

**THE ROLE OF UNIVERSITY BASED BUSINESS  
INCUBATORS STRATEGY ON ENTERPRISE GROWTH  
IN KENYA**

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**The Role of University based Business Incubators Strategy on  
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**DECLARATION**

This thesis is my original work and has not been presented for the award of a degree in any other University

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## **DEDICATION**

To my late parents and all those who shall choose to take the academic path

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## **TABLE OF CONTENTS**

<b>TABLE OF CONTENTS.....</b>	<b>iii</b>
<b>LIST OF TABLES.....</b>	<b>x</b>
<b>LIST OF FIGURES.....</b>	<b>xi</b>
<b>LIST OF APPENDICES.....</b>	<b>xii</b>
<b>ABBREVIATIONS &amp; ACRONYMS.....</b>	<b>xiii</b>
<b>OPERATIONAL DEFINITION OF TERMS.....</b>	<b>xiv</b>
<b>ABSTRACT.....</b>	<b>xvi</b>
<b>CHAPTER ONE.....</b>	<b>1</b>
<b>INTRODUCTION.....</b>	<b>1</b>
1.1 Background of the Study.....	1
1.1.1 Global Perspective of the Study.....	4
1.1.2 Local Perspective of the Study.....	5
1.2 Statement of the Problem.....	6
1.3. Objectives of the Study.....	7
1.3.1 General Objective.....	7
1.3.2 Specific Objectives.....	7
1.4 Hypotheses.....	7
1.5 Significance of the Study.....	8
1.6 Scope of the Study.....	8
1.7 Limitations of the Study.....	9
<b>CHAPTER TWO.....</b>	<b>10</b>
<b>LITERATURE REVIEW.....</b>	<b>10</b>
2.1 Introduction.....	10
2.2 Theoretical Framework.....	10

2.3 Conceptual Framework.....	17
2.3.1 Incubatee Selection Criteria Strategy.....	19
2.3.2 Managerial Skills Impartation Strategy.....	23
2.3.3 Entrepreneurship Skills Impartation Strategy.....	29
2.3.4 Social Network Skills Impartation Strategy.....	34
2.3.5 Incubator Environment.....	39
2.3.6 Enterprise Growth.....	41
2.4 Empirical Literature Review.....	42
2.4.1 Incubate Selection Criteria Strategy.....	42
2.4.2 Managerial Skills Impartation Strategy.....	45
2.4.3 Entrepreneurial Skills Impartation Strategy.....	47
2.4.4 Social Networks Skills Impartation Strategy.....	48
2.4.5 Enterprise Growth.....	50
2.5 Critique of Existing Literature.....	51
2.6 Summary of Literature Reviewed.....	52
2.7 Research Gaps.....	53
<b>CHAPTER THREE.....</b>	<b>54</b>
<b>RESEARCH METHODOLOGY.....</b>	<b>54</b>
3.1 Introduction.....	54
3.2 Research Philosophy.....	54
3.3 Research Design.....	55
3.4 Study Population .....	55
3.4.1 Target Population.....	56
3.5 Sampling Frame.....	56
3.6 Sample and Sampling Technique.....	57

3.7 Data Collection Instruments.....	58
3.8 Data Collection Procedure.....	58
3.9 Pilot Study.....	59
3.9.1 Reliability.....	59
3.9.2 Validity.....	59
3.10 Measurement of Variables.....	60
3.11 Data Analysis and Presentation.....	61
<b>CHAPTER FOUR.....</b>	<b>63</b>
<b>RESEARCH FINDINGS AND DISCUSSION.....</b>	<b>63</b>
4.1 Introduction.....	63
4.2 Response rate.....	63
4.3 Results of Pilot Study.....	63
4.4. Demographic Statistics.....	64
4.4.1 Gender of Respondents.....	64
4.4.2 Age Distribution of the Respondents.....	65
4.4.3 Nature of Business.....	66
4.4.4 Education Level of the Respondent.....	67
4.4.5 Period Incubated.....	68
4.4.6 Benefit Obtained from Incubation.....	69
4.5 Relationship Between Incubatee Selection Criteria Strategy and Enterprise growth in Kenya.....	70
4.5.1 Relationship Between Incubatee and the University Hosting the Incubator.....	70
4.5.2 Unique Incubatee Characteristic/Strength.....	71
4.5.3 Incubatee Selection Tools.....	72
4.5.4 Operational Period Prior to Incubation.....	73



4.5.6 Contribution to Host University Mission.....	74
4.5.7 Traits of Respondents and Their Incubated Enterprises.....	75
4.6 Managerial Skills Impartation Strategy.....	77
4.6.1 Managerial Skills Impartation Strategy in University Based Business Incubators .....	77
4.6.2 Monitoring and Evaluation Mechanism Incubators use for Their Graduated Incubatees.....	80
4.7 Entrepreneurship Skills Impartation Strategy .....	81
4.7.1 Highest Level of Entrepreneurship Training.....	81
4.7.2 Entrepreneurship Skills Impartation Strategy in University Based Business Incubators.....	82
4.7.3 Other Entrepreneurial Skills Impacted During Incubation.....	85
4.8 Social Networks Skills Impartation Strategy.....	87
4.8.1 Brainstorming Meeting With Incubator Manager/Staff.....	87
4.8.2 Relationship With Parties/Stakeholders.....	88
4.8.3 Benefits Obtained from Various Stakeholders.....	90
4.8.4 Social Networks Skills Impartation Strategy in University Based Business Incubators.....	92
4.9 Incubator Environment.....	95
4.9.1 Incubator Environment in the University Based Business Incubator.....	95
4.10 Enterprise growth.....	97
4.10.1 Enterprise Growth Factors.....	97
4.10.2 Change in Entrepreneurial Perspective.....	98
4.11. Tests for Normality.....	99
4.11.1 Tests for Normality.....	96
4.11.2 Test of Outliers.....	100
4.12 Correlation Analysis.....	101

4.13 Regression Analysis.....	102
4.13.1: The Relationship Between Incubatee Selection Criteria Strategy and Enterprise Growth in Kenya.....	102
4.13.2 The Relationship Between Managerial Skills Impartation Strategy in University Based Business Incubators and Enterprise Growth in Kenya.....	105
4.13.3 The Relationship Between Entrepreneurial Skills Impartation Strategy in University Based Business Incubators and Enterprise Growth in Kenya.....	106
4.13.4 The Relationship Between Social Networks Skills Impartation Strategy In University Based Business Incubators and Enterprise Growth in Kenya.....	108
4.13.5 The Relationship Between Incubator Environment in University Based Business Incubators and Enterprise growth in Kenya.....	110
4.13.6 The Combined Effect of Selection Criteria Strategy, Managerial Skills Impartation Strategy, Entrepreneurial Skills Impartation Strategy, Social Networks Skills Impartation and Incubator Environment on Enterprise Growth in Kenya.....	111
4.14 Revised Conceptual Model.....	111
<b>CHAPTER FIVE.....</b>	<b>116</b>
<b>SUMMARY, CONCLUSIONS AND RECOMMENDATIONS.....</b>	<b>116</b>
5.1 Introduction.....	116
5.2 Summary of Findings.....	116
5.2.1 Incubatee Selection Criteria Strategy.....	117
5.2.2 Managerial Skills Impartation Strategy.....	117
5.2.3 Entrepreneurship Skills Impartation Strategy.....	117
5.2.4 Social Networks Skills Impartation Strategy.....	118
5.2.5 Incubator Environment .....	118
5.2.6 Combined Effect of all Independent Variable.....	118
5.3 Conclusion.....	118

