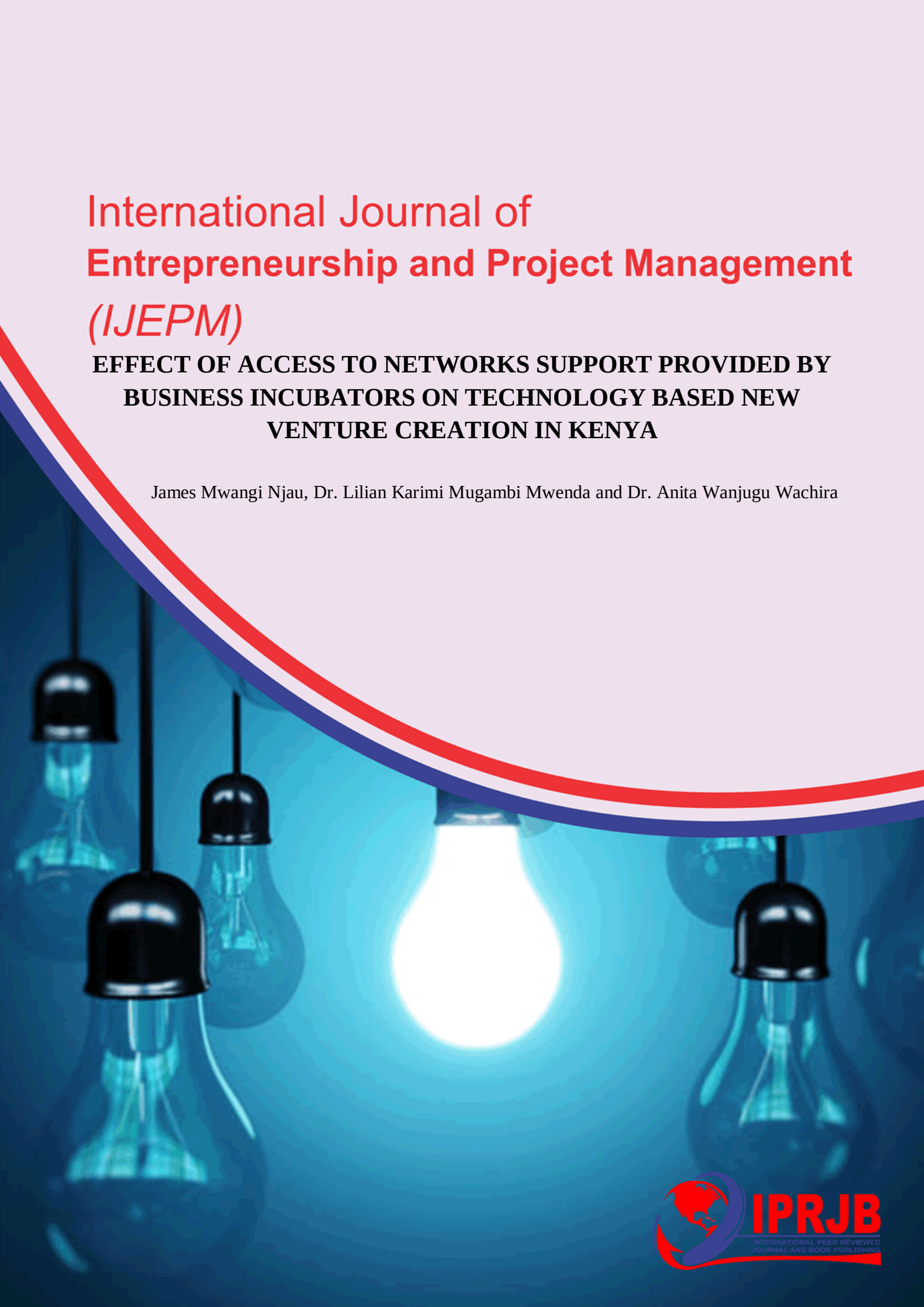
International Journal of
Entrepreneurship and Project Management
(IJEPM)

EFFECT OF ACCESS TO NETWORKS SUPPORT PROVIDED BY BUSINESS INCUBATORS ON TECHNOLOGY BASED NEW VENTURE CREATION IN KENYA

James Mwangi Njau, Dr. Lilian Karimi Mugambi Mwenda and Dr. Anita Wanjugu Wachira



IPRJB
INTERNATIONAL PEER REVIEWED JOURNAL AND BOOK PUBLISHING

International Journal of Entrepreneurship and Project Management
ISSN 2518-2838(Online) 2520-9108
Vol.4, Issue 1, pp 33 - 50, 2019

IPRJB
INTERNATIONAL PEER REVIEWED JOURNAL AND BOOK PUBLISHING
www.iprjb.org

EFFECT OF ACCESS TO NETWORKS SUPPORT PROVIDED BY BUSINESS INCUBATORS ON TECHNOLOGY BASED NEW VENTURE CREATION IN KENYA

[1]*James Mwangi Njau
PhD. student, Dedan Kimathi University of Technology
*Corresponding author email: mwanginjau@gmail.com

[2]Dr. Anita Wanjugu Wachira
Senior Lecturer, Dedan Kimathi University of Technology
Email address: anita.wachira@dkut.ac.ke

[3]Dr. Lilian Karimi Mugambi Mwenda
Senior Lecturer, Dedan Kimathi University of Technology
Email address: lilian.mwenda@dkut.ac.ke

Abstract

Purpose: The study sought to assess the effect of access to network support provided by business incubators on technology based new venture creation in Kenya.

Methodology: The study adopted descriptive research design. The population of study was 9 business incubator managers and 384 incubatees in Nairobi Metropolitan. Census was applied for the incubator managers and Stratified Random sampling was used to arrive at a sample size of 185 incubatees, and the response rate was 82.2 % for incubatees and 88.9% for incubator managers respectively. Data from incubator managers was collected using a structured interview schedule while a cross sectional survey was conducted for the incubatees using a structured questionnaire. Quantitative data was analysed using descriptive and inferential statistics while qualitative data was analysed using qualitative data analysis method.

Results: The study revealed that access to networks support had a positive significant effect on technology based new venture creation. The Pearson's correlation coefficient was $r=0.542$, $p<0.05$ and the beta value was 0.384, $p<0.05$ and t test value was 7.895, $p<0.05$. Therefore, the null hypothesis was rejected at 0.05 significance level.

