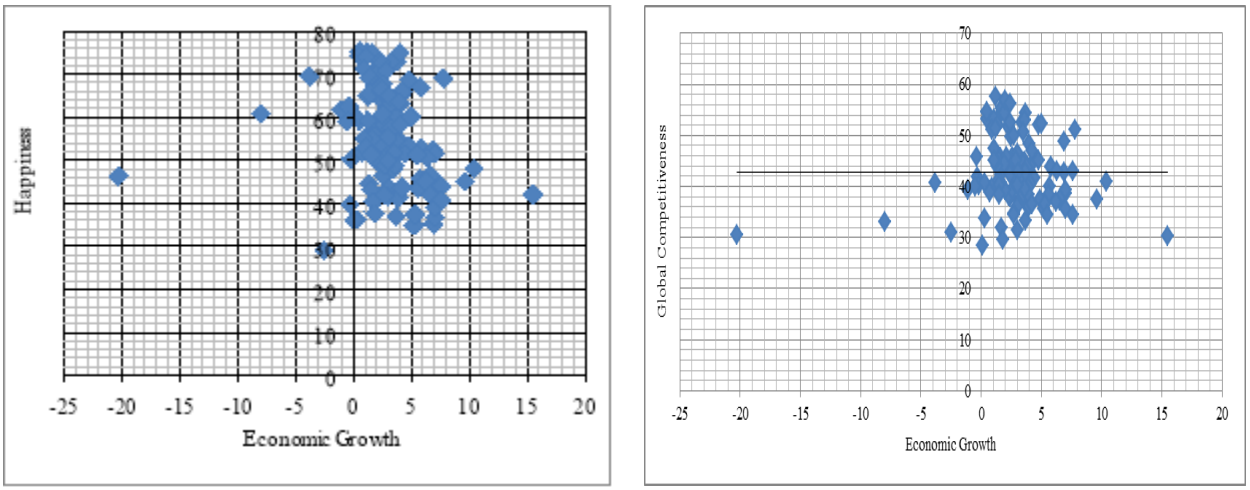

Figure 3: Scatter Diagram between Economic Growth and Happiness (Left Panel) and between Economic Growth and Global Competitiveness (Right Panel)

Figure 3 (right panel): presents Scatter Diagram between economic growth and the global competitiveness that shows a positive trend. It means that human development had positive correlation on global competitiveness. The higher the growth of GDP of a country, the higher the index of global competitiveness was. Regression coefficient resulted by regression analysis was positive, 0.0006. The regression coefficient was not statistically significant as t-calculated (0.004) was far smaller than t-table (1.98) n=123, at 95% significant level, and P-value (0.997) were more than 0.05.