5.4 Recommendations of the Study.....119

5.5 Suggested Areas for Further Research.....120

**REFERENCES.....121**

**APPENDICES.....141**

## LIST OF TABLES

<b>Table 3.1:</b> University Based Business Incubators in Kenya.....	56
<b>Table 3.2:</b> Sample Size and Distribution.....	57
<b>Table 4.1:</b> Response Rate.....	63
<b>Table 4.2:</b> Reliability Coefficients.....	64
<b>Table 4.3:</b> Age Distribution of the Respondents.....	66
<b>Table 4.4:</b> Incubation Period.....	69
<b>Table 4.5:</b> Operational Period Prior to Incubation.....	74
<b>Table 4.6:</b> Information on Respondents and their Incubated Businesses.....	76
<b>Table 4.7:</b> Managerial Skills in University Based Business Incubators.....	79
<b>Table 4.8:</b> Entrepreneurship Skills in University Based Business Incubators.....	85
<b>Table 4.9:</b> Relationship With Parties/Stakeholders.....	89
<b>Table 4.10:</b> Benefits Resulting From Relationship with Other Parties .....	91
<b>Table 4.11:</b> Social Networks in University Based Business Incubators.....	93
<b>Table 4.12:</b> Incubator Environment.....	96
<b>Table 4.14:</b> Test for Normality.....	99
<b>Table 4.15:</b> Pearson Correlation Coefficients.....	102
<b>Table 4.16:</b> Analysis of Variance.....	104
<b>Table 4.17:</b> Regression of Coefficient.....	104
<b>Table 4.18:</b> Analysis of Variance.....	105
<b>Table 4.19:</b> Regression Coefficients.....	106
<b>Table 4.20:</b> Analysis of Variance.....	107
<b>Table 4.21:</b> Regression of Coefficient.....	107
<b>Table 4.22:</b> Analysis of Variance.....	109
<b>Table 4.23:</b> Regression of Coefficient.....	109
<b>Table 4.24:</b> Analysis of Variance.....	110
<b>Table 4.25:</b> Regression of Coefficient.....	111
<b>Table 4.26:</b> Analysis of Variance.....	112

**Table 4.27:** Regression of Coefficient.....113

## LIST OF FIGURES

<b>Figure 2.1:</b> Conceptual Framework.....	18
<b>Figure 4.1:</b> Gender of Respondents.....	65
<b>Figure 4.2:</b> Nature of Business.....	67
<b>Figure 4.3:</b> Education Level of the Respondent.....	68
<b>Figure 4.4:</b> Benefit Obtained from Incubation.....	70
<b>Figure 4.5:</b> Relationship Between Incubatee and the university hosting the incubator..	71
<b>Figure 4.6:</b> Unique Incubatee Characteristic/Strength.....	72
<b>Figure 4.7:</b> Contribution to Host University’s Mission.....	75
<b>Figure 4.8:</b> Monitoring and Evaluation Mechanism.....	81
<b>Figure 4.9:</b> Highest Level of Entrepreneurship Training.....	82
<b>Figure 4.10:</b> Other Entrepreneurship skills Impacted During Incubation.....	86
<b>Figure 4.11:</b> Brainstorming Meeting With the Incubator Manager/Staff.....	88
<b>Figure 4.12:</b> Change in Entrepreneurial Perspective .....	98
<b>Figure 4.13:</b> A Box Plot for Checking Outliers.....	100
<b>Figure 4.14:</b> Scatter Plot Used to Check For Homogeneity of Variance.....	103
<b>Figure 4.15:</b> Revised Conceptual Framework .....	115

## **LIST OF APPENDICES**

<b>Appendix I:</b> Letter of Introduction.....	141
<b>Appendix II:</b> Questionnaire for Graduated Incubatees.....	142
<b>Appendix III:</b> Top University Based Business Incubators in the World.....	157

## **ABBREVIATIONS AND ACRONYMS**

<b>CSF</b>	Critical Success Factors
<b>DOI</b>	Diffusion of Innovation
<b>GOK</b>	Government of Kenya
<b>ICT</b>	Information Communication Technology
<b>ILO</b>	International Labour Organization
<b>JKUAT</b>	Jomo Kenyatta University of Agriculture and Technology
<b>MSME</b>	Micro Small and Medium Enterprises
<b>NBIA</b>	National Business Incubator Association (USA)
<b>NGO</b>	Non Governmental Organization
<b>OECD</b>	Organization for Economic Co-operation and Development
<b>R&amp;D</b>	Research and Development
<b>ROK</b>	Republic of Kenya
<b>SME</b>	Small and Medium Enterprise
<b>STFC</b>	Science and Technology Facilities Council
<b>UBI</b>	University Business Incubator
<b>USA</b>	United States of America
<b>UTBI</b>	University Technology Business Incubator
<b>WEFO</b>	Welsh European Funding Office



## **OPERATIONAL DEFINITION OF TERMS**

### **Business Incubator**

An innovative organizational entity designed to provide a supportive environment for new ventures.

### **Business Incubation**

A business support process that accelerates the successful development of start-up and fledgling companies by providing entrepreneurs with an array of targeted resources and services.

### **Enterprise growth**

The process of improving some measure of an enterprise's success. Enterprise growth can be achieved either by boosting the top line or revenue of the business with greater product sales or service income, or by increasing the bottom line or profits.

### **Entrepreneurship Skills**

Ability to analyze situations, opportunities and environments and then organize, manage and assume the risks and rewards of a business enterprise.

### **Incubator Environment**

Physical resources or facility-related services provided by the incubator to help reduce the costs faced by start-up enterprises e.g. office space and building facilities, office equipment and shared office services.

### **Managerial Skills**

The ability to attain enterprise's goals in an effective and efficient manner achieved through planning, organizing, leading and controlling the enterprises resources.

### **Selection Criteria**

The steps to secure the best mix of tenants into an incubator.

### **Social Network**

Ties not only among entrepreneurs that are co-located in incubators but also between entrepreneurs in incubators and external business partners.

### **University Based Business Incubator**

University based incubators are a special type of business incubators that are located in universities.

## ABSTRACT

The importance of enterprise growth around the globe has been well recognized and documented by many scholars. For instance, studies have reported that the potential contribution of enterprise growth to employment and income has been generally recognized. Entrepreneurs are widely recognized as the prime movers of economic development; the people who translate ideas into action. However the start-up failure rates are still very high and the desired growth levels are yet to be achieved and consequently some scholars and policy makers have turned to business incubators and particularly university based business incubators as a possible boost to enterprise growth through nurturing start-ups. This study sought to investigate the role of university based business incubators on enterprise growth in Kenya. It was conducted using a descriptive research design. The six active university based business incubators in Kenya were investigated with a specific focus on all the fifty nine graduated incubatees from the said incubators. Census technique was used given that the total number of all graduated incubatees (59) could be adequately studied. The study used a semi structured questionnaire as its main data collection tool. A combination of tools was used to analyze the data because whereas some aspects of the study are qualitative others are of a quantitative nature. Quantitative data was analyzed using Statistical Package for Social Sciences (SPSS) Version 21 software through descriptive statistics; measures of central tendency (mean and mode), measures of dispersion (standard deviation and variance) and inferential statistics (correlation and multiple regression analysis). Thematic analysis was used for qualitative data. Data was presented primarily in frequency tables, charts and graphs. The study established that the selection criteria strategy used by an incubator, the managerial skills impartation strategy, entrepreneur skills impartation strategy and social networks skills impartation strategy have a significant positive correlation to enterprise growth. Incubator environment was however found not to have a significant effect on enterprise growth. It was established that all the five variables while combined had a significant positive effect on enterprise growth. The study recommends among others, that the government through the Ministry of Education and management of individual universities set up more university based business incubators given the positive potential effect they have on enterprise growth. University based business incubators should continuously enrich their selection criteria strategy in order to attract and incubate only the very potential incubatees. Government policy makers need to re-look into the education curricula to ensure it structured in such a way that it actually impacts entrepreneurial skills into the learners. University based business incubators need to organize more platforms such as seminars, forums and workshops so as to create more networking opportunities for their incubatees and industry players. Further studies could be conducted on business incubators based in other non- university learning and research institutions such as technical and vocational training institutes.

# **CHAPTER ONE**

## **INTRODUCTION**

### **Introduction to the Study**

This chapter looks at the foundations of this study. Specifically, it gives a background to the study from the global, regional and Kenyan perspectives, discusses the problem that the study aims to solve and the objectives guiding it. The importance of the study to various stakeholders is also discussed in this chapter. The chapter concludes by giving the limitations faced in conducting the study.

### **1.1 Background of the Study**

The National Business Incubator Association (USA) defines business incubation as a business support process that accelerates the successful development of start-up and fledgling companies by providing entrepreneurs with an array of targeted resources and services. These services are usually developed or orchestrated by incubator management and offered both in the business incubator and through its network of contacts. A business incubator's main goal is to produce successful firms that will leave the program financially viable and freestanding (NBIA, 2013).

The roots of the incubation concept lie in Europe (Aernoudt, 2004). In ancient times, in order to have a visionary dream, people would go to a Roman (or Greek) temple, and lay themselves down on fresh hide from newly sacrificed animals. This practice was called incubatio. One of the most advanced reasons for practicing the incubatio was to obtain a vision on how to overcome one or another disease, which explains why the incubatio preferably took place in the temple of Aesculapius, the God of medicine. Indeed, gradually an incubator became the place where prematurely born infants were nurtured and taken care of. The principle of the incubator is that premature infants require temporary care in controlled conditions. These conditions should help newborn babies to survive, grow and develop once they have left the incubator (Aernoudt, 2004).

