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Research Application Summary

The influence of entrepreneurship capacity on innovation efficiency

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Abstract

The purpose of this paper is to examine the relationship between entrepreneurship capacity and innovation efficiency in all countries captured consistently in the Global Entrepreneurship Monitor and Global Innovation Index between the year 2010 and 2014 with the view of adopting best practice in Africa. The work is anchored on the innovation diffusion theory. Longitudinal design was used and secondary data provided a trend analysis of 29 countries across the world with the aim of benchmarking. Weighted averages, bivariate correlation and ordinal regression techniques were used to analyse the data. The study found that there is a positive significant influence of entrepreneurial capacity on innovation efficiency. The study recommends establishment of appropriate entrepreneurship education and its integration in the education system in Africa. There should also be collaboration between governments, researchers, policy makers and industry players. Further studies should be geared towards enablers of innovation commercialization.

Key words; Commercialization, creativity and efficacy, entrepreneurship capacity, innovation,

Résumé

L'objectif de cet article est d'examiner la relation entre la capacité d'entreprise et l'efficacité de l'innovation dans tous les pays répertoriés par Global Entrepreneurship Monitor and Global Innovation Index entre l'année 2010 et 2014 en vue d'adopter les meilleures pratiques en Afrique. Le travail est ancré sur la théorie de la diffusion de l'innovation. Une approche longitudinale a été utilisée et des données secondaires ont fourni une analyse des tendances de 29 pays à travers le monde dans le but d'une évaluation comparative. Des moyennes pondérées, une corrélation bivariée et des techniques de régression ordinale ont été utilisées pour analyser les données. L'étude a montré que la capacité d'entreprise a une influence positive significative sur l'efficacité de l'innovation. L'étude recommande la mise en place d'une éducation appropriée à l'entreprenariat et son intégration dans le système éducatif en Afrique. Il faudra également une collaboration entre les gouvernements, les chercheurs, les décideurs politiques et les acteurs de l'industrie. D'autres études doivent être orientées vers les facilitateurs de la commercialisation de l'innovation.

Mots clés ; Commercialisation, créativité et efficacité, capacité d'entreprendre, innovation

Introduction

Innovation and entrepreneurship play an important role in the social economic development of a country. Entrepreneurship activities support innovation performance by recognizing existing opportunities, assembling the necessary resources, taking risks and establishing enterprises that enhance commercialization of innovation. This study is aimed at examining the influence of entrepreneurship capacity on innovation efficiency with a view of demonstrating the relationship therein. The paper is anchored on Roger's (1995) innovation diffusion theory. The theory stipulates that innovation that is geared towards addressing the needs of the society are embraced faster than complicated ones that seems alien to a community. The theory led to the development of innovation decision process model. The model examines the prior conditions, knowledge levels, perceived characteristics of innovation, adoption or rejection, implementation and confirmation. The relevancy of the theory in this paper is that its model looks at the process of commercialization of innovation which depends on entrepreneurial efficacy which can be enhanced by strengthening entrepreneurial capacity which improves the rate of innovation adoption and thus increasing innovation efficiency.

Innovation efficiency. Dominant economies in the world like the United States of America, Japan and Germany have been propelled by their innovative capacity to their current status. China, for example, is in the league of the fastest growing economies in the world propelled by its proactive innovation (Samuelson, 2010). The innovation efficiency of the country has provided important lessons to both developed and developing countries. Innovation has been defined as a process of creating a new product, new enterprise, or enhancement of existing product, new process and new enterprise (Gerguri, 2011).

The prosperity of nations in the contemporary times is driven by knowledge economy which is manifested through innovation. There has been a paradigm shift from past ways of evaluating the success of product efficiency from 1960 to 1970 and total quality management from 1980 to 1990. These have been replaced with focus on knowledge economy that thrives on innovation performance and efficiency. However, African countries are still struggling with poverty due to low levels of entrepreneurship. The ratio of entrepreneurs to workers in Africa is 1 to 52 while in most developed countries is 1 to 10 (Acs, 2009). This has made many African countries be net importers of technology that disadvantage them in international trade and thus aggravating their predicaments.

Innovation efficiency parameters in this study are the ratio of innovation input and output. The ratios have been adopted from the Global Innovation Index (GII). Innovation inputs parameters comprises the role of research and development organisations, the education system, the supporting environment in the context of creativity and the prevailing market conditions. Innovation output parameters, on the other hand, are knowledge, technology and creativity.