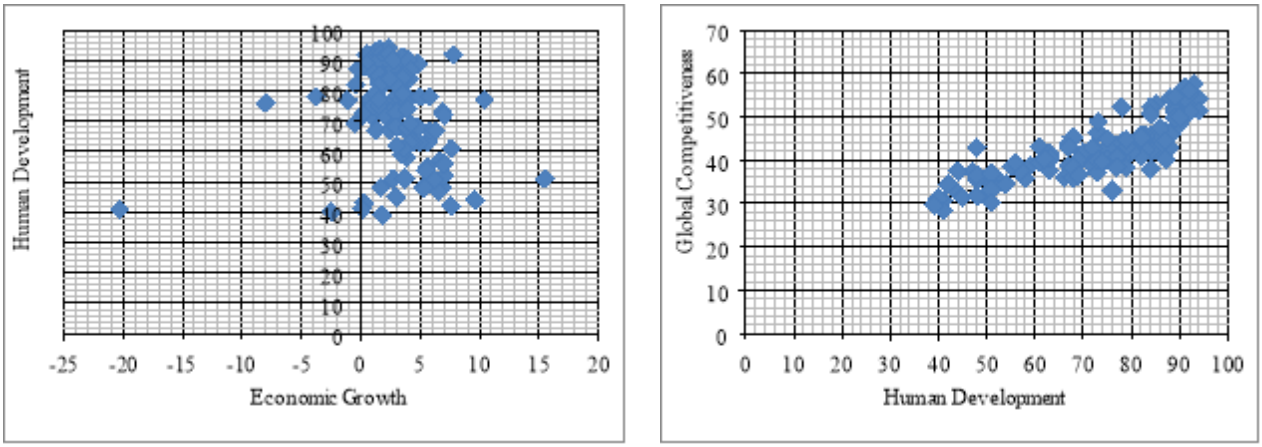

Figure 4: Scatter Diagram between Economic Growth and Human Development (Left Panel) and between Human Development and Global Competitiveness (Right Panel)

Figure 4 (left panel): presents Scatter Diagram between economic growth and human development that shows a positive trend. It means that economic growth had positive correlation on human development. The higher the growth of GDP of a country, the higher the index of human development was. Regression coefficient resulted by regression analysis was positive (-0.54), but it was not statistically significant as t-calculated (1.38) was far smaller than t-table (1.98) n=123, at 95% significant level, and P-value (0.17) were more than 0.05.

Figure 4 (right panel): presents Scatter Diagram between human development and global competitiveness that shows a positive trend. It means that human development had positive correlation on global competitiveness. The higher the human development index of a country, the higher the index of global competitiveness index was. Regression coefficient resulted by regression analysis was positive, 0.37 and was statistically significant as t-calculated (16.11) was far higher than t-table (1.98) n=123, at 95% significant level, and P-value (0.00) were more than 0.05.

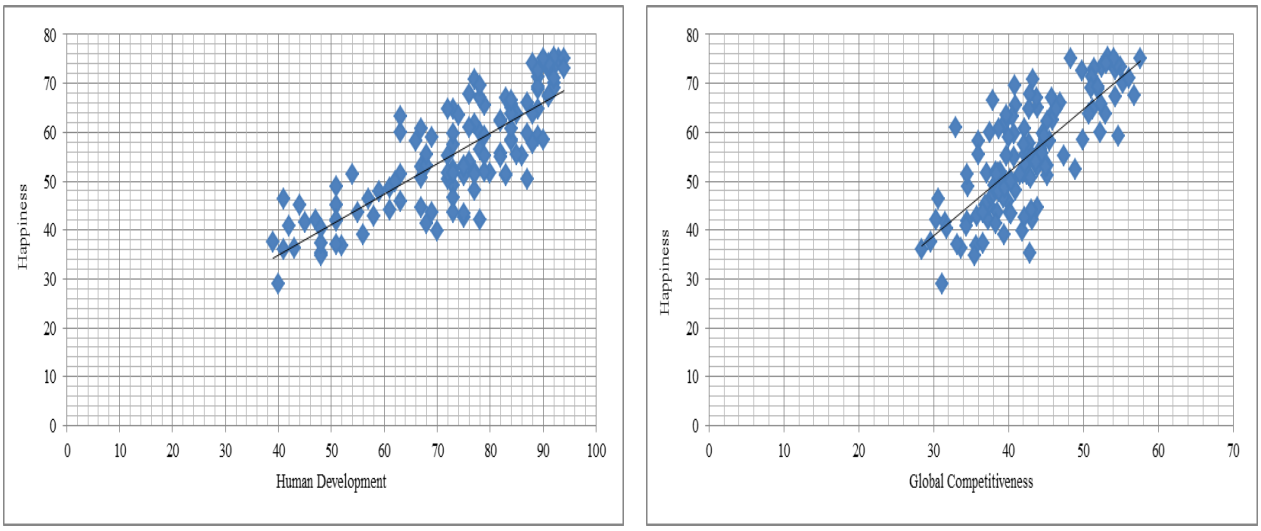

Figure 5: Scatter Diagram between Human Development and Happiness (Left Panel) and between Global Competitiveness and Happiness (Right Panel)

Figure 5 (left panel): presents Scatter Diagram between human development and happiness that shows a positive trend. It means that human development had positive correlation on happiness. The higher the human development index of a country, the higher the index of happiness was. Regression coefficient resulted by regression analysis was positive, 0.37. The regression coefficient was statistically significant as t-calculated (16.11) was far higher than t-table (1.98) n=123, at 95% significant level, and P-value (0.00) were more than 0.05.