Unique contribution to theory, practice and policy: The study recommends integration of incubation theories for a better understanding of the business incubation process. The business incubation practitioners can use the finding of this study to model a roadmap for provision of access to networks to new ventures in Kenya while entrepreneurs will be able to appreciate how access to networks support provided by business incubators can help them to overcome the liability of smallness and newness. On policy implications, the study identified the policy gaps that need to be addressed in relation to mainstreaming business incubation as a timely intervention in provision of access to network support in the new venture creation ecosystem.

Key words: *Access to network support, Business incubation, Technology based new venture creation.*

1.0 INTRODUCTION

The impact of the small enterprises on economic growth in many countries has led to increased support for new venture creation. For example, in the United Kingdom, over 2% of government expenditure is going towards support of the small business sector (Gertner, 2013). Globally government policy makers and development partners have invested in a number of interventions aimed at creating favourable conditions. Within this landscape of interventions, business incubators and related business development systems have emerged across the world as highly popular avenues for promotion of economic development (Ozdemir & Şehitoglu, 2013).Business incubation process entails a focus on strengthening dynamic, growth oriented, early stage enterprises and hence achieve economic growth (Adelowo, 2012). Business incubators have become a ubiquitous phenomenon worldwide and are being used as a mechanism for promoting the development of technology based growth oriented new ventures. The concept is normally used to refer to organizations that constitute or create a favourable environment for "hatching" and development of nascent ventures (Bergek & Norman, 2008). Business incubators actively support the process of creating new ventures by providing a variety of services that include infrastructure, access to networks and business support. Nicola (2012) asserts that the primary focus of business incubation is to increase probability of survival of incubated firms during their formative years. Lewis (2002) observes that accessibility to targeted business support enables entrepreneurs to stand a better chance of turning business ideas into successful new firms. This again depends on properly-developed and properly-operated business incubators programs.

Frenkel, Shefer and Miller (2008) observe that technological and business incubators are world phenomenon with North America leading the park with over a thousand of them in 2006 up from 12 in 1980. Mutambi, Byaruhanga, Trojer and Buhwezi (2010) while appreciating the contribution of business incubation, observe that in 2005 US over 1000 incubators assisted more than 27000 new ventures that provided employment to more than 100, 000 workers. There were 120 business incubators in Canada that housed 2,958 new ventures, generating income and creating full-time and part-time employment of over 13, 000 people. Smith (2015) observes that the government of Canada has recognized the business incubation as an economic tool capable of channelling innovation and developing small businesses. In the 2013 budget, the Canadian government allocated $ 60 million dollars to fund business incubators. Business incubators are not limited to developed countries, but have also been witnessed in developing countries such as Brazil, China, South Korea, Turkey, and Indonesia. Business incubators are contributing to the developing economies by playing a key role in economic recovery (Jamil, Ismail, Siddique, Khan, Kazi, & Qureshi, 2016).

Business incubators have also been adopted by Far East countries. Countries that embraced incubation early include China, Japan, India, Korea, Malaysia and Indonesia with more than 1,500 business incubators operating in Asia alone. A breakdown of this figure shows that China leads the park with over 600 incubators, India just over 50 out of which 15 are technology business incubators and a further 100 business incubators are in the planning stage that the government of India is undertaking. On the same note Japan has 200 business incubators, Taiwan has 70 business incubators and Malaysia has 20 business incubators Australia has 20 and South Korea has around 300 business incubators (Cho & Eunsuk, 2009).

However, Growth of incubation movement in developing countries has been slow due to constraining factors, and particularly in Africa. Irwin and Jackson (2009) observed that incubation in African is in its infancy, more so in the Sub- Saharan Africa. Opportunities for entrepreneurial networking and innovation are not as developed as compared with regions that have a longer history of incubation such as North America, Eastern Europe, Brazil in Latin America and Asian Pacific.

Business incubation rating in selected African Countries confirms this disparity. Out of eighteen countries involved in this study half of the counties had a rating of 2% and only two countries (Nigeria and South Africa) had a rating of more than 10%. Given this backdrop, the level of entrepreneurship is relatively low in African compared to other regions of the world, despite the perceived opportunities that the MSME sector portrays, African countries register a surprisingly low level of entrepreneurship. (Tengeh & Choto, 2015).

In Kenya, despite the key role the Micro, Small and Medium Enterprises (MSMEs) play in fostering economic development in a number of ways that include; job creation, fostering innovation, and increasing competition, the sector faces a myriad of challenges, ranging from a cumbersome regulatory environment characterized by multiple licenses, lack of capital, expensive loans, lack of markets, stiff competition, insecurity and poor infrastructure (GoK, 2005). The MSMEs basic report 2016 avers that 2.2 million MSMEs were closed in the last five years, 2016 inclusive. Therefore, there is a need to promote and facilitate competiveness of the small enterprises sector by; supporting development of new ventures, facilitating development of new enterprises, improving access to capital, promoting firm to firm linkages and promoting boarder representation of the sector in business associations (Republic of Kenya, 2016).

Wanyoko (2013) appreciates that business incubation is gaining prominence in Government policy, private sector and the academia as a mechanism for supporting new venture creation in Kenya. The last decade has witnessed an increase in private and public business incubators in the country. Recent private incubators include; Business Incubator (KEKOBI) IHUB, NAILAB, NETFUND among others. Most of the recent public incubators are found in Kenyan universities such as Chandaria Innovation Centre in Kenyatta University, C4D Innovation Hub in University of Nairobi and Innovation Hub at JKUAT (BIAK, 2016).Although business incubation is gradually taking root in Kenya, there is scanty evidence on the effect of business incubation on new business venture creation (Kinoti, 2011, Wanyoko, 2013). There is a need to examine the process of business incubation in terms of access to networks that has gained prominence in third generation incubators across the world, Kenya included. Specifically, there is a need to assess the effect of access to network support offered by business incubators on technology based new venture creation and whether that covers the needs of technology based new ventures in Kenya.

