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Does the Lack of Innovation Impact the Competitiveness of Businesses and Poverty Levels of African Countries?

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Abstract: Tom Peters concluded "innovate or die", implying that both businesses and countries in this rapid changing global environment will not survive in the long term without innovation (Kelly, 2005:6-7). In this paper, the impact of innovation on global competitiveness as well as on economic prosperity and growth have been measured. African countries, in contrast to countries in the rest of the world, have been compared using predominantly the Global Competitiveness Index (GCI) to measure competitiveness, innovation and economic wealth. It was established that there is a very significant relationship between both innovation and competitiveness as well as innovation and economic prosperity as measured by the GDP/Cap. African countries have a huge innovation problem which is significantly impacting on their competitiveness and ability to alleviate both the unemployment and poverty problem of Africa.

Key Words: Innovation, Global Competitiveness Index, GDP/Cap.

1. INTRODUCTION

Innovation impacts the competitiveness of nations and businesses, both big and small (Madrid-Guijarro, Gracia and Van Auken, 2009:465). According to Crespo and Crespo (2016), sustained economic growth is directly associated with the government's capacity to acquire, absorb, disseminate and apply new technologies and thus, innovate. Mounting competition amongst both businesses and countries add to the pressure on governments to stimulate innovation and manage the innovation process (Ismail, Zaidi, Omar, Soehod, Senin and Akhtar, 2013:145). Spinelli and Adams (2016:10) acknowledge that new industries have transformed the America economy over the last 30 years. No country has ever reduce poverty without creating sustained economic growth and innovation plays a critical role in generating productivity and accelerated growth. Bessant and Tidd (2015:5) state that more than 16 000 businesses in the USA have their own research labs and 16.8% of all businesses' sales in Germany were generated from newly introduced

products. Innovation is often linked with higher efficiency, thus impacting on the competitiveness of an industry.

In contrast, Martin and Namusonge (2014:102) conclude that most African countries are losing market share in many industries because of a lack of innovation. Macro-economic conditions and the structure of the economy in developing countries, such as Africa, often impact innovation as measured by patents and sales of innovative products (Bessant and Tidd, 2015:75). If African governments are serious about economic prosperity, reducing unemployment and fast-tracking growth, it is essential to create an entrepreneurial friendly and innovative environment for high growth businesses to prosper (Ernst and Young, 2013: 3).

2. PROBLEM INVESTIGATED

Over the past two decades numerous leading economies have relied less on the traditional labour and capital intensive means of wealth creation, rather focusing on the formation of new knowledge, advancement of new technology and innovation (Blankley and Booysens, 2010). In these countries, the result of this endeavour has yielded greater economic growth, higher wages and new employment opportunities. Considering the extent of Africa's socio-economic issues, it is worthwhile for African countries to attempt building industries that will establish a greater knowledge economy. Currently, African countries largely remains extraction based economies, relying on labour and capital for wealth creation. Greater investment in Research and Development (R&D) could yield numerous results, such as faster technological change, greater GDP growth, increased labour productivity and new employment opportunities (Blankley and Booysens, 2010; and Schwab and Sala-i-Martin, 2016).

Africa's readiness to compete in the knowledge economy is to some extent limited by the role of education and inherently the quality of research institutions. Income inequality has been declining in the industrialized world over the last 30 years, but in many developing countries, such as Africa, not with quality of education one of the main reasons (Global Risks Report, 2017:11). According to Schwab and Sala-i-Martin (2016), greater innovation is predicated on increased investment in education and Research and Development, especially by the private sector and the presence of high-quality scientific research institutions.

Africa has the capacity to innovate; however, the ability to innovate is hampered by an over-reliance on primary industries and a lack of an entrepreneurial and innovative culture (Schwab and Sala-i-Martin, 2016). Crespo and Crespo (2016:5270) conclude that innovation is complex and what is needed in a low-income country to promote innovation performance could be very different from high-income countries. The questions can be asked to what extent African countries and businesses are part of the innovation revolution and the extent to which innovation impacts employment, economic growth and prosperity as well as the competitiveness of businesses and countries on the African continent.

