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CHALLENGES AFFECTING INNOVATION IN THE TECHNOLOGY INCUBATION HUBS IN KENYA

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A hand in a blue suit sleeve points towards a glowing, circular button labeled 'Strategy' on a screen. The background is dark blue with abstract light patterns and a large, curved graphic element in red, white, and blue. The word 'Strategy' is written in a large, dark font on the glowing button.

Strategy

CHALLENGES AFFECTING INNOVATION IN THE TECHNOLOGY INCUBATION HUBS IN KENYA

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Abstract

Purpose: The purpose of this paper is to establish the various challenges that technology incubation hubs face in Kenya.

Methodology: In this study descriptive and exploratory research design was used. The population of this study consisted of ten technology incubation hubs that are registered in Kenya. The target populations in terms of respondents were the technology entrepreneurs, investors, managers, and innovation hubs staff from each of the innovation hubs. This study used primary data which was collected through the use of structured questionnaires. Data from the questionnaires was analyzed using Statistical Package for Social Science (SPSS) version 20 to derive descriptive results.

Results: A conclusion is made that ICT Infrastructure and ICT skills are a key determinant of the level of innovation in the technology incubation hubs in Kenya.

Unique contribution to theory, practice and policy: From the study findings, the government should provide effective and latest ICT infrastructure in all technology incubation hubs in Kenya. The government in collaboration with other ICT stakeholders should continuously improve on the provision of ICT and internet connectivity in all counties around the country in order to create a supportive environment for investment in technology incubation hubs in Kenya. Secondly, the government through collaboration with the ministry of education, technical institutions and universities should continuously offer the latest training on ICT skills in order to provide technology incubation hubs with the required human resource capacity in ICT innovation.

Key words: *Challenges, affecting, innovation, technology, incubation hubs, Kenya*

1.0 INTRODUCTION

1.1 Background of the study.

Various governments around the world are taking active steps to strengthen their national innovation systems through the creation of incubation hubs. The achievement of a knowledge economy is one of the top priorities of the government of Kenya towards the attainment of the development goals and objectives for wealth and employment creation as espoused in our development blueprint, Vision 2030 (Moraa & Mwangi, 2012). Groundbreaking innovations have encouraged local entrepreneurs, university students and government agencies to form innovation hubs around the country. The pioneer being I-hub lab research center located at Strathmore business school. The government of Kenya is committed to using ICTs as a means of addressing traditional development problems with innovative home-grown solutions and approaches that are cost-effective, more easily scalable and replicable. However, the ICT sector in Kenya still faces substantial challenges. There is a need for continued innovations besides the globally acclaimed M-Pesa financial services to drive socio-economic development and provide employment opportunities for the youth. In a nutshell, the country should shift from ICT consumerism to producer of ICT goods and services.

1.2 Statement of the Problem

Amid economic and political turbulence, Kenya is looking for ways to improve and sustain its economy and create more wealth for its citizens. One effective strategy is to nurture the spirit of innovation among citizens so that more local businesses can be set up to enable self-sustainability and to build an innovation-based economy (Mwenzwa & Misati, 2014). To double up in these efforts, the government's best option is to invest heavily in emerging technologies. This study sought to affirm the need for the setting up and strengthening of Technology innovation centers in Kenya and nurturing technology entrepreneurship development for commercial exploitation of technologies developed by them.

2.0 LITERATURE REVIEW

2.1 Christens Theory of Disruptive Technology

This theory examines how new technologies cause great firms to fail. Christen divided innovations into disruptive and sustaining innovations. Sustaining technologies promote the consumption of established products that mainstream customers in major markets have historically valued. Disruptive technologies are those who underperform established products in mainstream markets. Products based on disruptive technologies are typically cheaper, simpler, smaller and frequently more convenient to use (Tellis, 2006; Utterback & Acee, 2003). Disruptive technologies may enter and expand existing market niches, improving with time and ultimately attacking established products in their markets (King & Baatartogtokh, 2015). The actual importance of disruptive technology is that it may not displace existing products, but rather it is a powerful means of enlarging and broadening markets and providing new functionalities.

Many people are yet to gain from disruptive innovations since they are not connected with the prerequisite infrastructure. For leverage ICTs for development, a higher level of preparedness

and development of better infrastructure and access is needed. This theory supports the variable of ICT infrastructure whereby the country should embrace emerging technologies that are likely to drive massive economic transformations and disruptions.

2.2 Diffusion of Innovations

Diffusion of innovation adduces to the spread of abstract ideas and concepts, technical information, and actual practices within a social system. It refers to the flow of ideas from a source to an adapter typically via communication and influence. It also describes the process through which innovations and ideas become diffused and adopted within wider social networks.