1.1 Problem Statement

In the recent years, the Government of Kenya and development partners have given special attention to the Micro Small and Medium Enterprises sector as an avenue for fostering economic development through job creation, wealth creation, fostering innovation and creation of new products. Government reports on the state of the economy in the recent past indicate that the Micro Small and Medium Enterprises sector contribution to the gross domestic product is over 30% of the total output. Despite the important role that the Micro Small and Medium Enterprises play in the Kenyan economy, a number of challenges affecting the sector have been identified. These include; limited linkages with large enterprises, inadequate access to skills and access to markets. The overall effect of these challenges is business failure and stagnation among many business start- ups. The vision 2030 blue print underscores the need for capacity building and appropriate financial services for the sector and proposes establishment of Small and Medium Enterprises industrial parks in five regions in Kenya. Incubation of start-ups will enable the Kenyan government to promote industrialization and technological innovations in the regions. However, review of literature shows that there is little documented evidence and broad based statistics on the impact of business incubation programs in supporting technology based new venture creation in Kenya. There is a need to assess the effect incubation components that encompass the support provided by business incubators on new ventures.

Given this back drop, the study sought to assess the effect of access to network support provided by business incubators on technology based new business venture creation in Kenya.

1.2 Objective of the Study

The main objective of this study was to assess the effects of access to networks support provided by business incubators on technology based new venture creation in Kenya.

2.0 LITERATURE REVIEW

Theoretical framework

Campbell, Kendrick & Samuelson's incubation model (1985)

Campbell, Kendrick and Samuelson (1985) developed the first incubation model. In formulation of the incubation model, incubation process is defined as "a complicated and organic process by which valid business ideas and entrepreneurs emerge into real business." The model suggests four areas in incubation programs where incubators create value. The four areas includes; the diagnosis of business needs, the selection and monitored application of business services, the provision of access to incubator networks and the provision financing. This model gives a detailed framework of how the various components and activities in the business incubator interact to facilitate the transformation of a business proposal into a viable business enterprise. However, this model has weaknesses in that it assumes that all tenants in the incubator succeed and the model fails to consider tenants in public incubators (Hackett & Dilts, 2004).

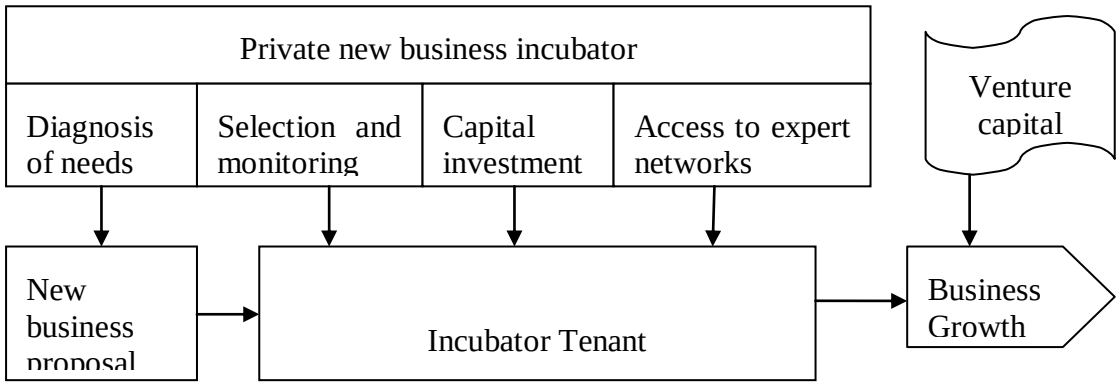


Figure 1 Campbell, Kendrick & Samuelson's incubation model (1985)

Based on Campbell, Kendrick & Samuelson's incubation model (1985) incubation model, the proposition is that incubatees access networks support from the business incubators that leads to technology based new venture creation. Campbell et al. underscore business incubator's provision of access to a network of business development expertise. The networks that incubatees accesses include local financial institutions, lawyers, colleges, management consultants, accountants government agencies, venture capitalists and local business associations (Gertner, 2013). This model's relevance to this study is underscored by its focus on the entrepreneur in the incubation process having access to networks support that enables entrepreneurs to overcome the liability of newness. In addition, the model clearly distinguishes the incubation process components.

Empirical Literature Review

Access to business networks is an important factor, especially by early stage enterprises. Business networks comprise a set of relationships formed through interaction with various agents or organizations that provide an enterprise with important resources (Pettersen, Aarstad, Hovin &

Tobiassen, 2016). Ratinho, Harms and Groen (2009) aver that the idea of using networks through business incubators to compensate for lack of resources is based on Social Capital Theory. New firms are constrained in terms of accessing established business networks that can compensate for lack of human and financial resources, an important factor that influences a firm's performance. Access to professional business services though business networks are normally out of reach to many young new firms. The ability to acquire business network resources is important for entrepreneurial ventures and more so to start-ups in their endeavour to achieve development and growth (Schutjens & Stam, 2003). There are four roles associated with network performance that include exchange of information and collective learning, connection to relationships that facilitate entrepreneurial goals and enterprise growth, access to new ideas and enterprise resources and achievement of credibility attained through formation of strategic business alliances (Rojas, 2010). In their research findings, Pettersen, Aarstad, Hovin and Tobiassen (2016) concluded that business incubation could provide generic network resources and to a lesser extent offer non-generic networks.

Rojas (2010) identified two types of networks in business incubators: internal and external networks. Internal networks promote social capital building, sharing of resources and development of ties among tenants in the business incubator. On the hand external networks that happens in the surrounding environment enable incubates to link up with potential partners, customers and local businesses. MacAdam and MacAdam (2008) posit that networks provide a platform on which new ventures can access new ideas and firms 'resources, attainment of credibility by forming alliances, exchange of information and collective learning, and finally, provide connection to relationships that promote entrepreneurial activities and growth. Incubators are strategically placed to provide access to financial resources to their tenants. Connections with potential financiers such as venture capital firms and business angel networks are an important avenue for providing financial resources during early stages startups (Aerts, Matthyssens & Vandenbempt, 2007).

Ratinho (2009) looked at the evolving access to networks value proposition among three generations of technology incubators. The first generation being those established in 1980s, second generation in the early 1990s and the late 1990s- early 2000s as the third generation. Empirical findings indicated that the demand for access to network resources (professional service providers and seed or venture capital was at different levels for the three generation of business incubators. On professional services providers, first generation incubators N=25 had 48.0%, second generation incubators N=19 had 63.2% and third generation N=27 had 93.3%. This shows that third generation made more use of professional services compared to the first and second-generation incubators. On seed or venture capital, the trend was the same at 12.0 %, 52.6% and 70.4% respectively. This indicates that the value preposition for access to network has positively changed over time. The importance of access to networks is supported by another study by Bhabra and Rekha (2013) on assessment of venture growth stages and factors affecting performance of business incubators in Australia. The study found out that entrepreneurs consider networking activities important for information exchange and referrals. Forty-four percent tenants depend on incubator manager to provide these services.