The earliest business incubators, in their modern form, appeared in the UK in 1972 (Scillitoe & Chakrabarti, 2010). They emerged from two simultaneous movements – the subdivision of older vacant buildings by architects into ‘working communities’ of design-related firms with shared accommodation, services and management. These developments were collectively managed and set up to create an optimal working environment for individuals in these trades. The next wave of incubator development in the UK was in response to plant closures. In 1975 the British Steel Corporation established a wholly owned subsidiary, BSC (Industrial) Ltd, to help create jobs in steel closure areas where thousands of former steelworkers had been laid off (Scillitoe & Chakrabarti, 2010).

In the US, the development of business incubators has three historical roots. The first began with efforts to redevelop inner-city blighted areas. The second started (as early as 1973) as an experiment funded by the National Science Foundation to foster entrepreneurship education, the development of new technologies in existing companies, and the establishment and nurturing of new businesses and innovation at major universities. The third grew from the initiatives of several successful individual entrepreneurs or groups of investors who sought to transfer their own new venture experiences to start-up companies through an environment conducive to successful technological innovation and commercialization (Scillitoe & Chakrabarti, 2010).

This study aimed to explore the role of university based business incubators strategy on enterprise growth in Kenya. Studies have shown that incubators are a major tool of enterprise growth in various economies of the world (Aldrich & Ruef, 2006). Overall, business incubators provide local, on-the-spot diagnosis and treatment of business problems, dramatically lowering the early-stage failure rate of startups. This concept is particularly important for start-ups considering their fragility. According to several empirical studies, approximately half of all new entrants survive less than five years (Mwobobia, 2012). The driving force behind the new venture creation process is the entrepreneur; the incubator seeks to develop this entrepreneurial talent by providing

complementary services that support and promote the skills and expertise of the entrepreneur when the firm is most vulnerable to market uncertainty (Jorgensen, 2011).

While generally beneficial to new entrepreneurial start-ups, there are some disadvantages associated with incubator units but these are rarely recognized or discussed within the extant literature. Schwartz (2011) contradicts existing results with regard to long-term graduate performance. His findings do not support the presumption of sustainable and strong firm growth beyond incubation. Other studies on incubators have brought to the fore the various challenges faced by business incubators as they aim to assist new enterprises. Particularly for university based incubators, Salman and Majid (2010) says that university based incubators face a variety of challenges including: lack of planning and clear vision, poor tenant selection criteria strategy, inadequate entrepreneurs, culture gap between academia and industry, undercapitalization of in-house resources, lack of incentives for faculty members and underutilized student workforce.

Universities are particularly well equipped with the resources to parent new ventures. They are dedicated to advancing knowledge in key scientific, engineering, management, and social areas. They have highly skilled and motivated student labour, which can be obtained at a relatively low cost. They also have many well-equipped laboratories - even those that are not state-of-the-art are often otherwise unavailable to small-scale or poorly capitalized new ventures; and a host of other facilities that can be shared (for example, computers, libraries, media access, and so on) (Otuki, 2013).

Interest in the university sponsored business incubator stems from the significant potential of the concept. The concept holds out the possibility of linking talent, technology, capital, and know-how to leverage entrepreneurial talent, accelerate the development of new technology-based firms, and speed the commercialization of technology (Bathula, Karia & Abbott, 2011). Mian as quoted in Wulung, Takahashi and Morikawa (2014) identified various characteristics of university based business

incubators based on specific dimensions such as objectives, organizational design, governance and policy guidance, institutional support, staffing, funding sources, technologies and entrepreneurs targeted operational policies and services provided (Wulung, *et al.*, 2014).

### **1.1.1 Global Perspective of the Study**

Throughout the world, universities are developing ties with the industry and the government. Some of such initiatives can be seen especially in the developed world (Bathula *et al.*, 2011). Appendix III shows the top twenty five university based business incubators in the world (University Business Incubators Index, 2014). However, as noted by Marwanga (2009) business incubators are still a fairly new concept in developing countries. From the University Business Incubators Index (2014), there is no single incubator out of the twenty five from an African university or even one from a developing country in another part of the world. The incubators listed in the index are majorly from the United States of America and Europe. The view of Marwanga (2009) is supported by Bathula *et al.*, (2011) who noted that the concept of university based business incubators is still relatively new but quickly catching up in India which is a large emerging economy.

According to Chandra and Chao (2011) China has warmly welcomed the business incubation concept, which started in the United States of America, as a tool for economic and technological development. China with 500+ business incubators leads one of the most successful business incubation efforts in Asia that is second only to the United States in the number of business incubators (Chandra & Chao, 2011). In Africa, the picture of business incubation as a whole and university based business incubators in particular, has been painted with success and failure in equal measure. For example, Adegbite (2001) carried out an in-depth study of business incubators in Nigeria and concluded that they had failed in their primary objective of turning out a steady flow of successful enterprises majorly because of their poor management. In South Africa Ndabeni (2008) notes that university based business incubators have had a positive

impact in the development of small enterprises in the country. According to Mutambi (2015) business incubators and clusters in Uganda are still in developing stages and their influence on enterprise performance and competitiveness has so far been negligible.

### **1.1.2 Local Perspective of the Study**

As the Kenyan economy moves in the direction of entrepreneurial and technological development, the role of the university has diversified beyond traditional instructional and research missions. Commercial and political pressures coming primarily from outside universities seek to gradually adapt them into more flexible, economically responsive institutions. Universities play a significant role in establishing linkages with the industry so as to provide their faculty a platform to conduct research and an opportunity for their students to create jobs (Marwanga, 2009). Apart from assisting students who seek jobs, these universities also run business incubators to support students starting their own ventures. Lately, universities are having their own business incubators and encouraging enterprise development by using research leading to start-up and technology transfer, which is easily facilitated by a university based incubators (Bathula *et al.*, 2011).

Some leading universities have taken initiative to establish university based incubators. These are aimed at empowering students to be self-employed upon graduation, thereby reducing pressure on the ever thinning employment space and the chronic unemployment in Kenya (Marwanga, 2009). Such universities and their incubator facilities include Strathmore University (@iBizAfrica), Kenyatta University (Chandaria Business Innovation and Incubation Centre), University of Nairobi (C4D Lab), JKUAT (Kuza Incubation Centre, Nairobi Industrial and Technology Park), Mount Kenya University (Business Incubation Centre), Technical University of Kenya (Business/Technology Incubation Unit) and Kenya College of Accountancy University (KCA Business Incubator). Those under JKUAT are not yet functional but at the set up phase.



## 1.2 Statement of the Problem

Enterprise growth is a very important component of social and economic development. It promotes capital formation and creates wealth in a country. It reduces unemployment and poverty and it's a pathway to prosperity (Kaiburi, Mobegi, Kombo & Sewe, 2012). Though Micro and Small Enterprises (MSEs) are the embodiment of entrepreneurship, past statistics indicate that the lower end Kenyan MSE employs 1-2 workers while over 70% employ only one person (KNBS, 2016). It is alarming to note that the majority of MSEs are confined to subsistence and low value activities. Only a few MSEs grow to employ 6 employees or more (KNBS, 2016; Kedogo, 2013). In 2014 the African Development Bank showed, using one-year growth rates in employment as a measure of firm growth, that only about 15% of MSEs in Africa, Kenya included, are high-growth firms. Further statistics show that three out of five business start-ups fail within the first few months of operation (Mwobobia, 2012). Other studies estimate that as many as 75% of small enterprises started in Kenya fail within three years of their birth. Indeed an enterprise that is more than three years old is regarded as having achieved some measure of success (Kaiburi *et al.*, 2012).

With the high mortality of startups and sluggish growth of MSEs, the economy, in due course of time, will lose the benefits that could have been accrued from the survival and growth of these enterprises. Although from different perspectives, several scholars have looked into the relationship between university based business incubators and enterprise growth. Chandra & Chao (2011) noted the positive contribution of incubators to growth of enterprises in China. On the other hand, Adegbite (2001) concluded that incubators had failed in their primary objective of turning out a steady flow of successful enterprises majorly because of their poor management. Schwartz (2011) found that there was no long term sustainable growth of an enterprise beyond incubation. In view of the differing findings by these foreign studies, there is therefore, a need to look into the role of university based business incubators strategy on enterprise growth in Kenya. This is

particularly focusing on their various operational factors that could have an effect on the survival and growth of their incubatees thereby promoting enterprise growth.

