Analysis of Incubatee Selection Process and Technology-Based New venture Creation in Business Incubators in Kenya: Selection Criteria and Actors

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Abstract

Business incubation process entails two major components; incubatee selection process and provision of an array of business support services in new venture creation in an incubator's environment. Systematic selection of new and nascent ventures is a prerequisite for exercising real options by providing business support through business coaching and access to resources that increases the chances of successful new venture creation. Therefore incubatee selection emerges as a determinant of successful new venture creation. Business incubation in Kenya is relatively a new phenomenon. Review of literature reveals inadequate extant data and empirical evidence on what should constitute an effective incubatee selection process. Specifically, there exist gaps in literature concerning structuring of the selection process that takes cognizance of the a balanced selection criteria and a heterogeneous selection team It is against this back drop that this study sought to analysis incubatee selection process and technology- based new ventures in Kenyan Business incubators. The study was informed the Hackett & Dilts Logic Business Incubator Model (2004) on incubatee selection process. The study used descriptive research design. The study population was 9 business incubator managers and 364 incubatees located in Nairobi Metropolitan. Stratified sampling was undertaken to obtain strata based on each business incubator involved in the study. For the incubatees, simple random sampling was then applied to obtain a sample size of 186 incubatee. A Semi-structured questionnaire was used to collect both quantitative and qualitative data from the incubatees. An interview schedule was used to collect data from incubator managers. Quantitative data was analyzed using SPSS that generated both descriptive and inferential statistics. Pearson's correlation coefficients indicated a positive correlation between incubatee selection process and technology based new venture creation; $r=0.401$, $p<0.05$. Bivariate analysis indicated incubatee selection process had a significant effect on technology based new venture creation, with the beta coefficients; $\beta = 0.439$, $p<0.05$). Majority of the business incubation managers indicated that success rate of the incubated ventures was approximately 50%. Move rover, majority of the entrepreneurs gave a low rating on harmonization of incubator objective and selection criteria. Therefore, this study recommends that business incubators in Kenya need to relook at how incubatee selection is structured to ensure that new ventures admitted to business incubators have a high success rate at the end of the incubation process. Specifically this study recommends that Kenyan business incubators need to set out very clear selection criteria that are properly harmonized with the incubator's objective. This will ensure that only deserving ventures with potential for product launching and business growth are admitted to the business incubators, and therefore increase successful new venture creation. Concerning incubatee selection actors, the study recommends the structuring of selection process that ensures that multiple actors are used in the selection process to utilize a wider pool of experts and professionals. Involvement of heterogeneous multiple teams of actors can lead to the selection of incubatees with higher chances of success in technology- based new venture creation.

Key Words: Incubatee selection process, new venture creation, Business incubator model

Introduction

Globally, government policymakers and development partners have invested in several initiatives aimed at creating favourable conditions that include policy and regulatory incentives, mechanisms to increase access to capital, and educational reform to support innovative entrepreneurship (Clarysse et al, 2007). Within this landscape of interventions, is the business incubation process, which entails a focus on strengthening dynamic, early-stage, growth-oriented enterprises and hence achieving economic growth (Moreira & Carvalho, 2012). 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 incubators and Science and Technology Parks (STPs) are gaining prominence as a timely intervention in promoting economic development globally through job creation, technology transfer and development of innovative products and services. The need to promote technology-based new ventures has led to the evolution and growth of business incubators and industrial parks. It is against this backdrop that incubation literature has emerged based on practice and scholarly research. Gertner (2013) avers that incubation literature focuses on topics that revolve around nine themes: Incubation literature, incubation process, incubator and networks, incubators and policy implications, incubators and new venture creation, evaluation of business incubators, incubator outputs, incubation and learning, and incubator facilities. The author further notes that the incubation process has received the least among the nine themes. Literature that links the incubation process to successful new venture creation is also scanty.

Literature review on the evolution of the business incubation industry indicates that each generation of business incubators emphasized an aspect of the incubation process that was not offered by the previous generation(s) (Ratinho et al, 2009). Business incubators have evolved from providing space to helping entrepreneur's nature and grow their new firms by leveraging business support and other resources within and outside the business incubators. This has placed more emphasis on the process that takes place in a business incubator rather than the incubator premises itself. Recent studies have linked the incubatee selection process to the attainment of incubation outcomes such as the creation of new ventures (Gertner, 2013; Patton et al., 2009).

Review of incubation literature, in general, reveals that there is no consensus in the definition of the incubation process. For example, Rice (2002) definition of business incubation highlights focuses on the interaction between actors, Business support is conceptualized as a major component of business incubation (Hackett and Dilts, 2008, Bergek & Norman, 2008) and earlier on Campbell et al (1985) focused on the incubation outcome. However, Gertner (2013) asserted that the definition of the business incubation process should be more holistic to include all the incubation components that different incubation models have identified over time. From this author's scholarly work this definition was developed:

> *"A process managed by an incubator to develop business ideas into new ventures that involve a selection process and delivery of an array of business support and resources to entrepreneurs by internal and external actors".*

The definition above was more inclusive in its view on incubation as a process that entails two major components; selection process and provision of an array of business support services. Moreover, based on incubation literature that focuses on incubation theories and models by different incubation scholars, four incubation components emerge as entailing the incubation

process. These include; incubatee selection, business support, access to network support and infrastructural facilities support (Hackett &Dilts, 2004, Rice 2002, Smilor, 1987, Campbell et al., 1985). Incubatee selection is the first step in business incubation implying that an inadequate selection process would affect the rest of the business incubation process. Given the incubatee selection process imperatives, the current study analyzes how this initial step affects technology-based new venture creation in Kenyan business incubators.