3. LITERATURE REVIEW

Hough, Thompson, Strickland and Gamble (2011) describe a market as "*a competitive battlefield where there is no end to the jockeying for buyer patronage*". They continue by explaining that the competitive environment continuously evolves due to businesses moving and counter-moving, acting and reacting and that subsequently the environment becomes more unpredictable and volatile, causing some businesses to thrive

and others to fail. Bessant and Tidd (2015) view the external business environment as both complex (competitors, customers, regulators etc.) and fast changing (technical, political, social and economic change). If businesses fail to recognize the need to innovate and respond to competitive forces, their competitive prosperity could be in danger due to the complexity and pace of change in modern markets.

O'Sullivan and Dooley (2008) define innovation as "the process of making changes, large or small, radical or incremental, to products, processes and services." Innovation can also be seen as an organisational culture of ongoing renewal of processes, strategies and business models, driven by changes in the micro and macro environments, with the objective to introduce new value-added products or services for competitive differentiation and success. Innovation, which is thus sometimes seen as "the lifeblood of a business's survival and growth", is an enabler for businesses to remain competitive (Baregheh, Rowley and Sambrook, 2009:1323). Ngek and Smit (2013:3046) recognise innovation as a key driver for high growth businesses. However, businesses are more inclined to focus on order and routine and often do not have an innovation friendly environment. The importance for businesses to innovative is intensified by increased global competition, decreased product life cycles, increased technological capabilities, and rapidly changing consumer demands.

For example, Spain experiences, relative to Europe, a lag of productivity and high unemployment (and similar to many African countries). The Bank of Spain blames too little investment in human resource development, innovation and entrepreneurship as well as technology as primary reasons for their problems (Madrid-Guijarro, *et al.*, 2009:466). Innovation is linked to superior financial performance and the ability to survive through sustainable competitive advantage (Bindroo, Mariadoss and Pillai, 2012:17). As marketplaces become more dynamic, it brings about change in customer demands and therefore greater opportunities offered by technology, changing markets, and structures; thus an increasing drive to innovate for survival and growth (Baregheh *et al.*, 2009:1323).

Cuhaci (2015:3) highlighted that SMEs and entrepreneurs are critical players in innovation, economic growth and job creation across the G20 countries. SMEs employ more than 66% of the work force, and provide more than 80% of new employment in the G20 countries. The author concludes that a culture of entrepreneurship is pivotal in generating impactful innovation. Smaller start-ups often disrupt their industries significantly. The EY G20 Entrepreneurship Barometer (Ernst and Young, 2013:3-6) ranks the G20 countries according to five pillars fostering entrepreneurship (access to funding, education and training, coordinated support, tax and regulation and entrepreneurial support). Their research highlight that governments in rapid-growing economies are making the fasted improvements to their entrepreneurial environments, are able to learn from the successes and failures of entrepreneurial policies and recognize the pivotal role played by entrepreneurs to innovate and foster growth.

Spinelli and Adams (2016:11) also recognize the importance of entrepreneurship and claim that since World War II, small entrepreneurial businesses have been responsible for 50% of all innovation and 95% of all radical innovation. Digital innovation has opened up a new international platform for small businesses. Accenture (2015:2) found a significant correlation between innovation and growth, stating that specifically digital innovation are removing traditional barriers to expansion and are enabling young entrepreneurs and SMEs to enter new and bigger markets. Digital technologies are removing traditional barriers to expansion and are enabling young entrepreneurs and SMEs to enter new and bigger markets. Governments need to actively nurture a more vibrant innovative system. The greater use of the digital platform further enhances

entrepreneurship and innovation. A survey amongst 2 000 large businesses (97%) and SME (82%) indicated how critical they regard digital innovation as key to their future success.

According to Ball, Geringer, Minor and Mcnett (2012), the volume of international trade of goods and services have increased exponentially over the last 20 years; in 1990 the current dollar measurement was approximately $4 trillion and in 2010 it was estimated at approximately $18.9 trillion, an increase of almost five times. Considering the value and importance of innovation, the question can be asked whether African countries are part of the exponential growth in international trade, driven by innovation and technology, and to what extent does it impact poverty, unemployment, competitiveness as well as economic growth and prosperity on the African continent?

4. RESEARCH OBJECTIVES

The primary research objective addressed in this paper is to determine whether innovation impacts the competitiveness (as measured by the Global Competitiveness Index - GCI) and wealth creation (as measured by the GDP per Capita) in countries, comparing specifically Africa with the rest of the World.

To address the primary research objective, the following secondary research questions have been formulated:

- Is there a significant positive relationship between the level of innovation and competitiveness of a country?
- Is there a significant positive relationship between the level of competitiveness and unemployment, economic prosperity and growth in a country?
- Are there significant differences between African countries and the rest of the world regarding unemployment, economic prosperity and growth?
- Are there significant differences between African countries and the rest of the world regarding competitiveness and innovativeness using different measures of innovativeness?