Some innovations diffuse from the first introduction to widespread use in a few years while others take many years. The rate of adoption of innovation is the relative speed with which an innovation is adopted by members of a social system. . Diffusion of innovation theory helps incubators, program developers and innovators understand the process through which new ideas and technologies become translated into widespread practice(Murray, 2009)(Hine, Parker, & Ireland, 2010). The results of diffusion are adoption, implementation, and institutionalization. A clear understanding of the cultural impact of dissemination of technology is necessary to stem and reverse the high failure rate of many innovations in the marketplace. A clear knowledge of the populace is therefore appropriate for effective adoption of new technologies. This theory supports the variable of the level of ICT skills and how it impacts the rate of diffusion and the rate of adoption of innovations.

2.3 ICT Infrastructure

Many researchers argue that information and communication technology(ICT) infrastructure is essential for the rapid development of emerging economies(Ngwenyama & Morawczynski, 2009). Others have argued that too much stock is given to ICT expansion as an engine of growth, while not enough attention is paid to human capital, health, and civil infrastructure. Proponents of ICT infrastructure expansion argue that it facilitates the movement of capital and the coordination of global production and transportation, as well as allows for new methods of cross-border investments and the expansion of services(Bollou & Ngwenyama, 2008; Pohjola, 2001). Although some emerging economies have managed to achieve significant outcomes in ICT expansion and economic growth, others still face considerable difficulties. A key limitation of current research is the decoupling of ICT infrastructure from other civil infrastructure.A few studies have investigated ICT infrastructure expansion in Kenya. Deen-Swarray, Gillwald and Morrell (2012), examined ICT use regarding its access. It is vital to note the importance of ICT infrastructure to the permeation and utilization of communication technologies.

2.4 ICT Skills

Empirical research has tested how organizational learning capability affects product innovation performance and, more generally, has investigated the numerous factors that influence innovative performance (Mothe & Uyen Nguyen Thi, 2010). Studies have found that entrepreneurship and innovation are positively related to each other and interact to help an organization to flourish. Even though enterprise creativity and innovation are viewed as the creation of the future, little has been done to prepare, educate and train entrepreneurs to

participate creatively in the innovation economy. Analysts emphasize the importance of creativity and innovation in the knowledge economy. Furthermore, it is believed that the ability of an organization to grow is dependent on its capacity to generate new creative ideas and to exploit them effectively. Other researchers have identified expertise, creative thinking skills and motivation as components of creativity.

2.5 SUMMARY OF LITERATURE REVIEW

From the review of the literature, it is evident that studies on the effect of ICT infrastructure and ICT skills on technology innovations are scanty. On the other hand, literature also reveals that funding or access to capital does not represent the most important factor for establishing and running successful incubation hubs. While generally, funding remains necessary, it is not a sufficient condition for viable hubs development. Instead, client and entrepreneur relationship problems that manifest themselves in several ways, for example, lack of management capacity, lack of clear vision, lack of control, lack of business plans, and marketing strategy are noted as critical. This is more serious, as the environments in which incubation hubs operate is increasingly becoming globalized and more liberalized and yet full of surprises and uncertainty.

3.0 RESEARCH METHODOLOGY

In this study descriptive and exploratory research design was used. The population of this study consisted of ten technology incubation hubs that are registered in Kenya. The target populations in terms of respondents were the technology entrepreneurs, investors, managers, and innovation hubs staff from each of the innovation hubs. This study used primary data which was collected through the use of structured questionnaires. Data from the questionnaires was analyzed using Statistical Package for Social Science (SPSS) version 20 to derive descriptive results.

4.0 RESEARCH FINDINGS AND DISCUSSIONS

4.1 Response Rate

A total number of 146 questionnaires were administered to the respondents. The findings indicate that 110 questionnaires were completed and returned. A total number of 36 questionnaires were not returned. This gave a response rate of 75 % for this study.

4.2 Demographic Data

The study required the respondents to give demographic information on areas including their age, education level, and working experience.

4.2.1 Age of the Respondents

The study sought to establish the age of the respondents in order to determine if the age corresponded with their working experience and job description in the technology incubation hubs. This was important since it helped in determining if the respondents had experienced the challenges affecting innovation in the technology incubation hubs in Kenya. Majority 47 (43%) of the respondents were in the age category of 41-50 years, 42 (39%) of the respondents were in the

age category of above 31-40 years, 15 (14%) of the respondents were of age 51 years and above, while 4 (4%) were in the age category of above 21-30 years.