Incubatee Selection Process

Hacketts and Dilts (2004a) while conceptualizing business incubation process identifies a systematic selection of new and young ventures as a prerequisite for exercising real options by providing business support through business coaching and access to resources that helps in reducing the cost of incubatees' potential failure. This implies that appropriate selection criteria that yield more homogenous tenants make it easier to provide adequate business support services, infrastructure and access to networks. A more objective selection process allows the incubation to have a balanced value proposition in terms of economies of scale associated with infrastructure, acceleration of the learning curve associated with business support and access to both internal and external resources that entails access to networks (Ratihno et al., 2009).

There is scarce evidence in the literature on business incubation scholars trying to explain the meaning of selection from the business incubation perspective. Most literature on business incubation defines selection as the extent to which the business incubators enumerate venture capitalists in the selection of incubatees for business incubation (Colombo & Grilli, 2005; Hackett & Dilts, 2008; Shane, 2008). In a recent study, Ganamotse (2011) defines selection criteria as the "yardstick" used to back the decision to admit entrepreneurs, their teams and ideas for business incubation. The incubatee selection process consists of two components; section criteria and selection actors who participate in selecting tenants.

The selection criteria consist of parameters such as the ability to create jobs, a written business plan, ability to pay operating expenses, unique business opportunity, fast-growth potential, technology-based venture (Gertner, 2013). Other selection criteria parameters include the potential to attract investment, the profit potential of the new venture, defendant competitive position, multiple harvestable exit options, and substitutability of the product and whether the prospective product has patent protection (Hacketts & Dilts, 2008). Ganamotse (2011) identified four factors that form the basis of the selection criteria for quality new ventures: financial characteristics, product differentiation, Management team characteristics and market characteristics of the market that the new ventures intend to sell their products.

Business incubation literature relating to Kenyan business incubators avers that there is scanty evidence on the effect of business incubation process on new venture creation (Kinoti & Miemie, 2011, Wanyoko, 2013). Another study by Riunge (2014) looked at the determinants of business incubation success and found that selection criteria was one of the determinants of incubated ICT firms. Though the study considered factors applied by incubators to select firms such as prior experience, accessible target market, product characteristics, potential to attract venture capital and financial capability of incubatees, the study did not look at how the selection process is structured to make it more effective in selection firms. The studies did not consider section actors and incubator objectives, two important components included in the structuring of the incubatee selection process. Moreover, Researchers have recognized the importance of an appropriate criterion for selecting incubatees and exit policies from the incubator as a prerequisite for

successful incubation process (Aerts et al., 2007; Lee & Osteryoung, 2004). These empirical findings indicate that there was discontent between incubator objective and the selection criteria. This implies that business incubators in Kenya need to structure their incubatee selection that creates harmony between incubator objective and selection criteria. Therefore there is need to examine incubatee selection process as proposed in the business incubation literature in the Kenyan Business incubators.

General Objectives

The study sought to analysis the incubatee selection process and technology based new venture creation in Kenyan business incubators.

Specific objectives

i. Examine the structuring of incubatee selection process in Kenya business incubators
ii. Determine the effect of incubatee selection process on incubated technology based new ventures in Kenya.

Research Hypothesis

H_{0_1} : Incubatee selection process has no significant effect on technology-based new venture creation in Kenya.

Literature Review

Theoretical Framework

Incubatee selection process was informed the Hackett & Dilts Logic Business Incubator Model (Hackett & Dilts, 2004a). The Logic Business incubator Model is premised on the fact that business incubation allows operationalization of an overarching community strategy to promote the survival of new firms and consequently, an incubator is an enabling technology rather than strategic technology. As such, the business incubation model is universal in application to both public and private business incubators. The model draws inputs from the theory of real options adopted by Hackett and Dilts (2004a) to explain the business incubation process. The model processes and practices include; selection, monitoring, business assistance, venture development, product development, and resource munificence. Figure 2.1 is a diagrammatic representation of Hackett and Dilts (2004a) Business Incubation Process Model.