Figure 5 (right panel): presents Scatter Diagram between global competitiveness and happiness that shows a positive trend. It means that global competitiveness had positive correlation on happiness. The higher the global competitiveness index of a country, the higher the index of happiness was. Regression coefficient resulted by regression analysis was positive (1.29). The regression coefficient was statistically significant as t-calculated (13.00) was far higher than t-table (1.98) n=123, at 95% significant level, and P-value (0.00) were more than 0.05.

Figure 6: presents the results of regression analysis for correlation analysis among variables being studied. The coefficient correlation between economic growth and the happiness was negative but very weak as r_{14}= -0.1667. The coefficient correlation between economic growth and global competitiveness was positive, but very weak as r_{13} = 0.0003. Again, the coefficient correlation between economic growth and human development was also negative, but very weak as r_{12} = -0.1244. Coefficient correlation between human development and global competitiveness was positive and very strong as r_{23} = 0.8256. Meanwhile the coefficient correlation between human development and happiness was also positive and very strong as r_{24} = 0.8164. Finally, the coefficient correlation between global competitiveness and happiness was positive and strong as r_{34} = 0.7635.

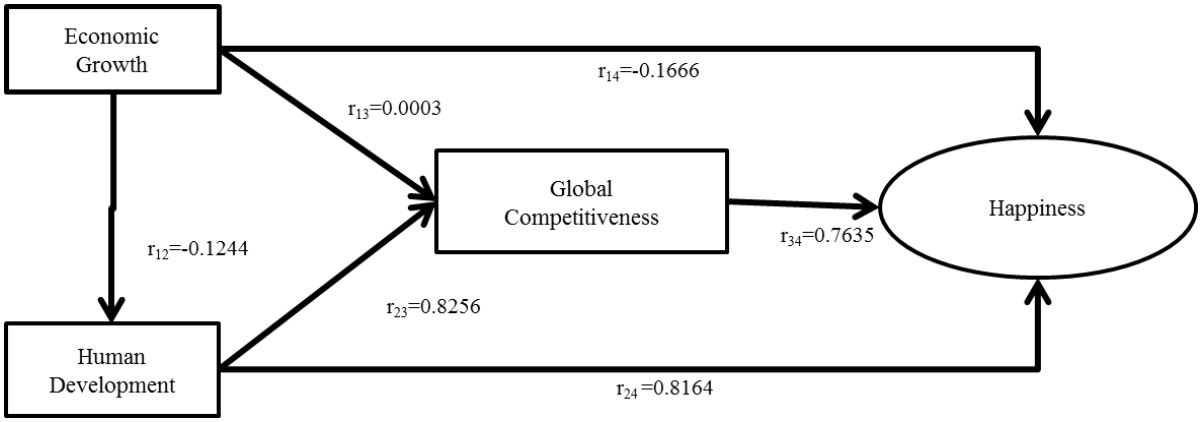

Figure 6: Correlation Coefficients among Economic Growth, Human Development, Global Competitiveness and Happiness

Solving the path equation proposed in Method of Analysis above, path coefficients have been calculated. In Path-1: the direct impact of economic growth on happiness was negative and significant as P_{41}=-0.11> [0.05]. It means that an increase in economic growth by 1 per cent would decrease the index of happiness by 0.11 per cent. In Path-2: the direct impact of economic growth on global competitiveness was positive and significant as P_{31}= 0.94 > 0.05. It means that an increase of economic growth by 1 per cent would increase the index of global competitiveness by 0.94 per cent. In Path-3: the direct impact of economic growth on human development was negative and significant as P_{21}= -0.12 > [0.05]. It means that an increase of economic growth by 1 per cent would decrease the index of human development by 0.12 per cent. In Path-4: the direct impact of human development on global competitiveness was positive and significant as P_{32}= 0.94 > 0.05. It means that an increase of human development index by 1 per cent would increase the index of global competitiveness by 0.94 per cent. In Path-5: the direct impact of human development on happiness was positive and significant as P_{42}=0.43 > 0.05. It means that an increase of human development index by 1 per cent would increase the index of happiness by 0.43 per cent. Finally, in Path-6: the direct impact of global competitiveness on happiness was positive and significant as P_{43} = 0.42 > 0.05. An increase of global competitiveness index by 1 per cent would increase the index of happiness by 0.42 per cent.