5. METHODOLOGY

5.1. Statistical Analysis

In this paper, the statistical analyses, such as cross tabulation, chi-square, one-way analysis of variance (Independent T-test), regression analysis, and Pearson correlation coefficient were done using excel and the Statistical Package of Sciences (SPSS) statistical software. Comparing means (Independent T-test) were used to measure the mean, standard deviation, skewness and significance of the differences between two groups of countries, namely African versus countries in the rest of the world, regarding variables such as the Global Competitiveness Index, various measures of Innovation, GDP/Cap, Unemployment and economic growth. Regression, Pearson correlation, standardized beta and adjusted R squared were used to determine the direction and the significance of the relationship between Innovation and Competitiveness, Competitiveness and GDP/Cap, as well as between various measures of Innovation.

Testing for the symmetry of the standard deviation (normal distribution), the following measure of Skewness (Hair, Black, Baben, Anderson and Tatham, 2006:80-81) was used (Z value exceeding ±2.58 indicates non-normal distribution at a significance level of 0.01):

$$z_{skewness} = \frac{skewness}{\sqrt{\frac{6}{N}}}$$

Where n is the number of countries in the sample. The level of Skewness for population, GDP and GDP/Cap were too high, leading to the use of natural logarithms (NLog) to solve the issue of Skewness. In some other cases, the median rather than the mean (average) were used.

5.2. Data

The 2016 Global Competitiveness Index (GCI) was used to measure the level of competitiveness of 140 countries, using twelve pillars which were combined into three categories or sub-indexes, namely basic requirements, efficiency enhancers plus innovation and sophistication factors (Schwab and Sala-i-Martin, 2016:6). For the purposes of this paper, only the Global Competiveness Index (Ranking) and Pillar 12 (Innovation) as measures to compare countries on competitiveness and innovation were used. The 2015 Global Innovation Index was also used as an additional measure of innovation (Dutta, Lanvin and Wunsch-Vincent, 2015). The Global Innovation Index (GII) covers 141 countries and uses five Input Measures (Institutions, Human Capital and Research, Infrastructure, Market Sophistication and Business Sophistication) as well as two Output Measures (Knowledge and Technology Outputs and Creative outputs) to measure each country's GII. The second measure, Innovation Efficiency Ranking (IER) is simply the Output dividend by the Input Measures. The IER thus intends to show how much innovation output a given country is getting for its inputs (Dutta, Lanvin and Wunsch-Vincent, 2015:9-10). These 141 countries represents 95.1% of the world's population and 98.6% of the world's GDP.

The World Wide Unemployment Data was used to compare the levels of, and change in, unemployment for African countries versus the rest of the world (ILO, 2016), and the GDP, population, GDP/Cap for the different countries were obtain from the data bases of the World Bank (2016). The Global Competitiveness Index compares 140 countries and the Global Innovation Index 141 countries. Most of the countries in these two Indexes were the same, except for nine countries. In the analyses where these two indexes were compared, the sample was only 131 countries.

6. RESULTS AND DISCUSSION

In the Global Competitiveness Index, Schwab and Sala-i-Martin (2016) classify countries into factor-, efficiency- and innovation-driven countries, with factor-driven countries typically being poor and focusing on basic commodities. Table 1 compares Africans to the countries in the rest of the world according to these categories.

Table 1
Type of Economies – African countries versus the Rest of the World

World Economies	*Africa*	*Rest*	*Total*	*Africa/Tot.*
Factor-Driven	27	23	50	**54.0%**
Efficiency-Driven	9	43	52	**17.3%**
Innovation-Driven	0	38	38	**0.0%**
Total	36	104	140	25.7%
Percentage	**25.7%**	**74.3%**	**100.0%**	

Table 1 indicates that of the 36 African countries (25.7% of GCI total) included in the Global Competitive Index, 75% are resource-driven and 25% are efficiency-driven with not a single African country amongst the innovation-driven economies in the world. This is a clear indication that African countries are poor and, to a very limited extent, sharing in the innovation boom the world is experiencing. Table 2 compares Gross Domestic Product (GDP), population size and level, as well as the change in unemployment of African countries versus the rest of the world.