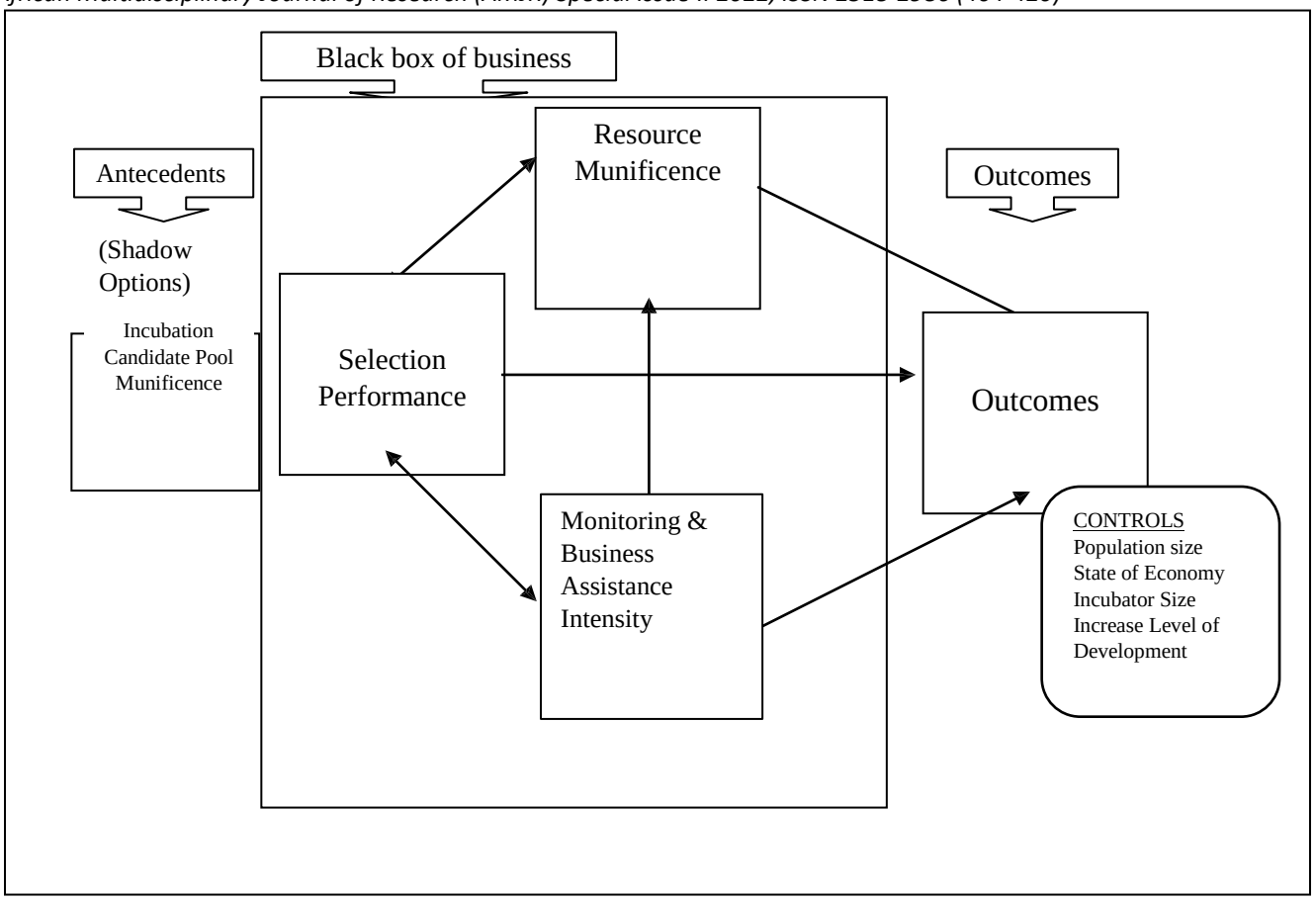

Figure 1: Hackett & Dilts Business Incubation process Model (Hacketts &Dilts, 2004a)

Hackett and Dilts (2004 a) incubation model suggests that the selection of incubatees is done from a pool of candidates after which the tenants in the business incubator are monitored and supported with resources during the initial development phase. The outcome of business incubation is either success or failure of the incubatees as they leave the business incubator. Hackett and Dilts (2004) posit that outputs and performance of the business incubation hinge on the ability of a business incubator to create real incubation options by selecting weak but promising nascent firms and monitoring and supporting the tenants in the business incubator. Therefore, Hackett and Dilts emphasis on the importance of selection performance and intensity of monitoring tenants and timely assistance efforts and resource munificence yields a more holistic vision of the incubation model (Moreira & Carvalho, 2012). However, it is important to note that any incubation program success depends on the incubation practices that a business incubator adopts. Other important factors are; age, incubator's size and the local environment.

Empirical Review

Effective incubation process is determined by the selection of the right entrepreneurs. Selection of incubatees is an important management activity performed by business incubators (Tengeh & Choto, 2015). Selection of incubatees is a daunting task that requires a comprehensive understanding of the technology, market and interactions of different dimensions in the process of creating the new venture. This is achieved by conducting a needs assessment, evaluating the potential businesses for admission into the business incubator based on their mission, industry sector, learning, and coaching ability of the entrepreneur and business location (Bergek &

Norman, 2008). Ganamotse (2011) identified four factors that form the basis of the selection criteria for quality new ventures: financial characteristics, product differentiation, Management team characteristics and markets characteristics of the market, which the new ventures intend to sell their products.

The empirical literature on selection criteria indicates that a variety of factors are considered. For example, a study by Bergek and Norman (2008) on the "screening practice" of sixteen Swedish business incubators found out that six incubators were entrepreneur focused related to character and competence of the entrepreneur while seven of the business incubators were idea-focused with an emphasis on the innovativeness of the business idea. The remaining three focused on both ideas and entrepreneurship. The researchers further observed that selection takes two approaches; selection based on the entrepreneur and selection based on the business idea. The idea-focused approach requires incubator managers to have a thorough knowledge and understanding of relevant technology fields. This enables the incubator managers to evaluate potential incubatees' ideas effectively. On the other hand, the entrepreneur approach considers entrepreneur personality, experience, skills, and characteristics concerning business development requirements.