Another study by Rosiera, Ramos, Maia and Henneberg (2014), assesses the quality and value of business incubators investments. A multi-company case study design was used, combining both qualitative and quantitative techniques. The study involved 58 entrepreneurs housed in the science and technology pack of the University of Porto. Primary data was collected through mixed methods approach: survey supplemented by semi-structured interviews with entrepreneurs. Entrepreneurs were asked to rate the perceived value of network resources accessed in the business incubator. The rating was done on the basis of perceived importance and satisfaction with the network resources. The incubator response was as follows: access to the University's network was rated 70% in terms of importance and satisfaction at 31%. Support to create external relationships was rated 69% in terms

of importance and satisfaction at 39%. Existing startups when deciding to join incubator was rated 20% in terms of importance and 22% satisfaction with the outcome. Finally, possibility to develop relationships with other startups in the incubator was rated 67% in terms of importance and 31% in terms satisfaction with the outcome.

A study by Arumugam and Ravundran (2014) on success factors of incubatee startups and the incubation environment influences looked at access to funds/ capital as an important element in access to networks. This factor yields a means score of 3.73 compared to access to infrastructure with a mean score of 3.91, access to mentoring again 3.91 and access to markets with a mean score of 4.03. The mean scores indicate that though funding is needed in order to obtain these -resources, it is not rated as important as infrastructure, mentoring and marketing by the incubatee. A further analysis of the contributing factors in the access to funding/ capital, enabling access to raise fund from government and other agencies had the maximum score of 4.09 indicating that incubatees require risk capital during idea to product development phase.

3.0 RESEARCH METHODOLOGY

This research adopted positivism research philosophy that upholds that only those knowledge claims, which are directly founded on experience, are genuine. Therefore the study adopted descriptive design that allowed the research to describe the study variables in terms of their characteristics and also explaining the relationships among these variable without undue manipulation (Saunders, Lewis & Thornhill, 2009, Creswell, 2013). The population for this study comprised of 9 business incubators (BIs) in Nairobi Metropolitan and 364 new technology based ventures that included those undergoing incubation and those that have successfully exited from these incubators in the last three years. Census was applied for the incubator managers and Stratified Random sampling was used to arrive at a sample size of 185 incubatees in business incubators located in Nairobi Metropolitan. Data from incubator managers was collected using a structured interview schedule while a cross sectional survey was conducted for the incubatees using a structured questionnaire. Quantitative data was analysed using descriptive and inferential statistics while qualitative data was analysed using qualitative data analysis method. The response rate was 82.2 % for incubatees and 88.9% for incubator managers respectively.

4.0 RESULTS AND DISCUSSIONS

4.1 Descriptive statistics

4.1.1 Area of technology and innovation in new ventures in Kenya.

Majority of the businesses' area of technology and innovation of the businesses involved in this study included information, communication and technology (ICT), agriculture and engineering as depicted in Figure 2.

International Journal of Entrepreneurship and Project Management
ISSN 2518-2838(Online) 2520-9108
Vol.4, Issue 1, pp 33 - 50, 2019

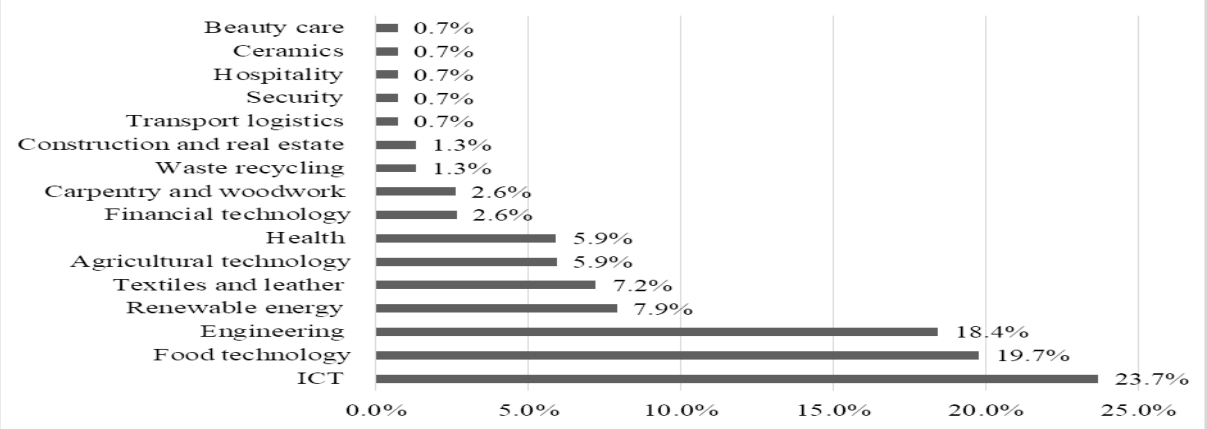


Figure 2: Area of technology and innovation in new ventures in Kenya

Source: (Author 2018, p. 142)

Businesses whose area of technology and innovation was in the field of ICT comprised about 23.7%. Businesses whose technology and innovation revolved around food technology comprised about 19.7% of the total responses. This was closely followed by 18.4% of the businesses that engaged in ventures that had engineering related technology and innovation. Businesses whose technology and innovation related with renewable energy, textile/leather, agricultural technology and health comprised about 7.9%, 7.2%, 5.9% and 5.9% respectively. These findings indicated that Kenyan entrepreneurs have taken a cue from the vision 2030 that envisage mainstreaming of agriculture, manufacturing, ICT and business outsourcing, financial services and whole sale and retail trade sectors based on their potential to contribute to 10% GDP growth (Government of Kenya, 2007). A few businesses (with a representation of less than 5% each) operated in financial technology, carpentry/woodwork, waste recycling, construction/real estate, transport logistics, security, hospitality, ceramics and beauty care areas of technology and innovation. Manimala and Vijay (2012) contends that besides their immense contribution, technology based venture face unique challenges related to the technology that they operate in compared to the challenges faced by new ventures not pedestaled on technology. Therefore, increase in creation of technology based new ventures in Kenya underscores the need to provide access to networks support to incubatees that can address challenges such as lack of markets, access to business finance, linkages with big firms and access to professional networks.