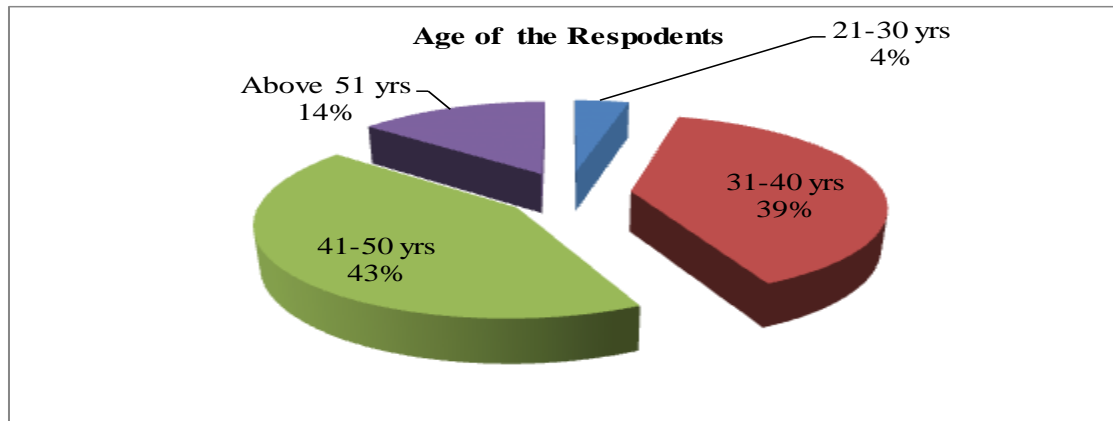


Figure 1: Age of the Respondents

4.2.3 Education Level of the Respondents

The study sought to establish the respondent's education level in order to ascertain if they were equipped with relevant knowledge and skills to understand the challenges affecting innovation in the technology incubation hubs in Kenya. From the study findings as presented in figure 4.2, majority 68 (62%) of the respondents were university graduates followed by 32 (29%) who had post-graduate education level and lastly 10 (9 %) of the respondents who had college education level. This demonstrated that all respondents were highly educated and had no difficulties in understanding the study problem.

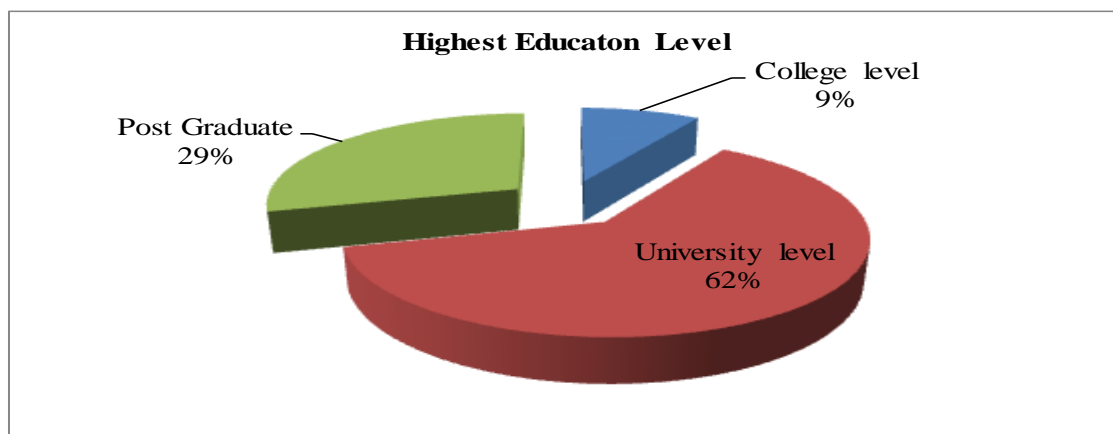


Figure 2: Education Level of the Respondents

4.2.3 Working Experience of the Respondents

The study sought to determine how long the respondents had been working in the technology

incubation hubs in Kenya to ascertain to what extent their responses could be relied upon to make conclusions for the study, based on their working experience. From the study findings as indicated in Figure 4.3, majority 57 (52%) of the respondents had working experience of 11-15 years, 26 (24%) had a working experience of 11-15years, 16 (14%) of the respondents had a working experience of 15years and above and lastly 11 (10%) of the respondents had a working experience of fewer than 5 years.