Various studies have evaluated incubatee selection practices in business incubators in the past. A study by Aerts et al. (2007) on screening practices by European incubators found out that 74% of incubators had a selection committee but the selecting decision rested on one individual. The business incubators considered three factors in their selection criteria; market-related factors as the most important parameter, then management team and lastly financial factors. However, overemphasis on one factor was associated with a high tenant failure rate suggesting a need to balance the screening practice and involvement of multiple decision-makers on selection committees. They also found out that entrepreneur focus and innovativeness of the business idea are important factors in the selection criteria. On tenants' experience and background, TIs preferred teams that were more entrepreneurial than ventures managed by single entrepreneurs with NTBIs at p-value ≤ 0.01.

A study by Ratinho et al. (2009) on technology incubators as the engine of growth evaluated the selection criteria applied by business incubators in six Northwestern countries in Europe. The study was a comparative analysis between technology incubators and non-technology incubators. The results showed statistically significant differences in selection criteria and exit strategies between the two sets of incubators. On the entry criteria, TIS tends to select young companies with an average age of 0.76 years while the average age of tenants admitted to NTBIs is 3.02 years. Technology incubators also used a more sophisticated selection procedure. Only 28.0% found it not difficult to get admitted in a business incubator while 64.0% of NTBIs found it not difficult to get admitted into an incubator. The average age of exit for tenants in TIs was 3.02 years while that of tenants in NTBIS 5.45 years. The study found that the selection criteria and exit strategy was an important variable that influenced the success of both incubators and their tenants.

A study by Riunge (2014) on the effects of business incubation on ICT firms located in Nairobi Metropolitan sought to establish whether selection criteria determines the successful incubation of ICT start-ups firms in Kenya. Using cross-tabulation, the findings of this research indicated the following factors are considered in the selection of incubatee in varying degrees. The

responses were as follows; 57.9% of respondents agreed that selection criteria were applied based on prior experience of the management team, 66.6 % based on prior technical experience, 77.1% based on the product characteristics, 61.4% agreed that ability to attract investment from venture capital firms was used, 80.7% indicated prior experience. Finally, 81.6% agreed that financial capability was applied and 85.1% concurred that long term strategic objective was considered.

Another study by Ratinho (2012) found that the selection criterion is applied in admitting start-ups into the business incubators. Only a small number of the incubatees (28%) found the process of incubatee selection to be difficult. On selection criteria, the findings indicated that 72.0% of the start-ups admitted to the technology incubators were team start, 29.2% were serial entrepreneurs, those with entrepreneurship preparation were 40.0% and the average years of experience for those admitted into the business incubators was 21.0. This implies that entrepreneurial experience is considered important when selecting incubatees into the business incubator.

While the empirical literature above indicate application of a selection criteria in most the business incubators, there is scanty literature on selection teams composition. Specifically, there are theoretical and empirical gaps in the literature concerning the structuring of the incubatee selection process that takes into account selection criteria and actors as proposed in theoretical literature. Therefore, to fill this gap, this study takes into account selection performance as proposed in the Hackett and Dilts (2004a) Business Incubation process Model. Moreover, this study analysed the structuring of incubatee selection that takes into account incubatee section criteria and heterogamous selection team guided by the incubator's objective.

Research Methodology

The positivism philosophical underpinings of this research was considered in the choice of descriptive research design, allowing observation and description of the new venture creation in Kenya in a business incubation context. The incubatee selection process has been explained interms of the selection criteria and actors, and its relationship relationship with new venture creation in Kenya. To collect relevant data for this study, 9 business incubators in Nairobi Metropolitan were identified with the units of observation being incubators' managers and incubatees involved in creation of new ventures in the incubators. A structured interview schedule was used to collect qualitative data form incubation managers. Quantative data from incubatees was collected using a semi structured questionnaire. Qualitative data was analysed using thematic qualitative data method while descriptive and inferential methods were applied for the quantitative data.

Results and Discussion

Descriptive Statistics on Structuring of Incubatee Selection Process.

This section presents descriptive analysis on the on the structuring of incubatee selection process. The three factors that constitute incubatee selection process, namely, incubator management, incubator objective and selection criteria. The study first sought to establish the selection approaches applied in Kenyan Business incubator based on two broad parameters; idea innovativeness and entrepreneurial characteristics and competence as averred in literature (Bergek & Norman 2008). Table 1 below represent the summary of findings on selection approaches applied in Kenyan Business Incubators.