### **1.3. Objectives of the Study**

This study was guided by the following general and specific objectives:

#### **1.3.1 General Objective**

The overall objective of this study was to find out the role of university based business incubators strategy on enterprise growth in Kenya.

#### **1.3.2 Specific Objectives**

- i. To establish the role of incubatee selection criteria strategy on enterprise growth in Kenya
- ii. To determine how managerial skills impartation strategy in university based business incubators affects enterprise growth in Kenya.
- iii. To investigate how entrepreneurship skills impartation strategy in university based business incubators affect enterprise growth in Kenya.
- iv. To determine how social networks skills impartation strategy in university based business incubators affects enterprise growth in Kenya.
- v. To determine how incubator environment in university based incubators affects enterprise growth in Kenya.
- vi. To find out the combined influence of the above five mentioned factors on enterprise growth in Kenya

### **1.4 Statistical Hypotheses**

To find out how each of the independent variables affects the dependent variable, the study was guided by the following hypotheses:

- i.  $H_{01}$  There is no relationship between incubatee selection criteria strategy and enterprise growth in Kenya

- ii. H<sub>02</sub> There is no relationship between managerial skills impartation strategy in university based business incubators and enterprise growth in Kenya
- iii. H<sub>03</sub> There is no relationship between entrepreneurial skills impartation strategy in university based business incubators and enterprise growth in Kenya
- iv. H<sub>04</sub> There is no relationship between social networks skills impartation strategy in university based business incubators and enterprise growth in Kenya.
- v. H<sub>05</sub> There is no relationship between incubator environment in university based business incubators and enterprise growth in Kenya
- vi. H<sub>06</sub> There is no combined relationship between the above five mentioned factors and enterprise growth in Kenya.

## **1.5 Significance of the Study**

### **1.5.1 Industry Decision Makers**

The findings and recommendations of the study have implications for decision makers in universities, industry and government regarding setting up, financing, operation and general support of university based business incubators. The decision makers will be able to make better informed decisions.

### **1.5.2 Entrepreneurs**

This study shall assist nascent entrepreneurs appreciate the contribution an incubation process would have in turning their entrepreneurial ideas into real sustainable enterprises that contribute to enterprise growth.

### **1.5.3 Other Researchers**

This study was conducted within the wider context of building a body of knowledge pertaining business incubation. This study therefore contributes to that body and serves as a reference point to future studies in this area.

## **1.6 Scope of the Study**

This study focused on business incubators based in universities in Kenya. It borrows from the work of Bathula, *et al.*, (2011) who noted that university based business

incubators are a special type of business incubators that are located in universities. It looked into the role of these university based business incubators on enterprise growth in Kenya, with a focus on six currently operational university based business incubators in Kenya. It had a focus on the graduated incubates from the six university based business incubators over the last five years (or less where the incubator had been in existence for less than five years). These graduated incubates themselves were also relatively young enterprises being less than five years old. The study was also focused on five variables namely: incubate selection criteria strategy, managerial skills impartation strategy, entrepreneurship skills impartation strategy, social networks skills impartation strategy and incubator environment.

### **1.7 Limitations of the Study**

It is not be possible to put to test or investigate all the factors relating to university based business incubators and enterprise growth in one study. Therefore, this study was limited by the fact that only a few specific variables as indicated in its conceptual framework were considered. Nevertheless, the research went into the depth of these factors as much as possible so as to generate a thorough understanding of the same. Further some of the possible respondent entrepreneurs were not comfortable giving out information relating to themselves as individuals and their enterprises. This limitation was partially countered by first assuring the respondents of confidentiality of information given and secondly the researcher personally administered the questionnaire so as to encourage and give confidence to the respondents to provide the required information.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

This chapter reviews the available literature on university based business incubators and their inter linkage with enterprise growth in different economies around the world. It also presents a theoretical foundation to support the concept of business incubation as a facilitator of enterprise growth. Further, it is here that a conceptual framework for this study is developed and discussed in detail. Based on a critical review of what has been presented by other scholars in this area, the study identifies research gaps that it aimed to bridge.

#### **2.2 Theoretical Framework**

A theory is a set of interrelated constructs (concepts), definitions and propositions that present a systematic view of phenomena by specifying relations among variables, with the purpose of explaining and predicting phenomena (Camp, 2010). This section therefore aims to bring to the spot light, theories regarding the concept of business incubation and its evolvement process over time.

##### **2.2.1 Multi-Objective Incubatee Selection Theory**

This theory is proposed by Wulung *et al.*, (2014). Basically it combines the potential incubatee's technical strengths as judged by various aspects of its business plan and the individual entrepreneur's characteristics within given constraint parameters to assist incubator managers make a decision on the most suitable incubatees. In the theory, incubator managers are the decision makers and start-ups or young MSEs are incubatee candidates. The theory considers multi-objective functions consisting of profitability maximization, incubatee survivability, and worker absorption maximization to reduce unemployment. Incubatee candidate properties, such as technology level, profitability, survivability, worker absorption and total assets are the inputs, while incubator capacity,

maximum total assets, minimum technology level and industry priority proportion are the constraint parameters.

Applying the proposed model consists of several steps: First, candidates propose their business plans to the incubator manager. Second, the incubator manager assesses the technology level of the incubates and the personal attributes of the entrepreneurs. Third, the applicants are screened for maximum total assets and minimum technology level to eliminate inappropriate candidates (Wulung *et al.*, 2014).

### **2.2.2 Stakeholder Management Theory**

Stakeholder management originated in the 1980s, as an attempt to summarize findings, from clinical studies of actual management behavior, in a new and fast-changing business environment (Freeman, 1984). A stake can be encompassed as an interest or a share in an undertaking. In Freeman's classic definition, a stakeholder is "any group or individual who can affect or is affected by the achievement of the organization's objectives" (Freeman, 1984). Kochan and Rubinstein (2000) coined the term "stakeholder firm" to denominate organizations that seek a broad inclusive definition of objectives and optimize a sense of fairness in several stakeholder groups. They claim that: "For a stakeholder firm to be viable over time, it must demonstrate its ability both to achieve the multiple objectives of the different parties and to distribute the value created in ways that maintain their commitment" (Kochan & Rubinstein, 2000).

Salman and Majeed (2009) argue that the success of university based business incubators could be measured by the extent to which they achieve various objectives touching on various stakeholders. The objectives include: Number of enterprises created; Survival rate of the incubated enterprises ; Jobs created; Research commercialized; Overall profitability of the incubator; Improvement in the university-business links; Faculty/student involvement; and Refinement of the entrepreneurial skills of the start-ups' management (Salman & Majeed, 2009). These

objectives represent various stakeholders including government, incubated enterprises, university, business community and the general society.

Mitchell, Agle and Wood (1997)) suggest that stakeholder level of importance is dynamically determined by three central attributes: power, legitimacy and urgency. Power stems from resource dependency (Pfeffer & Salancik, 1978), legitimacy from the social embeddedness of firms (Granovetter, 1985; Suchman, 1995) and urgency from a critical time-framed situation (i.e. crisis or opportunity) of some affected/affecting party. Thus, several groups are potential incubator stakeholders depending on their interests, resources and the shifting business conditions.

### **2.2.3 Need for Achievement Theory**

While the trait theory focuses on enduring inborn qualities and locus of control on the individual's perceptions about the rewards and punishments in his or her life, (Pervin, 1980), need for achievement theory by McClelland (1961) explained that human beings have a need to succeed, accomplish, excel or achieve. Entrepreneurs are driven by this need to achieve and excel. While there is no research evidence to support personality traits, there is evidence for the relationship between achievement motivation and entrepreneurship (Johnson, 1990). Achievement motivation may be the only convincing personological factor related to new venture creation (Shaver & Scott, 1991).

Findings indicate that aversion to risk declines as wealth raises, that is, one's net assets and value of future income (Szpiro, 1986). In complementing Szpiro's observation, Eisenhauer (1995) suggests that success in entrepreneurship, by increasing wealth, can reduce the entrepreneur's degree of risk aversion, and encourage more venturing. In his view, entrepreneurship may therefore, be a self - perpetuating process. Further evidence suggests that some entrepreneurs exhibit mildly risk-loving behavior (Brockhaus, 1980). These individuals prefer risks and challenges of venturing to the security of stable income.