4.1.2 Access to networks support and technology based new venture creation.

Access to business networks is an important factor, especially by early stage enterprises. Ten items were constructed to measure access to networks by incubated technology based new ventures on a scale of 1 to 5 points in Likert-type survey instrument where: No extent = 1; Little extent = 2; Moderate extent = 3; Great extent = 4 and Very great extent = 5. The results were analyzed and summarized in Table 1.

Table 1: Access to networks and technology new venture creation

	Response Rate Scale of 1-5							
Statements	**No extent**	**Little extent**	**Moderate extent**	**Great extent**	**Very great extent**	**Total**	**Mean**	**Std. Dev.**
Provision of better access to markets by incubatees in the business incubator leads to technology based new venture creation.	7.2%	14.5%	25.7%	28.3%	24.3%	100%	3.48	1.212
Provision of forums for interaction of businesses with potential customers to incubatees by business incubator leads to technology based new venture creation.	7.9%	7.9%	24.3%	33.6%	26.3%	100%	3.62	1.184
Provision access to a network of suppliers by incubatees in the business incubator leads to technology based new venture creation.	9.2%	21.1%	23.0%	32.9%	13.9%	100%	3.21	1.194
Facilitation of incubatee businesses in building long term relationship with suppliers by business incubator leads to technology based new venture creation.	15.1 %	17.1%	25.0%	25.7%	17.1%	100%	3.13	1.309
Network of professionals available in the business incubator that allows exchange of information and learning leads to technology based new venture creation.	2.0%	11.8%	24.3%	30.3%	31.6%	100%	3.78	1.081
Network of professionals available in the business incubator facilitates achievement of entrepreneurial goals and enterprise growth leading to technology based new venture creation.	4.6%	10.5%	26.3%	32.9%	25.7%	100%	3.64	1.112
Provision of platform for connections with potential financiers such as venture capital firms and business angels by business incubator leads to technology based new venture creation.	7.9%	9.9%	32.9%	27.6%	21.7%	100%	3.45	1.167
Provision of internal networks that promote social capital building and sharing of resources among incubatees leads to technology based new venture creation.	7.2%	12.5%	27.6%	30.3%	22.4%	100%	3.48	1.179
Provision of external networks for accessing new ideas by incubatees in the business incubator leads to technology based new venture creation.	4.6%	13.2%	26.3%	37.5%	18.4%	100%	3.52	1.079
Provision of access to external collaborators such as university researchers by incubatees in the business incubator leads to technology based new venture creation.	9.9%	11.2%	24.3%	31.6%	23.0%	100%	3.47	1.239
Grand mean							**3.48**	**1.176**

Access to networks support was operationalized by five parameters; access to markets, access to network of suppliers, access to network of professionals, internal networks and external collaborators. Rojas (2010) identified two types of networks in business incubators: internal and external networks. Internal networks promote social capital building, sharing of resources and development of ties among tenants in the business incubator. On the hand external networks that happens in the surrounding environment enable incubates to link up with potential partners,

customers and local businesses. The ability to acquire business network resources is important for entrepreneurial ventures and more so to start-ups in their endeavour to achieve development and growth (Schutjens & Stam, 2003). Analysis of access to networks as a component of the business incubation mechanism indicated availability of a network of professionals that allows exchange of information and learning that leads to technology based new venture creation had the highest rating among the respondents. The overall extent to which incubators provided access to a network of professional combining moderate, great and very large extent yielded 86.2%. This implies that majority of the respondent agreed the business incubators included in the study provided access to network of professionals that allows exchange of information and learning to their incubatees leading to technology based new venture creation.

The second factor still on network of professionals was whether business incubator has a network of professionals that facilitate achievement of entrepreneurial goals and enterprise growth leading to technology based new venture creation, with a combined response rate of 84.9% for moderate extent, great extent and very great extent. The high ranking by respondents on provision of network of professionals indicate that the Kenyan incubators have also evolved in tandem with the evolution of business incubation globally. Ratinho (2009) looked at the evolving access to networks value proposition among three generations of technology incubators. The first generation being those established in 1980s, second generation in the early 1990s and the late 1990s- early 2000s as the third generation. Empirical findings indicated that the demand for access to network resources (professional service providers and seed or venture capital was at different levels for the three generation of business incubators. On professional services providers, first generation incubators N=25 had 48.0%, second generation incubators N=19 had 63.2% and third generation N=27 had 93.3%. This shows that third generation made more use of professional services compared to the first and second-generation incubators.

Access to market networks was third in ranking based on the incubatees' responses. The overall extent to which incubators provides forums for interaction of businesses with potential customers combining moderate, great and very large extent yielded 84.2%. Provision of better access to markets by incubatees in the business incubator leads to technology based new venture creation was second in rating among access to market networks. Approximately 25.7% % of respondents indicated moderate extent, 28.3% indicated great extent and 24.3% indicated very great extent respectively. A study by Arumugam and Ravundran (2014) on success factors of incubatee startups and the incubation environment influences looked at important elements in business incubation. Access to funds/ capital had a means score of 3.73 compared to access to infrastructure with a mean score of 3.91, access to mentoring again 3.91 and access to markets with a mean score of 4.03. The finds implied that incubatee attached the highest importance to access to markets. The findings in the current study, however, indicate that even though incubatees attach a lot of importance to access to markets, Kenyan incubators rank low in provision of market networks that leads to technology based new venture creation compared to professional and financiers/potential investors' networks. Provision of platform for connections with potential financiers by business incubators such as venture capital firms and business angels that leads to technology based new venture creation was fourth in rating, with a combined response rate of 82.2% for moderate extent, great extent and very great extent. These findings also concur with Ratinho (2009) findings that averred that seed or venture capital was at different levels for the three generation of business incubators. Analysis of the findings indicated an increase in demand for venture capital with first generation at 12.0 %, second generation at 52.6% and third generation at 70.4% respectively.

Last but not least, the research sought to examine access to internal and external networks. Incidentally, business incubators in Nairobi Metropolitan scored higher in provision of external

networks compared to internal networks. With respect to provision of external networks for accessing new ideas by incubatees leads to technology based new venture creation, the overall extent to which incubators provided external networks for accessing new ideas by incubatees, combining moderate, great and very large extent yielded 82.2%. On whether business incubator provides access to external collaborators such as university researchers by incubatees that leads to technology based new venture creation, approximately 24.3% of respondents indicated moderate extent, 31.6% indicated great extent and 23% indicated very great extent respectively. The overall extent to which provision of internal networks to incubatees by incubators leads to technology based new venture creation, combining moderate, great and very large extent yielded 80.3%.