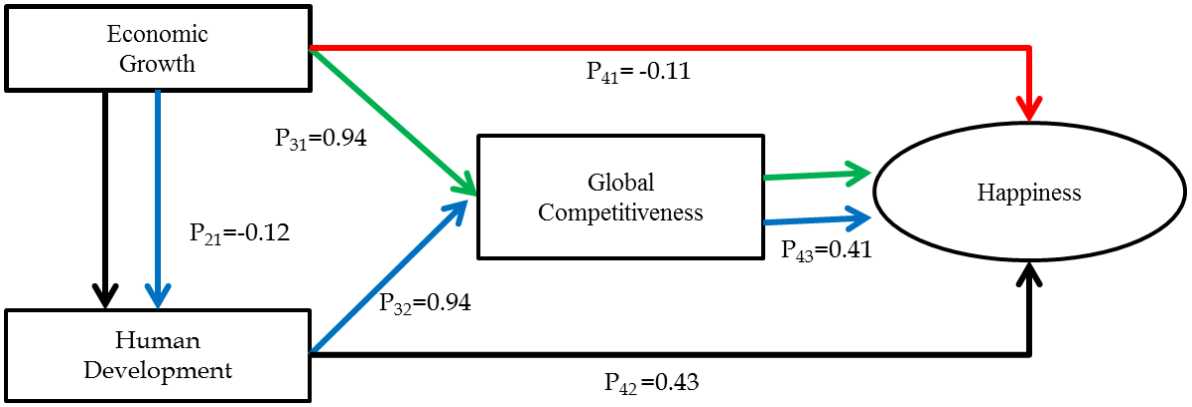

Figure 7: Path and Path Coefficients for Analyzing Direct and Indirect Impact of Economic Growth on Happiness

Figure 7: provides path model for analyzing direct and indirect impact of human development on happiness. In Path-1 (red-path), direct impact of human development on happiness was positive and significant, with P_{31}= 0.61. The higher the increase of the index of human development will increase the index of happiness. One per cent increase in economic growth would increase 0.61 per cent in happiness index. In Path-7 (green-path), indirect impact of economic growth on happiness, through global competitiveness was positive and significant P_{43}x P_{31}=0.41 x 0.94 = 0.38 > 0.05. It means that indirectly through global competitiveness, an increase of 1 per cent of economic growth would increase the index of happiness by 0.38 per cent. In Path-8 (the blue-path), indirect impact of economic growth on happiness through global competitiveness and human development was negative but statistically not

significant as $P_{43}xP_{32}xP_{21}$= 0.41 x 0.94 x -0.12= -0.05 <= 0.05. An increase of economic growth by 1 per cent would, indirectly decrease the index of happiness by 0.05 per cent. Finally, in Path-9 (black-path), the indirect impact of economic on happiness through human development was negative and statistically not significant as $P_{42}xP_{21}$ = 0.43 x -0.12 = -0.05 < = 0.05.

Conclusions

Two conclusions could be drawn, firstly, in Path-1 (red-path); economic growth had negative and significant direct impact on happiness. Secondly, indirectly, the impacts of economic growth on happiness varied depend on the path. On Path-7 (green path), the indirect impact of economic growth on happiness through global competitiveness was positive and statistically significant. On Path-8 (blue-path), the indirect impact of economic growth on happiness through global competitiveness and human development was negative but statistically not significant. Path-9 (black-path), the indirect impact of economic growth on happiness through human development was negative and statistically not significant. The implication of this finding was that economic growth no longer important indicator of economic development. Human development and global competitiveness were two important development indicators that improve and maintenance the level of happiness.

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