### **2.2.4 Social Capital Theory**

Social capital, broadly speaking, refers to social networks, the reciprocities that arise from them and their value within the business environment. According to Putnam (2000), it has “forceful, even quantifiable effects on many aspects of our lives” and it is more than just “warm, cuddly feelings or frissons of community pride.” There are two theoretical models underpinning the concept of social capital: one led by Bourdieu, and the other by Putnam.

Bourdieu (1986) focused on the role played by different forms of capital in the reproduction of unequal power relations. Coleman (1990), however, took a more rational perspective and defined social capital by its function: “facilitate(s) certain action of individuals who are within the structure”. According to him, there are three forms of social capital: (i) obligations and expectations which depend on the trustworthiness of the social environment; (ii) the capacity of information to flow through the social structure in order to provide a basis for action and (iii) the presence of norms. While both Coleman and Bourdieu saw social capital as an attribute of an individual, Putnam (1993) regards it as an attribute of a community. The latter believes that social capital stems from the networks, norms and trust that develop within a group, and provides the impetus to pursue shared objectives of all members belonging to that group.

According to Bourdieu (1986), just as access to economic capital brings certain privileges to a group or an individual, and cultural capital (e.g. familiarity with high art, literature, or manners) sets a group or individual apart from their less-privileged peers, social capital supplies the networks and connections that allow continued and future access to privilege. Likewise, Putnam (1993) compared social capital as connections among individuals to physical capital as physical objects and human capital as properties of individuals.

According to Fukuyama (1995) social capital and trust are integrated within an economic framework. Comparing the relative economic performance of different nations



and cultures on the basis of levels of trust, he found that the level of trust inherent in a given society determines its prosperity and degree of democracy, as well as its ability to compete economically. The World Bank and the Organization for Economic Co-operation and Development (OECD) have also valued the concept of social capital. The OECD (2001) defines social capital as “networks together with shared norms, values and understandings that facilitate co-operation within and among groups”. The World Bank (1999) further argues that social capital is not the institutions, relationships, and norms that shape the quality and quantity of a society’s social interactions; rather it is the glue that holds them together.

However, social capital could also be detrimental to the society (Adler & Kwon, 2002). This is because stronger actors, who possess the informational advantage, may keep the weaker parties excluded from their network, downplay social norms, and restrict individual freedom (Portes, 1998). Similar drawbacks of social capital have also been discussed by Halpern (1999) when a social network does not constitute a social good. Thus, social capital may lead to nepotism, injustice and corruption.

There is, more recently, a growing belief that small firm growth is more of a co-operative challenge for entrepreneurs than was originally thought – one that depends on social networks, rather than being a purely individual and competitive act (Grimaldi & Grandi, 2005). Acknowledging that some form of interdependency exists between entrepreneurial success and social networks partly explains why political intervention has been directed at encouraging a host of business start-ups and business incubation, and why publicly supported business incubators and science parks are promoted as tools for economic development via networks of entrepreneurs (Jørgensen, 2011).

### **2.2.5 Cluster Theory of Economic Growth**

Marshall (1947) proposed that learning between firms is enhanced when similar firms exist in close proximity, as knowledge can easily be exchanged between firms. The immediate environment affects the nature and development of an entrepreneurial venture

(Cooper & Park, 2008). Recent literature has expanded the role of the cluster beyond the linear model of innovation, input-output models and economies of scale, and begins to highlight the multi-level and often social nature of inter-firm knowledge exchanges within the cluster (Storper, 1997). Economic space becomes a relational space, the field of social interactions, interpersonal synergies and social collective actions that determine the innovative capability (Camagni, 1991).

Individuals play a critical role in this inter-organizational knowledge transfer (McAdam & Marlow, 2007). Learning experiences and resources can become shared, resulting in a complex system, which then leads to increased regional distinctiveness and competitiveness (Johannisson, Ramirez & Karlsson, 2002; Keeble & Wilkinson, 1999). The importance of social linkages between firms has been highlighted as a common component of regional collective learning processes (Capello, 1999). Some degree of institutional and social proximity enhance the quality of interaction, and trust is improved with social interaction, which sets in motion informal transfers of knowledge (Johannisson *et al.*, 2002). Knowledge spillovers, transfers of knowledge between firms, represent key sources of opportunities for firms and industries to improve processes or develop organizational or technological innovations (Jaffe, 1986; Malmberg & Maskell, 2002). Studies have been done showing that co-location in incubators can lead to cross-fertilization among entrepreneurs (Phan, Siegel, & Wright, 2005). Entrepreneurs in incubators may benefit from close physical proximity to entrepreneurs with potentially complementary competencies, allowing for outsourcing of contracts or using the incubator as an internal market place (Bøllingtoft, 2012; Bøllingtoft & Ulhoi, 2005).

### **2.2.6 Situated Learning Theory (SLT)**

SLT holds that learning and development takes place in communities of practice – a concept referring to people who actively pursue a common enterprise – and that “what is needed is not to create learning, but rather to create the circumstances/environment that make learning empowering and productive” within such communities (Wenger, 1998). In relation to business incubation Theodorakopoulos, Sanchez & Bennett (2012) are

among those who have borrowed and supported this theory. They argue that entrepreneurial learning and development as enhanced possession and use of human, social and financial capital, within a community of growth-oriented owner-managers, is predicated largely on three factors.

First, the strength of the community, which refers to how well members of that community engage and socially participate in the community's efforts towards the achievement of a common purpose, for instance business growth in this case. Second, the quality of its "boundaries" (i.e. the spaces where the owner-manager community interface with other communities of practice); and third, the health of the communal identity, which allows for the creation of new meaning, learning and development. It is postulated that these three factors influence the extent of entrepreneurial learning and development within communities of growth-oriented owner-managers, through which business opportunities are identified and exploited (Theodorakopoulos et al., 2012). University based business incubators could be viewed as an example of such communities.