The findings on access to both internal and external networks suggest that incubators in Kenya provided these networks at varying extent. These findings concurs with the findings of Rosiera, Ramos, Maia and Henneberg (2014), on assessment of the quality and value of business incubators investments. A multi-company case study design was used, combining both qualitative and quantitative techniques. The incubator response was as follows: access to the University's network was rated 70% in terms of importance and satisfaction at 31%. Support to create external relationships was rated 69% in terms of importance and satisfaction at 39%, and finally, possibility to develop relationships with other startups in the incubator was rated 67% in terms of importance and 31% in terms satisfaction with the outcome. The grand mean for extent to which the above factors lead to technology based new venture creation was 3.48 with a standard deviation of 1.176. This implies that a combination of the above listed factors concerning access to networks support lead to technology based new venture creation to a moderate extent.

4.1.3 Incubator managers' views on provision of access to networks support

The study sought the opinions of incubators managers concerning provision of access to networks support to incubatees by the business incubators. Table 2 summarizes the respondents' comments and themes that emerged during the interviews with incubation managers.

Table 2: Analysis of incubator managers views on access to networks

Variable	Emerging themes	Comments
Access to networks support	Provision of both internal and external by business incubators.	Incubatees have access to both internal and external networks.
	Incubators provide both financial and market networks.	Incubatees highly regard access to financial and market networks.
	Incubators provide supplies networks.	Incubators help incubatees access suppliers' networks.
	Business incubators provides innovation resources.	Incubatees are exposed to professionals that they can learn from.
	Business incubators provide networks opportunities based on stage growth of new venture.	Networking needs depends on the stage of growth of the new venture.
	Business incubators provides professional networks.	Professional networks are useful in refining business models for successful new venture creation
	Demand for financial networks is increasing	Entrepreneurs in business incubators are in dire need for financial networks such as investors and venture capital
	Peer to peer networks at the business incubator	Entrepreneurs considered to be a community that allows them to learn from each other.
	Incubatees utilize available networks	It is imperative for incubatees to increase access to networks by incubatees

Analysis of the results in table 2 indicates that business incubators in Kenya provide all the components that encompass access to network support. These include access to market networks, financial networks, network of supplies and professional networks. It is also evident that access to networks support leads to technology based new venture creation. Business incubation managers underscored that provision of professional networks has become important in helping incubatees to refine their business models. Incubatees also rated incubators highly in provision of professional networks that leads to technology based new venture creation. Therefore, it would be imperative for business incubators to increase access to networks support by incubatees in the business incubator.

4.2 Inferential statistics

4.2.1 Pearson's product movement correlation coefficient

Before carrying out a test on research hypotheses, the study examined how the variables of the study were correlated. Correlation coefficient was used to analyze the degree of relationship between independent variable; access to networks support and the dependent variable; technology based new venture creation. The results of this analysis are show in Table 3.

Table 3: Correlation coefficients for access to networks support

		Access to networks	Technology based new venture creation
Access to networks(IDV3)	Pearson Correlation	1	
	Sig. (2-tailed)		
Technology based new venture creation (DV)	Pearson Correlation	.542**	1
	Sig. (2-tailed)	.000	

**. Correlation is significant at the 0.05 level (2-tailed).

Table 4: Correlation coefficients for individual access to networks support constructs

		Access to markets by incubatees.	Forums for interaction of businesses with potential customers	Access to a network of suppliers	Building long term relationship with suppliers.	Network of professionals that allows exchange of information and learning.	Network of professionals that facilitate achievement of entrepreneurial goals.	Connections with potential financiers	Internal networks promotes social capital building.	External networks for accessing new ideas.	Access to external collaborators such as university researchers	Technology based new venture creation
Access to markets by incubatees.	Pearson Correlation	1										
	Sig. (2-tailed)											
Forums for interaction of businesses with potential customers.	Pearson Correlation	.634**	1									
	Sig. (2-tailed)	.000										
Access to a network of suppliers by incubatees.	Pearson Correlation	.666**	.590**	1								
	Sig. (2-tailed)	.000	.000									
Building long term relationship with suppliers.	Pearson Correlation	.605**	.565**	.759**	1							
	Sig. (2-tailed)	.000	.000	.000								
Network of professionals that allows exchange of information and learning.	Pearson Correlation	.259**	.177*	.232**	.380**	1						
	Sig. (2-tailed)	.001	.029	.004	.000							
Network of professionals that facilitate achievement of entrepreneurial goals growth.	Pearson Correlation	.339**	.351**	.376**	.458**	.578**	1					
	Sig. (2-tailed)	.000	.000	.000	.000	.000						
Connections with potential financiers	Pearson Correlation	.435**	.426**	.511**	.552**	.323**	.538**	1				
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000					
Internal networks promotes social capital building.	Pearson Correlation	.463**	.310**	.473**	.441**	.433**	.449**	.509**	1			
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000				
External networks for accessing new ideas.	Pearson Correlation	.491**	.475**	.428**	.544**	.475**	.657**	.532**	.531**	1		
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000			
Access to external collaborators such as university researchers	Pearson Correlation	.471**	.418**	.470**	.470**	.365**	.515**	.539**	.426**	.649**	1	
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000		
Technology based new venture	Pearson Correlation	.437**	.333**	.431**	.516**	.345**	.382**	.431**	.469**	.393**	.394**	1

creation	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

As shown in the Table 3, there was a significant and positive correlation between access to networks support and technology based new venture creation (r=0.542, p<0.05). Since correlation value was between 0.3 and 0.7, it implies that there was a strong association between access to networks support and technology based new venture creation. The coefficient value was positive, implying that an increase in value of access to networks support leads to an increase in the value of technology based new venture creation.

The results in table 4 indicated that there was a positive and significant correlation between all the access to network constructs and technology based new venture creation. The strongest association was between building long term relationship with suppliers and technology based new venture creation (0.516, p=. 0.000 The second strongest association was between provision of internal networks by the business incubator that promotes building of social capital and technology based new venture creation (r=0.469, p=0.000).It was followed by Provision of access to markets by business incubator and technology based new venture creation (r=0.437, p= 0.000), Access to network of suppliers and technology based new venture and technology based new venture creation (r=0.431, p=0.000), connection with potential financiers and technology based new venture creation (r=0431, p=0.000). Access to external networks and technology based new venture creation were also positively correlated (r= 0.394, p=0.000) as well as external networks that allow access to new ideas and technology based new venture creation (r= 0.393, p=0.000). The others were network of professionals that facilitate achievement of entrepreneurial goals and technology based new venture creation (r= 0.382, p=0.000), network of professionals that allows exchange of information and learning and technology based new venture creation (r= 0.345, p=0.000) and finally; forums for interaction of businesses with potential customers and technology based new venture creation (r= 0.333, p=0.000).