Table 1: Selection Criteria Approach Used

Selection Approach	Frequency	Percent
Based on idea innovativeness	45	29.6
Based on entrepreneur's character and competence	18	11.8
Based on both idea innovativeness and entrepreneur's character	89	58.6
Total	**152**	**100.0**

In order to understand the structuring of the incubatee selection process much better, respondents were requested to indicate the selection criteria approach that the incubator used to admit their business in the business incubator. Table 1 shows that the majority of the businesses had been selected for admission into incubation based on both idea innovativeness and entrepreneur's character as represented by 58.6% of the total responses. About 29.6% of the respondents indicated that the selection criteria approach that the incubator used to admit their business was based on idea innovativeness while 11.8% indicated that it was based on entrepreneur's character and competence. The findings concur with the observation by Bergek and Norman (2008) that selection takes two approaches, selection based on entrepreneur and selection based on the idea. The findings indicate that all the incubatees went through a selection process, and as Ganamotse (2011) notes, the purpose of incubatee selection is to examine potential capabilities of the new venture to attain successful new venture creation.

Incubatee Selection and Technology Based New Venture Creation

Eleven constructs were used to measure incubatee selection factors affecting technology-based new venture creation. A survey instrument with a Likert scale of 1 to 5 was used collect data, whereby: 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 4.34 on the next page.

Table 2: Incubatee Selection Process and Technology Based New Venture Creation

	Response Rate Scale of 1-5				
Statements	**No Extent**	**Little Extent**	**Mode-rate Extent**	**Great Extent**	**Very Great Extent**
Involvement of incubator management in the selection of incubatees into the business incubator leads to technology-based new venture creation.	3.9%	3.3%	11.8%	32.9%	48.0%
Incubator management engagement of external actors with start-up experience in incubatee selection into the business incubator leads to technology-based new venture creation.	6.6%	9.2%	17.1%	44.1%	23.0%
Determination of selection criteria used based on business incubator objective leads to technology-based new venture creation.	2.6%	1.3%	22.4%	37.5%	36.2%
Structuring of the selection process based on the business incubator objective leads to technology-based new venture creation	5.9%	9.2%	22.4%	28.9%	33.6%
Composition of selection team involved in the selection process based on business incubator objective leads to technology-based new	0%	5.3%	23.0%	32.9%	38.8%

venture creation

Consideration Management team characteristics of potential businesses during incubatee selection leads to technology-based new venture creation.	5.9%	9.2%	22.4%	28.9%	33.6%
Consideration of financial capability of potential businesses during incubatee selection leads to technology-based new venture creation.	7.2%	9.2%	24.3%	36.2%	23.0%
Consideration of potential to attract investment participation from external financiers during incubatee selection leads to technology-based new venture creation.	6.6%	7.2%	20.4%	35.5%	30.3%
Consideration of product differentiation in potential businesses during incubatee selection leads to technology-based new venture creation.	3.9%	3.9%	32.2%	34.2%	25.7%
Consideration of market characteristics targeted by potential businesses during incubatee selection leads to technology-based new venture creation.	5.9%	9.2%	21.7%	32.2%	30.9%
Consideration of learning and coaching ability of the entrepreneur during incubatee selection leads to technology-based new venture creation.	5.9%	6.6%	23.0%	34.2%	30.3%

Incubatee selection was operationalized through three parameters; incubator management, incubator objective and selection criteria. Analysis of incubatee selection as component in the business incubation mechanism indicated that determination of selection criteria used based on business incubator objective leads to technology-based new venture creation had the highest rating by incubatees with 22.4% of respondents at moderate extent 37.5% of respondents at great extent and 36.2% of respondents at very great extent respectively. Only a combined total of 3.9% of the respondents rated determination of selection criteria used based on business incubator objective at a little extent and no extent at all respectively.

The second factor in rating was business incubator objective determines how the selection process is structured in terms of selection factors used with 22.4% of respondents at moderate extent 28.9% of respondents at a great extent and 33.6% of respondents at very great extent respectively. The third factor in rating by incubatee was the composition of selection team involved in the selection process based on business incubator objective leads to technology-based new venture creation with 23% of respondents at moderate extent, 32.9% of respondents at a great extent and 38.8% of respondents at very great extent respectively.

Analysis of the three factors with the highest rating among the constructs of the operationalized incubatee selection process indicated that consideration of the incubator objective during incubatee had the greatest effect on technology-based new venture creation. All the three constructs used to operationalize the incubator objective received the highest rating as averred in the discussion above. The descriptive statistical analysis on the effect of business incubation on business survival is in agreement with views of incubators' management. Several incubator managers while commenting on the incubatee selection process avers that business incubators

consider incubator's objective when selection incubatees for admission in the business incubator. One incubator manager remarked,

> "We look at the objective of the incubatee alignment with our objective, the viability of the idea and presence of a dedicated entrepreneurial team." (Incubator manager M2)

Incubator Manager M4 also noted that;

> "The Incubatee must be pursuing an innovation in an area of technology that the incubator supports…… and also our infrastructure and capacity to support the business."

The fourth factor in rating was involvement of incubation management in the selection of incubatees into the business incubator leads to technology-based new venture creation with 11.8 % of respondents at moderate extent, 32.8% of respondents at a great extent and 48 % of respondents at very great extent respectively. In total, only 7.2% of the respondents felt that management involvement in incubatee selection was to a little extent and no extent at all respectively. The descriptive statistical analysis on factors used in incubatee selection is in agreement with views of incubators' management. One of the of incubator manager while commenting on selection criteria avers that;

> "We have a selection team of five members headed by the incubation manager. The team consists of members drawn from centers of incubation that are based on the areas of technology the incubator is concerned with."(Incubator manager M4)

Another incubator manager avers that besides involving incubator management, experts and entrepreneurs are also involved in the selection of incubatees.