Table 2
GDP, Population and Unemployment of Africa versus Rest of the World

		Average /	*Mean*	
PERFORMANCE	*Africa*	*Rest*	*Total*	*Sig.*
GDP 2015 NL ($ bil.)	16 608.6	99 680.4	62 119.9	0.000***
GDP Growth 2010-15	21.6%	15.2%	16.9%	0.104
Population 2015 (NL)	11.4	10.1	10.5	0.710
Pop. Growth 2010-15	12.5%	5.4%	7.2%	0.000***
Unemployment 2016	10.5%	7.8%	8.5%	0.019**
Unemployment (10-16)	-0.1%	0.7%	0.5%	0.076*

***Significant at 1%; **Significant at 5%; *Significant at 10%

Given the Skewness of the GDP and population of countries, it was necessary to use natural logs in both cases to smooth the data. From Table 2 it is clear that, although the average population in African countries are very similar to the rest of the world, the countries in the rest of the world, on average, have a GDP more than six times of the African countries. What is, however, positive (although not significant), is that the African countries show a better growth in GDP since 2010. The population growth of the African countries from 2010 to 2016 is also significantly higher (almost 2.5 times more) than the rest of the world, which is a serious concern. In addition, we see that the level of unemployment at 10.5% is significantly higher in Africa than in the rest of the world. The rest of the world has also done significantly better in lowering the levels of unemployment by 0.5% since 2010 while Africa's level of unemployment increased. Table 3 measures the GDP/Cap and the growth of the GDP/Cap since 2010. This becomes the true measure of a country's ability to create and increase the wealth of its people.

Table 3
GDP per Capital – African countries versus the Rest of the World

		Average		
GDP PER CAPITA	*Africa*	*Rest*	*Total*	*Sig.*
GDP/Capita 2015 (NL)	1 454	9 867	5 952	0.000***
% Increase in GDP/Cap (10-15)	7.6%	9.0%	8.6%	0.734
Increase in GDP/Cap (10-15)	102.63	812.47	471.79	0.912

***Significant at 1%; **Significant at 5%; *Significant at 10%

Table 3 clearly illustrates that people in African countries are more than 6.5 times poorer (sig. <1%) than people in the rest of the world. Although not significant, both the percentage growth and actual increase in GDP/Cap since 2010 until 2015 in African countries at 7.6% and $102 are much lower than in the rest of the world at 9.0% and $812. The growth in GDP in African countries, as highlighted in Table 2, was more than neutralized because of the population growth.

Table 4
Relationship between Innovation and Global Competitive Index and GDP/Cap

Global Competitive Index (GCI) vs Pillar 12 and GDP/Cap vs GCI	*Pearson Correlation*	*Sig.*	*Adjusted R Square*	*Stand. Beta*
GCI (Dependent)				
Pillar 12 (Innovation)	0.843	0.000***	0.849	0.394
Global Innovation Index - GII (Rank)	0.863	0.000***	0.752	0.928
GII – Innovation Efficiency Ranking	0.362	0.016**		0.362
GDP/Cap 2015 (Dependent)				
GCI (Independent)	-0.845	0.000***	0.789	-0.463
Global Innovation Index Rank	-0.867	0.000***		-0.558
Pillar 12: Innovation	-0.696	0.000***	0.481	-0.696

***Significant at 1%; **Significant at 5%; *Significant at 10%

In Table 4 a regression analysis between three measures of Innovation and its impact on both the Global Competitiveness Index (GCI 2015/16) and the GDP/Cap (2015) were done using the 140 countries as reflected in the GCI. In the first part of Table 4, Pillar 12 (Innovation) of the GCI as well as the Global Innovation Index (two different measures of the Innovativeness of countries) were used to determine the impact of Innovation on the Global Competitiveness of a country. The Global Innovation Index (Dutta, Lanvin and Wunsch-Vincent, 2015:9) uses two measures of Innovation, namely the Global Innovation Index (GII) and the Innovation Efficiency Ratio (IER).

Using regression analysis to determine both the direction and significance of the relationship, it was clear that Innovation impacts the global competiveness of countries significantly. The Pearson correlation between the Global Competitive Index and both Pillar 12 (Innovation) and the GII are exceptionally high, with the standardized Beta and Adjusted R Square confirming the significance of the positive relationship with the GCI. Although the IER also impacts the GCI significantly (<5%), both the correlation and the standardized Beta indicate not such a strong relationship as in the case of Pillar 12 and GII. Thus, we can conclude that Innovation impacts the Global Competitiveness of a country significantly.