4.2.3 Regression analysis

The objective of the study was to analyse the effect of access to networks support provided by business incubators on technology based new venture creation in Kenya. Bivariate linear regression analysis was used to examine whether access to networks support had a significant effect on technology based new venture creation in Kenya. The research hypothesis was:-

H_0: Access to networks support has no significant effect on technology based new venture creation in Kenya.

Testing the model fitness

Bivariate linear regression analysis was conducted to establish the effect of business support ($X_{2)}$ on the dependent variable; technology based new venture creation. Table 5 shows Coefficient of determination (R^2) and adjusted (R^2).

International Journal of Entrepreneurship and Project Management
ISSN 2518-2838(Online) 2520-9108
Vol.4, Issue 1, pp 33 - 50, 2019

Table 5: Coefficient of determination (R^2) and adjusted (R^2) for Access to networks

Model Summary[b]									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.542[a]	.294	.289	.15029	.294	62.335	1	150	.000

a. Predictors: (Constant), Access to Networks Support
b. Dependent Variable: Technology based new venture creation

The R- square and adjusted R- square was (R^2) = 0.294, adj. (R^2) =0.289 respectively as highlighted in Table 5. This implies that access to networks was able explain at least 32.6% variation in the dependent variable; technology based new venture creation. R^2 ranges from zero to one and the closer the value to one the better "fit" the model is.

ANOVA for regression

The analysis of variance was carried in order to provide information about the variability within the bivariate regression model in order to form the basis for test of significance. The outcome of analysis of variance is shown in Table 6.

Table 6: ANOVA results for access to networks

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.408	1	1.408	62.335	.000[b]
	Residual	3.388	150	.023		
	Total	4.796	151			

a. Dependent Variable: Technology based new venture creation
b. Predictors: (Constant), Access to Networks Support

The results of the significant test of the regression model for incubatee selection and technology based new venture creation had F statistics= 62.335 $_{(1,150)}$, p value < 0.05. This implies that the model had a significant statistical meaning and indicated "goodness" of fit of the model. According to field (2013), for the model to have significant statistical meaning, the F change value should be greater than 10. The study therefore concluded that the model was statistically significant to predict the relationship between business support and technology based new venture creation.

Coefficients of access to networks support

Table 7 shows the coefficients of the regression output for access to networks and technology based new venture creation. The Coefficients values were used to generate the model for access to networks and technology based new venture creation $Y=0.849+0.384X_1 + \varepsilon$

Where;

Y= technology based new venture creation

X_1 = Access to network support

ε = Error term

International Journal of Entrepreneurship and Project Management
ISSN 2518-2838(Online) 2520-9108
Vol.4, Issue 1, pp 33 - 50, 2019

Table 7: Coefficients of access to networks

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.849	.078		10.950	.000
	Access to Networks Support	.384	.049	.542	7.895	.000

a. Dependent Variable: Technology based new venture creation

The results on Table 7 indicate that that there exist a statistically significant positive relationship access to networks and technology based new venture creation in Nairobi Metropolitan ($\beta = 0.384$, $p<0.05$), implying that if incubatee selection increases by one unit, technology based new venture creation would increase by 0.384. The computed P value of 0.000 was less than 0.005 level of significance implying that access to networks had significant effect on technology based new venture creation in Nairobi metropolitan business incubators. The critical t value is supposed to be between -1.96 to + 1.96 to accept the null hypothesis. The computed t value was 7.895, $p<0.05$. Thus, null hypothesis $(\mathbf{H_0})$ was rejected and the alternative hypothesis $(\mathbf{H_a})$ accepted implying that access to networks had significant effect on technology based new venture creation in Nairobi Metropolitan Therefore, the study concluded that access to networks had a significant effect on technology based new venture creation in Kenya.

5.0 CONCLUSIONS AND RECOMMENDATIONS

Conclusions

From the results, access to networks had a positive relationship with technology based new venture creation. Access to networks had a significant effect on technology based new venture creation. Findings on access to networks as a component of the business incubation mechanism indicated access to a network of professionals that allows exchange of information and learning as an element of business support had the highest rating among the respondents. Incubation literature indicates that the demand for professional services has increased across the three generation of business incubators. Therefore, the findings in this study concur with the existing literature, implying that even as business incubation emerges as an important intervention in new venture creation in the developing economies, the needs of incubatees are somehow the same with those of their counterparts in developed economies such as USA, Japan, Europe and China. Provision of access to market networks was third in rating among the respondents while provision of platform for connections with potential financiers such as venture capital firms and business angels fourth in rating in relation to access to networks. Majority of the respondents indicated that lack of access to markets and lack of access to private equity and debt finance during new venture creation were a big challenge to them.

Recommendations

While access to networks was measured through access to markets, network of suppliers, network of professionals, internal networks and external collaborations, access to a network of professionals that allows exchange of information and learning as an element of business support within business incubators had the highest rating among the respondents. Therefore, business incubators should have a structured way of providing professional networks. For example, professionals can be assigned specific new ventures that they can mentor and coach on particular aspects of new venture creation. Business incubator provides platform for connections with potential financiers such as venture

capital firms and business angels that lead to technology based new venture creation was second in rating as an element in access to network by incubatees in the business incubators. Therefore, it is imperative for the incubation management to a have properly structured engagement with investors that strikes a balance between the interests of the investors and those of the incubatees.

The findings in this study indicated that even though incubatees attach a lot of importance to access to markets, Kenyan incubators rank low in provision of market networks that leads to technology based new venture creation compared to professional and financiers/potential investors' networks. Majority of the respondents indicated that access to market networks was a big challenge to new ventures. In order to improve incubatees 'access to market networks, incubation managers need to play a proactive role in providing access to market networks. Joint business incubators' exhibitions and conferences would also offer opportunities to incubators and incubatees to market themselves.