Entrepreneurship capacity. Entrepreneurship in Africa can accelerate innovation, bring about value creation, increase productive activities and create the elusive employment opportunities which lead to economic growth and sustainable development. Entrepreneurs utilize the available scours resources to create and seize up opportunities that add value in peoples' life. Entrepreneurship has been defined as a tool for innovators to commercialize their innovations (Donovan, 2013). Entrepreneurship capacity can be gauged in terms of Entrepreneurship Self-Efficacy (ESE). The key drivers that can provide the required resilience, optimism and dynamism are tolerance to ambiguity, risk taking, proactiveness,

opportunity identification and innovation which constitutes an ESE of an entrepreneur. However, the antecedents of ESE still perturb entrepreneurship researchers (Urassa, 2015).
The study adopted the Global Entrepreneurship Monitor (GEM) index to demonstrate entrepreneurship capacity. The index focuses on social cultural and political factors as the inputs that feed on the general national framework of a country. The general national framework conditions lead to improvement of entrepreneurship profile and establishment of firms. Entrepreneurship profile involves improvement of entrepreneurship attitude, activity and aspirations. These result in a social economic development which includes job creation, innovation and social value (Slavica, 2015). The study therefore considered entrepreneurship activities, the perception of opportunity, social cultural and political factors as the antecedents of entrepreneurial capacity as depicted by GEM.

The study objective and hypothesis. The paper examined the relationship between entrepreneurship capacity and innovation efficiency in all countries captured consistently in GEM and GII between the year 2010 and 2014 with the view of adopting best practice in Africa. The study hypothesized that Ho: Entrepreneurship capacity has no significant influence on innovation efficiency of a country and H1: Entrepreneurship capacity has an important impact on innovation efficiency of a country.

The theoretical underpinning in the study. Mark Casson's (1945), economic theory attempted to address the relationship between entrepreneurship and innovation. The theory posits that entrepreneurship is a result of conducive economic environment and argues that demand for enterprise arises from the need for change. Cassons defines an entrepreneur as one who specializes in taking judgmental decisions about the scarce resources and coordinate them, motivated by self-interest and creativity. The theory also addresses risks, uncertainties and break even points. However, the theory is of the view that the core capabilities of entrepreneur are difficult or impossible to learn. Innovation is one of the innate competences and the notion of limited cognitive ability in Mark Casson's' theory can be investigated by establishing whether there is a relationship between entrepreneurship capacity and innovation efficiency.

The conceptual framework. The elements of entrepreneurship capacity are depicted as the independent variable which includes; entrepreneurship activities, perception of opportunity, social cultural and political factor. Innovation efficiency, on the other hand, is the dependent variable whose antecedents are innovation output index and innovation input index. This is illustrated in the conceptual framework in Figure 1. The conceptual model shows how entrepreneurship capacity is related to innovation efficiency.

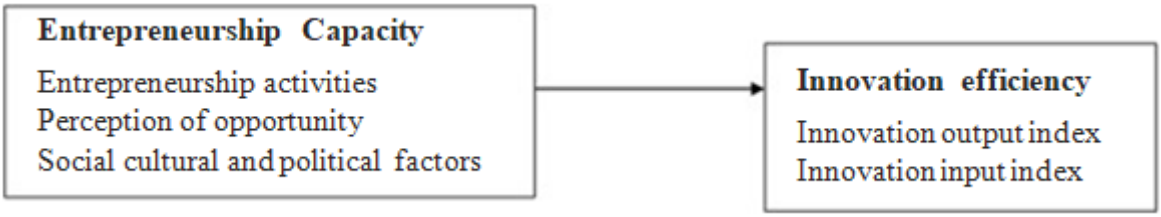

Figure 1. The conceptual framework

Methodology

Longitudinal design was used to examine the relationship between the study variables. Quantitative secondary data were used to conduct a trend analysis of entrepreneurship capacity for five years from GEM index and for innovation efficiency from GII for all the 29 countries across the world which had

consistently been included in both indexes between 2010 and 2014. These countries included South Africa, Belgium, Bosnia, Brazil, Chile, China, Colombia, Croatia, Finland, France, Greece, Hungary, Ireland, Japan, Malaysia, Mexico, Netherlands, Norway, Peru, Portugal, Romania, Russia, Slovenia, Spain, Sweden, Switzerland, Trinidad and Tobago, United States of America and United Kingdom.

The GEM index is constituted through a survey based on primary data collected on attributes that either promotes or hinder entrepreneurial activities. The GEM survey covers over one hundred countries across the world. Data are collected using standardized tools which can be used to design evidence-based policy interventions. On the other hand, GII measures the innovation index of different countries. Innovation efficiency was obtained by establishing the ratio of innovation output and input. Weighted averages, bivariate correlation and ordinal regression techniques were used to analyse data in order to find the association between entrepreneurship capacity and innovation efficiency.