The second part of Table 4 measures the extent to which a country's global competitiveness and Innovation impacts the GDP per Capita in that country. The intention is to establish whether global competitiveness and level of innovation in a country have an influence on the wealth of that nation as measured by the GDP/Cap. Again, both the Pearson correlation (high, negative) and the standardized beta confirm the significance of the relationship. Wealthier countries are significantly more competitive and innovative than poor countries as measured by the GCI. Thus, a high/bad ranking of a country's competitiveness (GCI) and innovativeness is associated with poor economic performance as measured by using the GDP/Cap (a negative relationship).

We can thus conclude that Innovation impacts the competiveness of countries, and, at the same time, that the competitiveness of countries as measured by the GCI, impacts the economic wealth of that nation significantly as measured by the GDP/Cap. Table 5 addresses the issues of how competitive and innovative African countries are compared to the rest of the world. The scores in Tables 5 and 6 represent the Mean Ranking of African countries versus the rest of the world; the higher the score, the worse the ranking.

Table 5
Global Competitiveness and Innovation: African Countries versus the Rest of the World

GCI - RANKING:	*Africa*	*Rest*	*Sig.*
Global Competitive Index 2015-16	108.4	57.4	0.000***
Innovation (Pillar 12)	93.5	62.5	0.000***
Global Innovation Index – GII (Rank)	105.2	57.2	0.000***
Innovation Efficiency Ratio - IER	80.1	64.9	0.055*

***Significant at 1%; **Significant at 5%; *Significant at 10%

From Table 5 it is clear that African countries are significantly less competitive as the rest of the world as measured by the Global Competitive Index. Also, both measures of Innovation (Pillar 12 and GII) show the extent to which African countries are outperformed by the rest of the world in terms of innovation. Although still significant at a 10% level, the Innovation Efficiency Ratio (IER) indicates that African countries are doing slightly better in turning Inputs into Outputs (the gap between Africa and the Rest is smaller). Table 6 indicates the ranking of African countries versus the rest of the world regarding the drivers of Pillar 12 (Innovation) of the GCI.

Table 6
Ranking of components of Pillar 12 (Innovation) – Africa versus the Rest

Components of Innovation	*Africa*	*Rest*	*Gap*	*Sig*
Capacity for innovation	90.4	63.6	26.8	0.001***
Quality of scientific research institution	95.0	62.0	33.0	0.000***
Business spending on R & D	88.8	64.2	24.6	0.001***
University-industry collaborate in R&D	97.2	61.3	36.9	0.000***
Gov't procure adv. tech. products	77.4	68.1	9.7	0.238
Availability of scientists and engineers	95.3	61.9	33.4	0.000***
PCT patents, applications/million pop.*	100.6	56.5	44.1	0.000***
12th pillar: Innovation	93.5	62.5		0.000***

***Significant at 1%; **Significant at 5%; *Significant at 10%

With the exception of one sub-pillar, all the drivers of innovation rank significantly (sig.<1%) higher (i.e. weaker) than the rest of the world. This clearly highlights what African countries must do to improve their innovativeness. African nations are significantly poorer that the rest of the world, have higher levels of unemployment and their competitiveness is significantly lower. Central to these problems is the lack of innovation in African countries.

7. APPLICATION FOR AFRICAN GOVERNMENTS

Africa's competitiveness, according to Schwab and Sala-i-Martin (2016:24) has been weakening year on year. The primary purpose of this paper was to ascertain the extent to which innovation contributes to the competitiveness of African countries. The Global Competitiveness Index, comparing 140 countries across the globe, was the primary source used in this study. Of the 140 countries included in the GCI, 36 were African countries. Improving the economic wealth and increasing growth to address issues such as poverty, unemployment and unequal distribution of wealth should be central on the agendas of all governments. The problem of Africa is highlighted in Table 1 with 75.0% of sampled African countries being amongst the poorest, while only 21.1% of countries in the rest of the world are factor-driven (poor).

The GDP (2015) of African countries at $16 609 billion are significantly lower than the mean for countries in the rest of the world ($99 680 billion), regardless of the fact that the mean population for the two groups were very similar. Not only is unemployment in Africa at 10.5% significantly higher than that of the rest of the world, it also increased since 2010 while unemployment decreased in the rest of the world. Even more concerning is the significantly higher poverty levels of African countries with an average GDP per Capita of $1 454, almost seven times less than the countries in the rest of the world. Although not significant, the growth in GDP/Cap since 2010 for Africa was worse than the rest of the world. The question to be asked is whether innovation, or the lack thereof, contribute to the competitiveness and poverty of African countries?