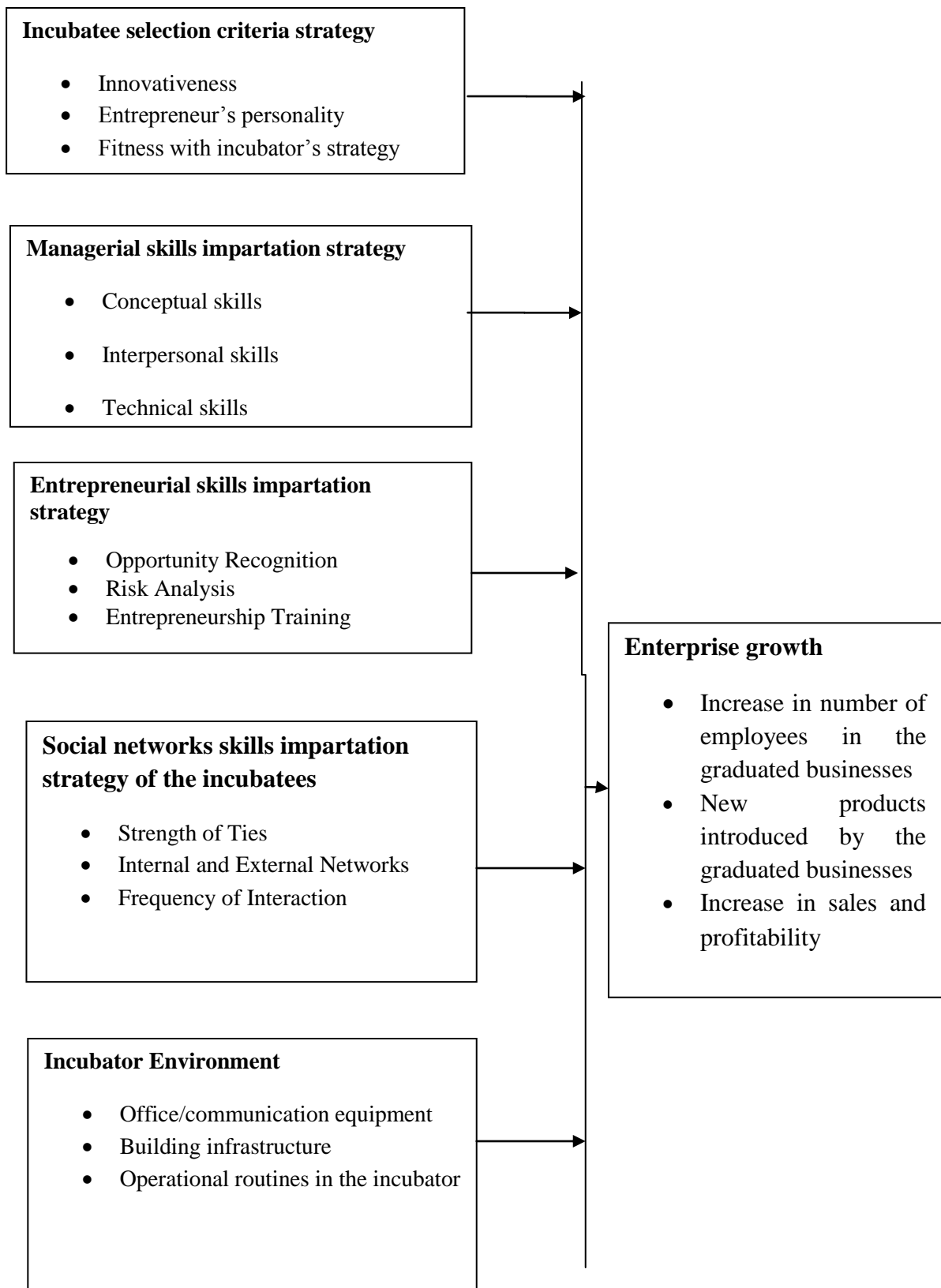
### **2.2.7 The Schumpeter Theory**

From Schumpeter's point-of-view, the entrepreneur is the leader that "leads" the means of production into new channels and not necessarily "...a genius or benefactor to humanity" (Schumpeter, 1911). The entrepreneur's decisions to innovate depend on some expectation of obtaining a profit. However, there is a circular process because innovation could bring about an improvement of the product, giving the entrepreneur a better position in the market, which could lead to higher profits that would encourage him to introduce new innovations (Galindo, Ribeiro & Mendez, 2012). On the other hand, this behavior would have also an indirect process called "creative destruction." Schumpeter considers that entrepreneurship activity implies the innovation in the introduction of a new product, organization or process, generating a destruction process (Galindo & Mendez- Picazo, 2013).

When an entrepreneur gives up innovation, he lessens his entrepreneurial position. For this reason, the Schumpeterian vision implies that the entrepreneur is an innovator that destroys the existing structures. From a more modern and general point-of-view, entrepreneurs create new firms but that does not imply that they must create new products. One can generate a new business without being an innovator in the Schumpeterian sense and assimilate the technological advances (Galindo & Mendez-Picazo, 2013). It is also important to take into account that in the Schumpeterian perspective, profit is an income derived from a monopoly power position (Oakley, 1990), and this position is obtained through the innovation process. Therefore, due to innovation, firms obtain higher profits that would stimulate the entrepreneur to introduce new innovations (Galindo & Mendez-Picazo, 2013).

### **2.3 Conceptual Framework**

The study's conceptual framework consisted of five independent variables namely: incubatee selection criteria strategy, managerial skills impartation strategy, entrepreneurial skills impartation strategy, social networks skills impartation strategy and incubator environment. These independent variables are hypothesized to have a role on enterprise growth, which is the study's dependent variable. Each of these variables is explained in the context of this study. The diagrammatical representation of the study showing the relationship between the dependent and the independent variables is illustrated below:



Independent Variables

Dependent Variable

**Figure 2.1: Conceptual Framework**

### **2.3.1 Incubatee Selection Criteria Strategy**

The selection criteria strategy of an incubator will majorly focus on start-up businesses that its developers believes to have high potential in that they: Have a product or service that is based on technological knowledge; Are likely to achieve significant growth in three years, in terms of sales and number of employees; and demonstrate considerable export potential (Macadam & Marlow, 2007). According to Becker and Gassmann (2006) for-profit business incubators look for innovative projects – either start-ups, or spin-offs from existing companies – with a developed business plan and a potential for high growth. In addition, their fit with the corporate technology strategy is of the utmost importance for corporate incubators.

University based business incubators on the other hand, are primarily aimed at innovative, technology-oriented small and medium scale enterprises geared towards commercializing research and development results, especially from the parent universities and also provision of opportunities to faculty and students (Adegbite, 2001). Most university based business incubators are operated as not for profit entities (Salman & Majeed, 2009). Most of the incubator facilities are public-private partnerships, with initial support coming from government bodies. About 80 percent of these facilities operate as not-for-profit entities (Knopp, 2006; NBIA, 2009). Salman and Majeed (2009) note that many university based business incubators today rely incessantly on subsidies (from government, private sponsors and parent universities) to survive. This weak financial capacity has compromised the entrepreneur selection criteria strategy in the incubators. Because of incubators' cash flow requirements, early tenants are likely to be chosen on their capacity to pay rent rather than their growth potential.

Moreover, virtually no attention is paid to the alignment of companies' objectives and universities' vision. It is not unusual to find a company in a university based incubator with a completely different scope, locating itself in the incubator only to

take advantage of low rent space and hence restricting the role of the incubator to a cheap tenancy provider (Salman & Majeed, 2009). Chadra and Chao (2011) note that in the first phase of incubation growth phase in China lasting from 1987 to 1997, during which most business incubators were government sponsored, tenant selection criteria were stated in theory, but do not appear to have been applied evenly in all instances, since political interests seem to have been part of entry equation.

Programs such as business plan competitions are important to provide inflow of potential entrepreneurs into subsequent stages of the incubation process (Djokovic & Souitaris, 2006). Lalkaka (1997) argues that a well-executed business incubation tenant selection criteria strategy saves resources that otherwise would have been wasted. The steps to secure the best mix of tenants are: First, market the incubator to target audiences-particularly banks, technical universities, research and manufacturing organizations, and chambers of commerce - through professionally designed promotion campaigns. Second, develop clear admission and exit criteria, based on the incubator's mission and the regional conditions. Third, implement the selection in a transparent and fair manner (Lalkaka, 1997). The standard selection process usually comprises: administration of a questionnaire to the candidates; interview by the incubator manager to assess generally the candidate's entrepreneurial qualities; review of the technical section of the business plan by a technical review group and the market, management, and financing aspects by a business group; contractual/lease agreements, to enable the tenant to move in (Lalkaka, 1997). Even with a thorough selection process, there will be only a few high-flyers, some "walking-dead," a majority of steady-growth companies, and a few failures (Lalkaka, 1997).

According to Wulung *et al.*, (2014) despite the importance of the incubatee selection process, there have been no efforts to date to formulate a mathematical model that addresses multi-criterion incubatee selection strategy. Therefore, only a small number of incubator managers use multiple criteria to select the most promising incubatees. They further argue that the fundamental difficulty in incubatee selection strategy is the lack of

reliable data as the candidate's business plan often includes exaggerated or highly optimistic values.

Ciavarella, Buckholtz, Riordan, Gatewood and Stokes (2004) are of the view that a venture's survivability is positively influenced by an entrepreneur's personal attributes of extroversion, emotional stability, agreeableness, conscientiousness, and openness to experiences. Hopefully, the weakness of the business plan can be compensated by evaluating the personality of the entrepreneur (Wulung *et al.*, 2014). Bergek and Norrman (2008) support this viewpoint by noting that incubatee selection strategy can be divided into idea-focused selection and entrepreneur-focused selection. In the idea-focused selection approach, the incubator manager evaluates candidate incubatees based on market and profit potential, while the entrepreneur-focused approach evaluates the characteristics of the entrepreneur, including his experiences and skills. In their proposed entrepreneur selection model, Wulung *et al.*, (2014) use the personal attributes of the entrepreneur to predict survivability.

### **Innovativeness of the Incubatee**

According to Schumpeter's theory, innovations are new or improved products, production techniques, organization structures, discovery of new markets and the input of new factors. His ideas have stimulated studies to develop innovation typology resting on two common criteria, the degree of newness and the degree of difference. The typology used in most innovation studies is the distinction between radical and incremental innovations.

Radical innovations represent entirely new and different offerings through which enterprises aim to get access into new markets or even try to create new markets (Garcia & Calantone, 2002). Radical innovations have been considered as risky actions since they need time, financial resources and expensive knowledge (Cainelli, Evangelista & Savona, 2006). Instead, incremental innovations represent minor improvements to the existing products, services and processes through which enterprises often pursue to



enhance processes, make operations more effective, improve the quality and decrease costs (Garcia & Calantone, 2002).