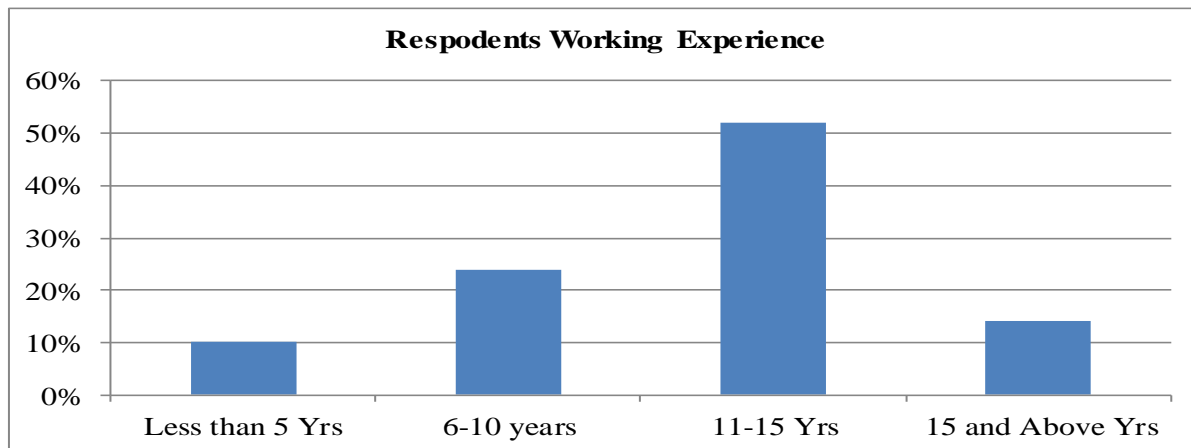


Figure 3: Respondents Working Experience

4.3 Descriptive Statistics

The study sought to find out challenges affecting innovation in the technology incubation hubs in Kenya.

4.3.1 ICT Infrastructure

The respondents were asked to indicate their opinions on statements related to how ICT infrastructure affects innovation in technology incubation hubs in Kenya. The findings imply that majority of the respondents agreed that the country has a conducive ecosystem that supports innovation. A large portion of the population has access to ICT hardware and software; the availability and accessibility of ICT promote innovation in the incubation hubs.

4.3.2 ICT Skills

The study is aimed to establish how ICT skills affect innovation in technology incubation hubs in Kenya. The study requested the respondents to indicate their opinions on key statements in relation to how ICT skills affect innovation in technology incubation hubs in Kenya. The key ICT skills statements included; ICT competence, capacity to adopt and use ICT and ICT knowledge generation. The finding indicates that majority of the respondents agreed that ICT skills affect innovation in technology incubation hubs in Kenya.

4.4 Inferential Statistics

Inferential statistics is the attempt to apply the conclusions that have been obtained from one experimental study to more general populations. This means inferential statistics tries to answer questions about populations and samples that have not been tested in the given experiment.

4.4.1 Correlation Analysis

Correlation analysis was done to establish the relationships that existed between the independent and dependent variables.

Table 1: Correlation Matrix

| | | Innovation | | |
|-------------------------------|---------------------|-------------|--------------------|------------|
| | | InTech Hubs | ICT Infrastructure | ICT Skills |
| Innovation in technology hubs | Pearson Correlation | 1.000 | | |
| | Sig. (2-tailed) | | | |
| ICT Infrastructure | Pearson Correlation | .715** | 1.000 | |
| | Sig. (2-tailed) | 0.000 | | |
| ICT Skills | Pearson Correlation | .753** | .196* | 1.000 |
| | Sig. (2-tailed) | 0.000 | 0.029 | |

5.0 SUMMARY OF FINDINGS AND CONCLUSIONS

5.1 Summary of the Findings

The general objective of this study was to find out challenges affecting innovation in the technology incubation hubs in Kenya. The study specifically determined how ICT infrastructure and ICT skills affected innovation in technology incubation hubs in Kenya. The study findings showed that ICT infrastructure and ICT skills were the major challenges affecting innovation in technology incubation hubs in Kenya. ICT infrastructure has a strong positive correlation $r = 0.715$ with innovation in technology incubation hubs. The ICT Infrastructure had a beta coefficient of 0.449 which was found to be positive at the significant level of 0.000. The study findings showed that the key ICT infrastructure factors notably; Network infrastructure; ICT hardware and software and connectivity affects innovation in technology incubation hubs. The variable ICT skills had the strongest correlation $r = 0.753$ with innovation in technology hubs in Kenya. The ICT skills had a beta coefficient of 0.501 which was found to be significant at 0.001.

It was identified that the key ICT skills factors notably; ICT competence, capacity to adopt and use ICT and ICT knowledge generation strongly influenced innovation in technology.

5.2 Conclusions

Based on the study findings, the study drew conclusions that ICT infrastructure and ICT skills were the major challenges affecting innovation in technology incubation hubs in Kenya. The coefficient of determination indicates variation on Innovation in technology incubation hubs is determined by the two independent variables notably; ICT infrastructure and ICT skills. Generally, the study concludes that innovation in technology incubation hubs in Kenya can be improved if the ICT infrastructure and ICT skills are improved.

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