Findings and discussion

Entrepreneurial capacity was obtained by determining the average score for the five years under review. The same was done for innovation efficiency for the same period. A correlation between the two variables was then conducted. This was done at 5% level of significance shown in Table 1.

Table 1. Correlation between Entrepreneurial capacity and innovation efficiency

Model	R	R Square	Adjusted R square	Std. error of the estimate
1	. 367a	.135	.103	. 08606

The value of R square was positive and hence a positive relationship between the two variables was confirmed. The two variables were then regressed to show the relationship between entrepreneurial capacity and innovation efficiency. This was done at 5% level of significance shown in Table 2.

Table 2. Regression between entrepreneurial capacity and innovation efficiency

Model -	2 Log Likelihood	Chi-square	df	Sig.
Intercept only	191.144			
Final	186.159	4.985	1	.026

The value of P was 0.026 which is less than 0.05 hence the rejection of the null hypothesis and acceptance of the alternative hypothesis. This means that there is a significant positive influence of entrepreneurial capacity on innovation efficiency.The model deviance and test the goodness of fit of the regression model was obtained using the Pearson deviance as shown in Table 3.

The p-value at χ^2_{HL} = 757.579 , is 0.217 which is greater than 0.05 and at χ^2_{HL} = 184.773

the p- value is 1 which is less than 1.96 hence the model is good.

Table 3. Test of goodness of fit of the model

	Chi-Square	df	Sig.
Pearson	757.579	728	217
Deviance	184.773	728	1.000

Conclusion and recommendations

It was concluded that entrepreneurial capacity significantly influences innovation efficiency positively. Capacity building of potential and practicing entrepreneurs is therefore paramount in promoting innovation efficiency. The study recommends the establishment of suitable entrepreneurship education programs in Africa to inculcate and enhance their entrepreneurial capacity and promote lifelong learning. Experiential learning should be encouraged as it develops competences to successfully engage into entrepreneurship which enhances commercialization of innovation. There should also be an integration of entrepreneurship education in various study disciplines in institutions of higher learning in Africa to enhance the entrepreneurial capacity of graduate so that they can be propelled into innovation prowess. Collaboration between research and development agencies, policy makers, governments and industry players should also be encouraged to develop seamless and supportive infrastructures that facilitate innovation efficiency in Africa. Further studies on how to promote commercialization of innovation should be carried out.

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References

Donna, J.K. 2011. Global Enterpreneurship Moniter, 2010 Global Report . Entrepreneurship Research Association.

Donna, J. K. 2012. Global Entrepreneurship Moniter 2011 Global Report . Entrepreneurship Research Association.

Donovan, J.M. 2013. Innovation training within the Australian advanced manufacturing industry. *Journal of Vacation Education and Training* 62 (2):256-276.

Cornell University, I. a. 2010. The Global Innovation Index 2010: The Local Dynamics of Innovation. Geneva, Ithaca and Fontainebleau. World Intellectual Property Organization.

Cornell University, I. a. 2011. The Global Innovation Index 2011: The Local Dynamics of Innovation. Geneva, Ithaca and Fontainebleau. World Intellectual Property Organization.

Cornell University, I. a. 2012. The Global Innovation Index 2012: The Local Dynamics of Innovation. Geneva, Ithaca and Fontainebleau. World Intellectual Property Organization.

Cornell University, I. a. 2013. The Global Innovation Index 2013: The Local Dynamics of Innovation. Geneva, Ithaca and Fontainebleau. World Intellectual Property Organization.

Cornell University, I. a. 2014. The Global Innovation Index 2014: The Local Dynamics of Innovation. Geneva, Ithaca and Fontainebleau. World Intellectual Property Organization.

Gerguri, V. R. 2011. Theoretical framework of innovation and competitiveness. *European Journal of Science* 23 (2):1-9.

Jose Emesto Amoros, N.B. 2014. Global Entrepreneurship Moniter 2013 Global Report. Entrepreneurship Research Association.

Petridon, K.K. 2010. Entrepreneur training for creativity and innovation. *Journal of European Industry Training* 34 (3):270-288.

Samuelson, R. 2010. China ûrst – the danger behind the rising power's 'me ûrst' doctrine. Newsweek. p. 9.

Siri Roland Xavier, D.K. 2013. Global Entrepreneurship Moniter 2012 Global Report. Entrepreneurship Research Association.

Slavica, G.M. 2015. Global Entrepreneurship Moniter 2014 Global report. Global entrepreneurship research.

Urassa, V.R. 2015. Students' entrepreneurial self-efficacy: Does the teaching method matter? *Education and Training* 57 (8/9).