The relationships between the size, age, innovativeness and performance of a firm have long been debated in innovation and growth studies. Many empirical studies have tested the Schumpeterian hypothesis that large firms tend to have a resource advantage over smaller ones when it comes to exploiting new technologies (Bhattacharya & Bloch, 2004). However, some studies have shown that a relatively strong resource base of R&D inputs does not necessarily imply the existence of scale economies in producing innovative output. Small firms are often structurally less complex or have less hierarchical organizational structures and management, and so may have more flexibility and be quicker to reallocate their resources. These findings demonstrate that there are significant links between a firm's size, innovations and growth. As noted by Lalkaka (1997), incubators have a preference for highly innovative businesses.

### **Individual Entrepreneur's Personality and Experience**

Mian as quoted in Wulung *et al.*, (2014) examined the cases of six incubators in the United States that are sponsored by universities. He found that one of the unique dimensions of these incubators was the profile of the entrepreneurs starting the businesses. The average age of entrepreneurs starting businesses was 40 years, and most of the entrepreneurs were university graduates. Studies on entrepreneur belief in their abilities to succeed show that self-efficacy represents a robust predictor distinguishing between entrepreneurs and non-entrepreneurs (Markman, Baron & Balkin, 2005; Rauch & Frese, 2007). As noted by Wulung *et al.*, (2014) business incubators should look into the personal traits of the individuals behind the start-ups and prefer individuals with entrepreneurial personality traits earlier noted.

### **Fitness with Incubator's Area of Expertise/Strategy**

University-based business incubators have become popular as they seek to provide a unique opportunity to nascent entrepreneurs to benefit from the talent and resources that

are located in the university (Rothaermel & Thursby, 2005). This is particularly useful for businesses which require higher level of technology and sophistication. The business owners have access to research labs, seminars on campus, and can tap the academics for their knowledge and networks. On the other hand, universities also benefit from supporting and/or sponsoring the incubators as those facilities can be used for training opportunities for students and as commercial outlets for faculty research. (Bathula *et al.*, 2011).

The main focus of university based business incubators is on the generation and transfer of scientific and technological knowledge from universities to companies and an outlet for commercialising university research (Grimaldi & Grandi, 2005). Currently, most of university-based business incubators focus on high-technology fields and as such incubatees with a strong focus on technology are preferred (Bathula *et al.*, 2011).

### **2.3.2 Managerial Skills Impartation Strategy**

The incubator must secure competent personnel familiar with the changing trade and technical environment. This requires an attractive compensation package, including participation in any equity/royalty arrangements with tenants (Lalkaka, 1997). According to him a competent incubator manager should possess various attributes including: Broad entrepreneurial experience and specific knowledge in aspects of small business, marketing, finance, and technology management; sound knowledge of the professional technical community and a wide network of contacts; computer literacy, and excellent communication and interpersonal skills; good counseling and teaching capabilities; and unqualified integrity, dynamic leadership, and unsurpassed energy.

The deputy incubator manager may have complementary experience in real estate management, accounting systems, and equipment procurement. A competent administrative assistant and a bilingual receptionist-secretary would complete the initial staff. Then, as the operations expand-and as revenue grows- additional staff may be added, but always keeping the target of positive cashflow in full view (Lalkaka, 1997).

According to Lalkaka, (1997) the bulk of the manager's time should be devoted to first, providing support to help the companies grow, and second, running operations in a self-sustainable, businesslike manner. Typically however, the main tasks of the manager are raising funds for the incubator and tenants and maintaining good relations with the managing board and professional community. According to Xu (2010) an incubator manager typically provides direct and indirect support to the success of tenanted businesses. The manager usually performs two roles – a counselor/mentor role and as a contact point between tenants and resources.

The proper training of incubator management in developing countries usually comprises: in-country orientation for the selected managers on the local facilities and services and the mission of the incubator within the community; a visit by local sponsors abroad to see first-hand the role of incubators and their own responsibilities; hands-on apprenticeship for the managers at a comparable incubator abroad; continuing training at home to upgrade needed skills and through participation in regional and international seminars; and setting up a national association of technology parks and incubators and linking up to the international associations such as NBIA (USA) (Lalkaka, 1997).

Salman and Majeed (2009) identify several managerial challenges faced by incubators based in academic institutions including lack of planning and clear vision whereby in many instances, universities start incubators without a proper need assessment and market analysis, or merely because other universities are doing it. It becomes a conventional symbol for a university to have an incubator. These incubators are later used as a means of boosting strong relationships with the industry whereas in reality, industries were never analyzed or involved in the decision making process while taking these initiative.

According to Salman and Majeed (2009) the most serious managerial challenge facing university based business incubators is that of undercapitalization of in-house university resources which includes faculty, students and laboratories. Faculty's lack of involvement is due to the lack of incentives - as they are expected to get involved

voluntarily. This involvement is besides their teaching assignments. Therefore, it is taken as a burden by many of the faculty members and they prefer to stick to their teaching jobs. The result is a complacent faculty, settled in a comfort zone of academic environment, distant from the outside world activity. In their study of academic incubators in Pakistan, they contend that students could bring creative energy which is a pivotal element of entrepreneurial environment and that too at a lower cost than the external help. Yet no significant student internship initiative was found in majority of the academic incubators. Finally, they argue that expensive and valuable equipment available in universities laboratories also often remains inaccessible to the incubated companies (Salman & Majeed, 2009).

Incubators in Kenya are still a relatively new and growing concept (Marwanga, 2009). They call for prudent management like any other going concern. Change can create problems for managers, and sustaining rapid growth requires management structures that are able to seek new opportunities as organizations expand, address obstacles and barriers that come up and act flexibly to integrate new staff and expand products/service offerings. This can lead to reduced quality in decision making, worse product/service quality or friction between staff, particularly as new staff try to gain influence (Xu, 2010).

Salman and Majeed, (2009) propose what they call a ‘proactive incubator management’ approach to deal with the identified managerial challenges in university based business incubators. The approach involves diversification of income resources of academic incubators by introducing project management teams, fully utilizing in-house resources such as faculty, student interns, and laboratories, offering financial incentives, and doing commercial development projects and ensuring professional standards.

The project management teams report directly to the incubator manager, and manage multiple projects, involving the faculty as well as student. They envisage that This approach would result in the integration of the underutilized resources mentioned;

faculty, students and the labs. The project managers would be able to connect these academic resources with the incubator managers, hence filling the gap that exists between academic incubators and their academic institutions.

### **Conceptual Skills**

The incubator manager is responsible for establishing goals and selecting sponsors. The first step for the manager is to make a realistic assessment of the profile of the local entrepreneur and the gaps in knowledge, facilities, and functions that the incubator must be designed to fill. This forms the base of a good business plan, which then serves to mobilize broad sponsor support, raise finance, market, and monitor performance of the incubator (Xu, 2010).

Another planning decision to be undertaken by the manager is on the incubator focus. That is: Should the incubator cater mainly to one discipline, such as software development, or should it cover a wider range? The single subsector focus has the potential for better cooperation and competition among tenants, perhaps some expensive research facilities provided for shared use, and more concentrated technical assistance from the incubator management. But in most situations, the reservoir of potential local businesses in a single technology is limited and the capital investment needed to equip a special-purpose incubator is too high to justify this. Furthermore, the diversity of disciplines can itself add value to interactions among tenants (Xu, 2010).

According to Wulung, *et al.*, (2014) incubators the world over should be considered as part social investment. This usually requires a public-private partnership, with the public sponsor-the government or university-contributing in cash and in kind, toward the investment and initial operating costs for three to five years, until revenues match expenses. With university support inevitably comes university intervention, blatant or subtle. (“As the university will provide the vacant building space, our lecturer should be considered for incubator manager. He will also teach a course part-time,” etc.) While treating the incubator as a “center” or department of the university or government

agency may be expedient, the two cultures are different, the negative perceptions are significant, and the bureaucratic constraints are many. The preferred legal persona could be a nonprofit corporation, transformed later to an autonomous company.

Another planning issue is whether the incubator should be embedded in the structure of the university, be loosely linked, or stand alone. The efficiency of technology transfer is often inversely proportional to distance between transferor and transferee, and therefore, physical and organizational proximity could help facilitate access to expertise. The stand-alone incubator would have greater autonomy and flexibility. Each option has its advantages and the arrangement adopted may depend largely on the primary promoter.

### **Interpersonal Skills**

Interpersonal skills are also referred to as human skills (Yulk, 2006). Interpersonal skills embrace the way a manager relates with other people, including the ability to motivate, facilitate, coordinate, lead, communicate, and resolve conflicts (Pieper, 2007). Effective managers are cheerleaders, facilitators, coaches and mentors. They build through people. Effective human skills enable incubator managers to unleash incubatees' energy and help them grow (Sorenson, 2006).