> "We have a selection team composed of subject matter experts who give their input business people from the relevant industry, industrial pack management and entrepreneurs who help in looking at business viability." (Incubator manager M2)

Selection criteria constructs had the lowest rating among the incubatees. The fifth factor in rating was selection consideration of product differentiation of potential businesses leads to technology-based new venture creation with 32.2% of respondents at moderate extent 34.2% of respondents at a great extent and 25.7% of respondents at very great extent respectively. The sixth factor in rating was; consideration of learning and coaching ability of the entrepreneur leads to technology-based new venture creation with 23% of respondents at moderate extent, 34.2% of respondents at a great extent and 30.3% of respondents at very great extent respectively. The seventh factor in rating was; consideration of potential to attract investment participation from external financiers by business incubator leads to technology-based new venture creation with 20.4% of respondents at moderate extent 35.5% of respondents at a great extent and 30.3 % of respondents at very great extent respectively.

The other factors that incubators considered, though to a small extent included: Consideration of management team characteristics of potential businesses by business incubators with 22.4 % of respondents at moderate extent 28.9% of respondents at a great extent and 33.6 % of respondents at very great extent respectively. Consideration of market characteristics targeted by potential businesses by business incubators had 21.7% of respondents at a moderate extent, 32.2 % of respondents at a great extent and 30.9% of respondents at very great extent respectively. Incubator management engages external actors with start-up experience in the selection of incubatee into the business incubator with 17.2% of respondents at moderate extent 44.1% of respondents at a great extent and 23% of respondents at very great extent respectively.

The above results concur with the findings of a study by Ratinho (2011) on the selection criterion applied in the admission of start-ups into the business incubators. Only a small number of the incubatees (28%) found the process of incubatee selection to be difficult. On selection criteria, the findings indicated that 72.0% of the start-ups admitted to the technology incubators were team start, 29.2% were serial entrepreneurs, those with entrepreneurship preparation were 40.0% and the average years of experience for those admitted into the business incubators was 21.0%. This implies that entrepreneurial experience is considered important when selecting incubatees into the business incubator.

Consideration of financial capability of potential businesses by business incubators leads to technology-based new venture creation having the lowest rating with 24.3 % of respondents at moderate extent 36.2% of respondents at a great extent and 23% of respondents at very great extent respectively. A combined total of 16.5% of the respondents rated consideration of financial capability of incubatees in the selection of incubatees at a little extent and no extent at all respectively and was the lowest among all the other factors considered in the incubatee selection criteria constructs. The above findings concur with Ganamotse (2011) who identified four factors that form the basis for the selection criteria for quality new ventures: financial characteristics, product differentiation, Management team characteristics and markets characteristics which the new venture intends to sell their products. The descriptive statistical analysis on factors used in incubatee selection is in agreement with views of incubators' management. One of the of incubator managers while commenting on selection criteria avers that,

Incubator manager M5

> "We consider factors such as value addition aspects of the product, technical knowledge of the entrepreneur and market potential of the proposed product."

Another incubator manager, M7 contends,

> First of all, does the project consider environmental sustainability? What is the social impact of the project because our focus is social enterprise ventures? We also consider the potential of the idea in terms of being scaled up. We also consider the entrepreneurial characteristics of the entrepreneur.

The overall analysis leads to the conclusion that the majority of factors used in the selection of incubatees were considered by the business incubators included in this study. Therefore the findings concur with the findings of a study by Riunge (2014) on the effects of business incubation on ICT firms located in Nairobi Metropolitan which sought to establish whether selection criteria determine the successful incubation of ICT start-ups firms in Kenya. Using cross-tabulation, the findings of this research indicated that incubatee selection process factors affected technology-based new venture creation at varying degrees. The responses were as follows; 57.9% of respondents agreed that selection criteria were applied based on prior experience of the management team, 66.6% based on prior technical experience, 77.1% based on the product characteristics, 61.4% agreed that ability to attract investment from venture capital firms was used, 80.7% indicated prior experience. Finally, 81.6% agreed that financial capability was applied and 85.1% concurred that long term strategic objective was considered. This implies that the parameters that the researcher used to measure incubatee selection during incubation were all relevant.

Therefore, there is a need for business incubation in Kenya to structure their incubation process in a way that will lead to higher technology-based new venture creation. Selection of incubatees is a daunting task that requires a comprehensive understanding of the technology, market and

interactions of different dimensions in the process of creating the new venture. This is achieved by conducting a needs assessment, evaluating the potential businesses for admission into the business incubator based on their mission, industry sector, learning, and coaching ability of the entrepreneur and business location (Bergek & Norman, 2008).

Incubator Managers' Views on Incubatee Selection Process

The study sought the views of incubators managers pertaining the incuabatee section process. The respondents' comments and themes that emerged during the interviews with incubation managers are captured in Table 3 below.