Using two measure of Innovation (Global Innovation Index, as well as Pillar 12 of the Global Competitiveness Index) as indicators of a country's relative innovativeness and comparing it to the global competitiveness of Countries (as measured by the GCI), it was established that Innovation impacts Competitiveness amongst countries significantly. At the same time, both the Innovativeness and Competitiveness of a nation have a significantly negative impact on the poverty levels of that country (the worst/higher the ranking of a country on innovation and competitiveness, the lower the GDP/Cap). In both regression analyses, all three measures of significance (Pearson correlation, adjusted R square and standardized Beta) confirm the importance of these relationships (innovation and competitiveness impacting the GDP/Cap of a country).

It is clear that African nations are significantly poorer than countries in the rest of the world and that innovation impacts both the competitiveness and economic wealth of countries. Over-reliance on minerals combined with declining commodity prices are some of the major reasons for this dilemma. According to Schwab and Sala-i-Martin (2016:24), five African countries improved their GCI position with between three to six positions, namely Rwanda, Botswana, Ghana, Tanzania and Sierra Leone. Kenya also improved its innovation ranking according to the GCI. Mauritius (45) has taken over from South Africa (47) as the highest ranked African country regarding competitiveness. Dubba *et al.* (2016:xviii) highlight that certain African low-income countries outperform others because of improvements in the institutional frameworks, a skilled labour force, expanded tertiary education and funding for innovation, to mention a few.

Looking at the drivers or components of Pillar12 (Innovation), the role of universities is quite prominent in solving the innovation problem in Africa. Four of the seven drivers reflect directly on universities' role in driving tertiary education. Thus, the main focus of African governments should be firstly to support universities in a) improving the quality of scientific research, b) promoting university-industrial collaboration,

and c) training more scientists and engineers. In doing so, the capacity to innovate will improve. A more educated workforce is central to the ability to innovate. African businesses could secondly increase their spending on research and development. That could improve the number of patents and patent applications in African countries. If governments do not take the importance of innovation in this rapidly changing global village seriously, African countries will become even poorer, less competitive, and less relevant to the world.

8. CONCLUSION

Governments around the world are often grappling with questions relating to the issue of economic growth to improve the poverty and unemployment levels of their nations. From this research it is clear that innovation, or the lack thereof, significantly impacts the competitiveness of businesses and countries which, in turn, seriously impacts poverty and the high levels of unemployment. Africa needs innovation, not only to increase the wealth of its people, but also to find context-specific solutions to local challenges in areas such as energy, transport and sanitation (Dubba *et al.*, 2016:9). Tom Peters concluded "innovate or die", motivating the statement by stating that regardless of focusing on cost cutting or efficiency, businesses will not survive in the long term without innovation (Kelly, 2005:6-7). Amidst an ever-changing external environment, a sustainable competitive advantages is fleeting without entrepreneurship and innovation (Kuratko, Morris and Covin, 2011: IX).

One of the limitations of this paper is that not all measures of innovation (such as Bloomberg's) were used to compare countries. A more detailed analysis of high and low performing African countries regarding innovation and economic growth could also improve the findings. However, these issues were outside the scope of this paper. In conclusion, innovation and entrepreneurship are central to stimulate and grow emerging economies, such as in Africa. The problems are that a) technology and innovation are not evenly distributed globally, b) many businesses in emerging countries are trapped in dependent relationships as low-cost providers of low-level technologies, and c) have failed to develop or design their own new products or services (Bessant and Tidd, 2015:67-68). If governments are serious about economic prosperity, reducing unemployment and fast-tracking growth, it is essential to create an entrepreneurial friendly and innovative environment for high growth businesses to prosper (Ernst and Young, 2013: 3).

REFERENCE LIST

Accenture. (2015), Harnessing the Power of Entrepreneurs in Open Innovation. *Accenture G20 YEA Young Entrepreneurs' Alliance Summit*. Turkey.

Accenture. (2013), Entrepreneurial Innovation: How to unleash a key source of growth and jobs Ball, D., Geringer, M., Minor, M. & Mcnett, J. 2012. *International business: The challenge of global competition. 13th edition.* United Kingdom: Mcgraw-Hill Higher Education in G20 countries. Accenture G20 YEA Young Entrepreneurs' Alliance Summit. Moskow.