References

Adelowo C. M., Olaopa R. O. & Siyanbola W. O. (2012). Technology Business Incubation as Strategy for SME Development: How Far, How Well in Nigeria? *National Centre for Technology Management (Federal Ministry of Science and Technology)* PMB 012, Obafemi Awolowo University, Ile-Ife, Nigeria.

Aerts, K., Matthyssens, P. & Vandenbempt, K. (2007). Critical role and screening practices of European business incubators. *Technovation, 27*(5), 254-267.

Arumugam, B., & Ravindran, S. (2014). Success factors of incubatee start-ups and the incubation environment influencers. *International Journal of Applied Business and Economic Research*, *12*(4), 1179–1193.

Bergek, A., & Norman, C. (2008). Incubator best practice: A framework. *Technovation*, *28*(12), 20–28. Retrieved from http://doi.org/10.1016/j.technovation.2007.07.008 on 5th/06/2016.

Bhabra, R. (2014). *An examination of growth stages and factors affecting the performance of business incubators: the case of Australia. University of Wollongong.* Retrieved from http://ro.uow.edu.au/theses/4252 on 10th/06/16.

Chok, B. J. & Eunsuk S. (2009). The role dynamics of the IKED, Government Agencies, Supporting institutes and Incubation Centres in Korea. *APJIE*, 3(2), 57-75.

Creswell, J. W. (2009). *Research Design: Qualitative, Quantitative & Mixed Methods Approaches* (3rd ed.). Sage, Thousand Oaks, CA.

Field, A. and Miles, J. (2013). Discovering statistics using SAS. London: SAGE.

Frenkel, A., Shefer, D. & Miller, M. (2008). Public versus Private Technological Incubator Programmes: *Privatizing the Technological Incubators in Israel.* Paper presented at the 4th Congress of the European Regional Science Association, 23-27 August 2005, Amsterdam.

Gertner, D. (2013). Unpacking Incubation: Factors affecting incubation processes and their effects on new venture creation, *PhD Thesis*, Newcastle University Business School.

Government of Kenya. (2005). Sessional Paper, 2 of 2005 on *Development of Micro and Small Enterprises for Wealth and Employment Creation for Poverty Reduction*, Nairobi: Government printers.

Government of Kenya. (2007). *Kenya Vision 2030 - A Globally Competitive and Prosperous Kenya*, (October), 1–180. Government Printers.

Hackett, S. & Dilts, D. (2004). A Systematic Review of Business Incubation Research. *The Journal of Technology Transfer*, *29*(1), 55-82.

Irwin, D and Jackson, A. (2009). Benchmarks for incubator workspace in Africa. Retrieved from www.irwingrayson.com on 8th/06/17.

Jamil, F., Ismail, K., Siddique, M., Khan, M. M., Kazi, A. G., & Qureshi, M. I. (2016). Business incubators in Asian developing countries. *International Review of Management and Marketing*, *6*(4), 291–295.

Kinoti, A. & Miemie, S. (2011), an Evaluation of the Entrepreneurs perception of Business-Incubation Services in Kenya. *International Journal of Business Administration* 2, 4. Sci edu press.

McAdam, M. & McAdam, R. (2008). High tech start-ups in University Science Park incubators: The relationship between the start-up's lifecycle progression and use of the incubator's resources. *Technovation*, *28*(5), 277-290.

Mutambi, J., Byaruhanga, J. K., Trojer, L., & Buhwezi, K. B. (2010). Research on the State of Business Incubation Systems in Different Countries: Lessons for Uganda. *African Journal of Science, Technology, Innovation and Development*, *2*(2), 190–214.

Nicola, D. G., Lacher, L. & Minshall (2012). A review of research on the role and effectiveness of business incubation for high-growth start-ups, University of Cambridge Institute for Manufacturing. *Centre for Technology Management Working Paper Series*, No: 2012/01.

Ozdemir, O. Ç., & Şehitoglu, Y. (2013). *Assessing the Impacts of Technology Business Incubators: A framework for Technology Development Centers in Turkey.* Retrieved from https://doi.org/10.1016/j.sbspro. 2013.04.032 on 8th/06/17 on 20th/05/17.

Pettersen, I. B., Aarstad, J., Høvig, Ø. S., & Tobiassen, A. E. (2016). Business incubation and the network resources of start-ups. *Journal of Innovation and Entrepreneurship*. https://doi.org/10.1186/s13731-016-0038-8 on 23th/03/17

Ratinho, T., Harms, R. & Groen, A. (2010). *Towards a Distinction between Technology Incubators and Non-Technology Incubators: Can they contribute to Economic Growth?* University of Twente. Retrieved from http://doc.utwente.nl/73695 on 20th/05/17.

Ratinho, T., Harms, R., & Groen, A. (2009). *Technology business incubators as engines of growth: towards a distinction between technology incubators and non-technology incubators*. University of Twente. Retrieved from http://doc.utwente.nl/73695 on 20th/05/17.

Republic of Kenya. (2016). *MSME Basic Report, Kenya National Bureau of Statistics*. I SBN: 9 966 - 767 -56- 8. Nairobi, Government printers.

Rojas, V. M. (2010). Business incubators: knowledge transfer and networks creation as key success factors. Lannaeous University publication.

Roseira, C., Ramos, C., Maia, F., & Henneberg, S. (2014). Understanding Incubator Value A Network Approach to University Incubators. *University of Porto-FEP-School of Economics and Management*. Retrieved from http://www.fep.up.pt/investigacao/workingpapers/wp532.pdf on 28th/07/17.

Smith, A. (1998). *An Inquiry into the Nature and Causes of the Wealth of Nations.* Oxford, New York: Oxford University Press.

Smith, S. W. & Hannigan, T. J. (2015). *Swinging for the fences: How do top accelerators impact the trajectories of new ventures? Druid15, Rome, June 15-17, 2015.*

Schutjens, V., & Stam, E. (2003). The evolution and nature of young firm networks: a longitudinal perspective. *Small Business Economics,* 21(2), 115–134. Retrieved from doi: 10.1023/A: 1025093611364 on 28th/07/17.

Tengeh R.K & Choto P. (2015). The relevance and challenges of business incubators that support survivalist entrepreneurs: *Investment Management and Financial Innovations*, 12 (2).

Wanyoko, A. M. (2013). Influence of business incubation services on growth of Small and Medium Enterprises in Kenya. *International Journal of Social Sciences and Entrepreneurship, 1* (7), 454-468.