Table 3: Analysis of Incubator Managers' Views on Incubatee Selection Process

Incubatee Selection	Emergent themes	Comments
	All business incubators involved in the study had a selection criteria.	The structuring of the incubatee process for some incubators requires harmonization of incubator objective and selection criteria.
	All business incubators indicated that they had a selection teams.	Majority of the selection teams consisted of incubator staff. There is a need for a heterogeneous team that includes experts, professionals and entrepreneurs.
	Business incubators consider the entrepreneurial team of the new venture	A heterogeneous entrepreneurial team with diverse management and technical skills increases the odds of successful new venture creation
	Business incubators considers business idea viability	Evaluation of the business model helps in identifying viable business ideas.

Pearson's product movement correlation coefficient

As a prerequisite for hypothesis testing analysis was done for the Pearson's correlation coefficient to determine the degree of relationship between the independent variable: incubatee selection process and the dependent variable: technology based new venture creation. Table 4 in the next page shows outcome of this analysis indicated that incubatee selection process had a moderate positive correlation with technology-based new venture creation in Kenya ($r=0.401$, $p<0.05$).

Table 4: Pearson's Product Movement Correlation Coefficient Results

		Incubatee Selection Process	Technology-Based New Venture Creation
Incubatee Selection Process	Pearson Correlation	1	
	Sig. (2-tailed)		
Technology Based New Venture Creation	Pearson Correlation	.401**	1
	Sig. (2-tailed)	.000	

Hypothesis Testing

H_{0_1} : Incubatee Selection Process Has No Significant Effect on Technology Based New Venture Creation in Kenya

i. Testing the Model Fitness for Incubatee Selection Process

The effect of the incubatee selection process (X1) on the dependent variable; technology-based new venture creation was determined using bivariate regression analysis. Table 5 shows the results from testing of the model fitness in the analysis output.

Table 5: Coefficients of Determination (R^2) and Adjusted (R^2) for incubatee selection Proces

Model Summary

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	.401	.161	.155	.58203	.161	28.702	1	150	.000

The R- square and adjusted R- square was (R2) = 0.161 and adj. (R2) =0.155 respectively as highlighted in Table 5. The R- square values indicates that incubatee selection process was able to explain at least 16.1% variation in the dependent variable; technology-based new venture creation. Given that R2 ranges from zero to one and inthis case, the values were within this range, the better "fit" the model is.

ii. ANOVA for Regression for Incubatee Selection Process

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

Table 6: ANOVA Results Incubatee Selection Process

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	9.723	1	9.723	28.702	.000
	Residual	50.814	150	.339		
	Total	60.537	151			

The results of the significant test of the regression model had F statistics= 28.702 (1,150), p-value < 0.05, indicating a significant statistical meaning and "goodness" of the fit of the model. For the model to have significant statistical meaning, the F change value should be greater than 10 (Field & Miles, 2013). The study, therefore, concluded that the model was statistically significant to predict the relationship between incubatee selection process and technology-based new venture creation.

iii. Coefficients for Incubation Selection Process

Table 4.7 shows incubatee selection and technology-based new venture creation regression coefficients output. The Coefficients values were used to generate the model for incubatee selection and technology-based new venture creation Y=2.114+**0.439**$X_{1.}$

Table 4.7: Coefficients for Incubation Selection Process

Coefficients						
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	2.114	.318		6.639	.000
	Incubatee Selection Process	.439	.082	.401	5.357	.000

The results on Table 4.47 indicate that there existed a statistically significant positive relationship between the incubatee selection process and technology-based new venture creation in Nairobi Metropolitan ($\beta = 0.439$, $p<0.05$. This implies that if incubatee selection process increases by one unit, technology-based new venture creation would increase by 0.439. The computed t value was 5.357, $p<0.05$. The computed p-value of 0.000 was less than 0.05. The critical t value is supposed to be between -1.96 to and 1.96 to accept the null hypothesis. Thus, the null hypothesis $(H_{0_1})$was rejected and the alternative hypothesis(H_{a_1}) accepted implying that incubatee selection process had a significant effect on technology-based new venture creation in Nairobi Metropolitan. Therefore, the study concluded that the incubatee selection process had a significant effect on technology-based new venture creation in Kenya.

Several previous studies have evaluated the effect of incubatee selection process on new venture creation. A study by Riunge (2014) evaluated the determinants of successful business incubation in Kenya. Results indicated that selection criteria had a positive and significant effect on successful business incubation (($\beta = 0.173$, $p<0.05$). This implied that an increase in selection criteria by one unit leads to an increase in technology-based new venture creation incubation by 0.173 units. A more recent study by Wachira (2017) assessed the effect of incubatee selection criteria strategy in University-based incubators on enterprise growth in Kenya. The calculated F-statistic was 20.361 with a p-value of 0.000, $p< 0.05$ implying that the null hypothesis was rejected and the alternative hypothesis accepted that selection criteria strategy had a significant effect on enterprise growth in Kenya.

Conclusion and Recommendations

Incubatee selection process, was found to have a significant positive relationship with technology-based new venture creation. Incubatee selection process also had a significant effect on technology-based new venture creation. This implies that selection performance is an important element, the outcome of which is success or failure of the incubatees as they leave the business incubator. The empirical findings indicated that business incubator highly considered business incubator objective during the selection of incubatees. The business incubator objective also determined how the selection process was structured by the business incubators. However, empirical findings indicate that there was discontent between incubator objective and the selection criteria. Business incubators in the study were given a low rating in the use of selection criteria developed from the existing incubation literature. This implies that business incubators in Kenya need to structure their incubatee selection that creates harmony between incubator objective and selection criteria.