Baregheh, A., Rowley, J. and Sambrook, S. (2009), Towards a Multidisciplinary Definition of Innovation. *Management Decision,* 47(8).

Bessant, J. and Tidd, J. (2015), *Innovation and Entrepreneurship.* John Wiley & Sons Ltd. United Kingdom. Second Edition.

Bindroo, V., Mariadoss, B.J. and Pillai, R.G. (2012), Customer clusters as a source of innovation-based competitive advantage. *Journal of International Marketing*, 20(3): 17-33.

Blankley, W. and Booysens, I. (2010), Science, technology and innovation indicators. South *African Journal of Science*, 106:15-20.

Crespo, N.F. and Crespo, C.F. (2016), Global innovation index: Moving beyond the absolute value of ranking with a fuzzy-set analysis. *Journal of Business Research*, 69: 5265-5271.

Cuhaci, R. (2015), Harnessing the Power of Entrepreneurs in Open Innovation. *G20 Young Entrepreneurs Alliance Sumit*. Accenture. Turkey.

Dutta, S., Lanvin, B. and Wunsch-Vincent, S. (2015), *The Global Innovation Index 2015. Effective Innovation Policies for Development.* Johnson Cornell University, INSEAD, WIPO (World Intellectual Property Organization).

Ernst & Young. (2013), *The power of three. Together, governments, entrepreneurs can spur growth across the G20*. G20 Young Entrepreneurs' Alliance.

Global Risks Report, The. (2017), *World Economic Forum*, 12th Edition.

Hair, J.F., W.C. Black, B.J. Babin, R.E. Anderson and R.N. Tatham. (2006), *Multivariate Data Analysis*. Pearson Prentice Hall, New Jersey, Sixth Edition.

Hough, J., Thompson, A.A., Strickland, A.J. and Gamble, J.E. (2011), *Crafting and executing strategy: Text, readings and cases.* New York: New York: McGraw-Hill Higher Education.

International Labour Organization (ILO). (2016), *World Wide Unemployment Data.* ILOSTAT database. Data retrieved in March 2017. Available from: *http://databank.worldbank. org/data/reports.aspx?source=2&country=ZAF* [Accessed on 10 February 2017].

Ismail, K., Zaidi, W., Omar, W., Soehod, K., Senin, A.A. and S. Akhtar, (2013), Role of Innovation in SMEs Performance: A Case of Malaysian SMEs. *Mathematical Methods in Engineering and Economics.* Accessed 29 March 2017 *http://s3.amazonaws.com/academia. edu.documents/46667608/Role_of_Innovation_in_SMEs_Performance_A20160621-100271i8dzdt.pdf?AWSAccessKeyId=AKIAI.* 145-149.

Kelly, K. (2005), Asia and automation: All you need to know about strategy. *Management Today*. July 2005.

Kuratko, D.F., Morris, M.H. & Covin, J.G. (2011), *Corporate innovation & entrepreneurship: Entrepreneurial development within organizations. 3rd edition.* South-Western Cengage Learning, United States.

Madrid-Guijarro, A., Gracia, D. & Van Auken, H. (2009), Barriers to Innovation among Spanish Manufacturing SMEs, *Journal of Business Management*, 47(4). 465-488.

Martin, M.S. and Namusonge, M.J. (2014), Influence of innovation on SMEs growth – a case of garment manufacturing industries in Nakuru County. International Journal for Innovation Education and Research, 2(06), 102-121.

O'Sullivan, D. and Dooley, L. (2008), *Defining Innovation.* Sage Publications.

PWC. (2017), Redefining business success in a changing world. *19th Annual Global CEO Survey*.

Ngek, N.B. and Smit, A.v.A. (2013), Will promoting more typical SME start-ups increase job creation in South Africa. *African Journal of Business Management*, 7(31): 3043-3051.

Schwab, K. and Sala-i-Martin, X. (2016), The Global Competitiveness Report. *World Economic Forum.*

Spinelli, S and Adams, R.J. (2016), *New Venture Creation: Entrepreneurship for the 21st Century*. McGraw-Hill Education. New York.

World Bank. (2016*), Data Bank: World Development Indicators.* Available from: *http://databank.worldbank.org/data/reports.aspx?source=2&country=ZAF* [Accessed on 10 February 2017].