This study recommends that business incubators in Kenya need to set out very clear selection criteria that are properly harmonized with the incubator's objective. This is because business incubation literature provides evidence that a business incubator objective directs how finances and other resources are deployed in the provision of business incubation services. This ensures that only deserving ventures with potential for product launching and business growth are admitted into the business incubators to increase successful technology-based new venture creation. Since the study found that majority of the business incubators used both idea innovativeness; and, entrepreneurs character and competences, the selection criteria should strike a balance between the two approaches by ensuring that the parameters in the selection criteria balances between idea innovativeness; and, entrepreneurs character and competences.

Finally, this study recommends structuring of the selection process should also ensure that multiple actors are used in the selection process to utilize a wider pool of experts and professionals. While several incubators indicated that they had a selection team, there was no balance, and the teams mainly comprised of incubator management. In some instances, the final decision on whether to admit or not admit an incubatee was vested on one person. Heterogeneous multiple teams of actors can lead to the selection of incubatees with higher chances of success in technology-based new venture creation in Kenya.

References

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

Barrow, C. (2001). *Incubator: A Realist's Guide to the World's New Business Accelerators*. West Sussex, UK: John Wiley & Sons Ltd.

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

Bollingtoft, A., & Ulhoi J. P. (2005). The networked business incubator—leveraging entrepreneurial agency? *Journal of Business Venturing*, 20, 265 – 290.

Campbell, C., Kendrick, R. C., & Samuelson, D. S. (1985) Stalking the Latent Entrepreneur: Business Incubators and Economic Development. Economic Development Review, 3, 43-48.

Clarysse, B., Wright, M., Lockett, A., Mustar, P., & Knockaert, M. (2007) Academic Spin-Offs, Formal Technology Transfer and Capital Raising. *Industrial and Corporate Change*, 16, 609-640.

Colombo, M. G. & Grilli, L. (2005). Founders' human capital and the growth of new technology based firms: A competence-based view. *Research Policy*, 34(6), 795-816.

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

Ganamotse, G. N. (2011). A Conceptual Framework for Examining Selection Practices of Business Incubators, *10th International Entrepreneurship Forum,* Tamkeen, Bahrain, 9-11 January 2011.

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

Hackett, S. M., & Dilts, D. M. (2004a) A Real Options-Drive Theory of Business Incubation. *Journal of Technology Transfer,* 29, 41-54.

Hackett, S. M., & Dilts, D. M. (2008). Inside the black box of business incubation : Study Business-scale assessment, model refinement, and incubation outcomes, 439–471. *The Journal of Technology Transfer*. Retrieved from https://doi.org/10.1007/s10961-007-9056-9.

Jorgensen, S. B. (2014). *Business Incubators and Incubatees: A study of the entrepreneurs inside the Growth Factories.* Published PhD thesis. Roskilde: Roskilde Universitet.

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

Lee, S. S., & Osteryoung, J. S. (2004). A Comparison of Critical Success Factors for Effective Operations of University Business Incubators in the United States and Korea. *Journal of Small Business Management, 42*(4), 418-426. Doi: 10.1111/ j.1540- 627X. 2004.00120.

Moreira, A. C. & Carvalho, M. F. (2012). Incubation of new ideas: extending incubation models to less-favoured regions. *Entrepreneurship–Creativity and Innovative Business Models, 41*.

Ozdemir, O. Ç., & Şehitoglu, Y. (2013). Assessing the Impacts of Technology Business Incubators: A framework for Technology Development Centers in Turkey. *Procedia–Social and Behavioral Sciences*, *75*, 282–291. Retrieved from https://doi.org/10.1016/j.sbspro.2013.04.032 on 8th/06/17 on 20th/05/17.

Patton, D., Warren, L. & Bream, D. (2009). Elements that underpin high-tech business incubation processes. *Journal of Technology Transfer*, 34, 621-636.

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.

Rice, M. P. (2002). Co-production of Business Assistance in Business Incubators: An Exploratory Study. *Journal of Business Venturing*, 17, 163-187.

Riunge, M. N. (2014). *Determinants of success in information and communication technology (ICT) business startup's incubation in Kenya*. University of Nairobi. Retrieved from http://erepository.uonbi.ac.ke/handle/11295/77043 on 28th/07/17.

Saunders, M., Lewis, P., & Thornhill, A. (2009). *Research Methods for Business Students* (5th Ed.). London: Prentice Hall.

Shane, S. (2008). *Illusions of Entrepreneurship: The Costly Myths that Entrepreneurs, Investors, and Policy Makers Live By*, New Haven, Yale University Press.

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

Wachira, K. (2017). *The Role of University Based Business Incubators Strategy on Enterprise Growth in Kenya.* (Unpublished PhD Thesis, Jomo Kenyatta University of Agriculture and Technology). Retrieved from http://hdl.handle.net/123456789/3305.

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.