Dawson (2014) identifies several design element of mentoring which represent a variable or an opportunity for a choice in the design of a mentoring model, for example: the choice of one-to-one rather than group mentoring (the cardinality element); the criteria that are used to choose mentors and mentees (the selection element); or the triggers for and consequences of ending a mentoring relationship (the termination element). The other design elements identified by Dawson (2014) include the objectives of a mentoring model which are a projected state of affairs that the model has been designed to achieve (the objective element); a statement of who is involved and their roles i.e. the mentors and mentees (the role element); the intended closeness of the mentoring relationship (tie strength element); the comparative experience, expertise, or

status of participants (Relative seniority element); the length of a mentoring relationship, regularity of contact, and quantity of contact (time element); how mentoring relationships are composed or how a particular mentee is matched to a particular mentor (matching element); actions that mentors and mentees can perform during their relationship (activities element); technological or other artifacts available to assist mentors and mentees (resource and tools element); what participants will receive to compensate for their efforts e.g. the mentor may be paid while the mentee obtains an increased mastery of content (rewards element); a set of rules and guidelines on issues such as privacy or the use of technology (policy element) (Dawson, 2014).

### **Technical Skills**

Technical skills include mastery of the methods, techniques and equipment involved in specific functions such as engineering, manufacturing or finance. They also include specialized knowledge, analytical ability, and the competent use of tools and techniques to solve problems in that specific discipline (Rue & Byars, 2004). Incubator managers particularly require technical skills in finance and performance management (Hackett & Dilts, 2004).

According to Hackett and Dilts (2004) financial dependency places incubators in a “politically charged environment” where constantly demonstrating the “success” of the incubator and the incubatees is necessary to justify continued funding. The traditional model of measuring success in any business organization is often as straightforward as reading a profit and loss statement. Business incubation facilities are sometimes structured as businesses in the conventional sense, but Hackett and Dilts (2004) report that the majority of incubators are non-profit entities. Even so, there is a trend now for non-profit organizations to emulate the private sector in such areas as strategic planning, finance and organizational development. Measuring success in a non-profit business incubation project, particularly one having a “targeted” set of outputs agreed as a basis for the allocation of public funds, could be viewed as a relatively simple exercise. The

monitoring, collection and reporting of data relating solely to those targets (beneficiaries, finances) indicate top-line success or failure (WEFO, 2003).

However, Howard (2005) noted that some of the positive outcomes, such as benefiting from access to ideas and knowledge, do not always show up in the statistical outputs periodically reported. The question then becomes: are there additional criteria by which business incubators measure and report activity – how can success be measured and reported? WEFO (2003) used the terminology of “hard outputs”, “soft outcomes” and “distance travelled” to measure performance of incubators. An output is usually the tangible service that a project delivers, and an outcome is a wider “behavioural” change that results from the output. Further, “hard outcomes” are the clearly definable and quantifiable results which show progress made, and “soft outcomes” represent the intermediate stage on the way to achieving the hard outcome. Typically this would include personal skills such as improved financial/business planning or management skills (WEFO, 2003). However, these may be termed “indicators”. The term “distance travelled” refers to the progress that an individual makes towards the harder outcomes as a result of the project intervention (WEFO, 2003).

In the context of business incubation, qualitative data on soft outcomes can be used to measure and demonstrate success in a number of ways: to highlight individual’s progress; show project staff what progress is being made; support for project development/adjustments; demonstrating additional benefits of the project to stakeholders and funders (WEFO, 2003). Consideration of soft outcomes also provides a valuable context for clients’ needs and progress, providing a truer, more rounded picture of successes (WEFO, 2003).

### **2.3.3 Entrepreneurship Skills Impartation Strategy**

Drucker (2006) strongly imply that entrepreneurial talents can be “matured-up” by postnatal education since inborn nature is not sufficient to explain the difference between entrepreneurs and non-entrepreneurs. Drucker (2006) is of the view that



entrepreneurship is a discipline and, like any discipline, it can be learned. If entrepreneurial talent was innate and could not be built up postnatally, entrepreneurship education would lose its significance and that entrepreneurial talent should therefore not be perceived as innate. Furthermore, entrepreneurship education promotes the intention of venture creation because entrepreneurship-related knowledge and skills stimulate an individual's motivation to create a new venture (Drucker, 2006).

### **Opportunity Recognition**

The identification of opportunities has been recognized as one of the most important abilities of successful entrepreneurs (Ardichvili, Cardozo, & Ray, 2003) and consequently has become an important element in the scholarly study of entrepreneurship. Not surprisingly there has been considerable interest in why, when, and how some people are able to identify opportunities, while others cannot or do not (Shane & Venkataraman, 2000). Following (Shane, Locke & Collins, 2003), entrepreneurial opportunities are defined as situations in which new goods, raw materials, markets and organizational methods can be introduced through the formation of new means, ends, or means-ends relationships.

According to Shane *et al.*,(2003) the identification of opportunities is a process that takes place over time rather than as a simple inspirational process, it assumes a process of creative retrospection. The identification of opportunities being the result of one's position of personal power, which depends on social, cultural and technological aspects together with the perception of a particular market opportunity (vision). The vision may be a good idea for a future project and a managerial project is then needed to exploit it. In this sense the opportunity has been identified, and the outstanding question is one of materializing. Psychologists who analyze the creation process suggest that, at least two types of creativity are necessary to conceptualize the process of identification of opportunities: the discovery and the resolution. From the empiric point of view, founders of companies view their businesses as a development of their intuition. They observe that the knowledge derived from education or work has a bigger influence when creating

a business than the degree of innovation of the opportunity. In this sense, the knowledge acquired from experience or education and even information are important factors in the creation of companies (Shane *et al.*, 2003).

Over the last few years, numerous models of opportunity recognition and development have been presented. In the Ardichvili-Cardozo-Ray model, major factors that influence the core process of opportunity recognition and development leading to business formation include: Firstly, entrepreneurial alertness; Ardichvili *et al.*, (2003) argue that any recognition of opportunity by a prospective entrepreneur is preceded by a state of heightened alertness to information. Secondly is information asymmetry and prior knowledge. People tend to notice information that is related to information they already know. Therefore entrepreneurs will discover opportunities because prior knowledge triggers recognition of the value of the new information. The third factor is social networks. Weak ties are “bridges” to information sources not necessarily contained within an individual’s strong-tie network. An entrepreneur’s networks are important to opportunity recognition. Fourth are personality traits. According to Ardichvili *et al.*, (2003) some cognitive studies have focused on the personality traits of entrepreneurs and their contribution to the success of entrepreneurial ventures. Finally is the type of opportunity itself. Ardichvili *et al.*, (2003) believe that the process of opportunity development may differ between four types of “opportunities”: Dreams, Problem Solving, Technology Transfer and Business Formation.

Dreams represents the kind of creativity we associate with artists, some designers, and inventors who are interested in moving proprietary knowledge in a new direction or pushing technology past its current limits (Problems and solutions both unknown). In technology transfer: opportunity development here emphasizes search for applications more than product/service development. (Problems are unknown but solutions are available). In business formation, opportunity development involves matching known resources and needs to form businesses that can create and deliver value. (Both problems and solutions are known). In problem solving, the aim of opportunity development in

this situation is usually the design of a specific product/service to address an expressed market need. (Problems are known but solutions are not) (Ardichvili *et al.*, 2003).

### **Risk Analysis**

In any given situation, entrepreneurs tend to perceive more opportunities than non-entrepreneurs where the latter perceive the same situation to have more costs and greater risks (Vecchio, 2003). As a whole, research on entrepreneur cognitive structure rests on the assumption that entrepreneurs differ from non-entrepreneurs in the cognitive structures that they use, as well as in the way that they use them (Markman, *et al.*, 2005). Cognitive processes focus on decision making and opportunity evaluation. Making decisions is a key task faced by all entrepreneurs, as they often face environments characterized by high levels of uncertainty and ambiguity. Usually, entrepreneurs are portrayed as people who ‘think on their feet’ and prefer action to reflection and thought (Markman & Baron, 2003), as often they must make decisions rapidly. Therefore, they tend to think heuristically, following quick rules for making decisions and planning action rather than thinking analytically and systematically.

However, like all human beings, entrepreneurs are not immune to errors and biases that can lead to faulty decisions, erroneous inferences and unrealistic expectations (Drucker, 2006). Evaluating opportunities is a critical entrepreneurial process in differentiating an idea from an opportunity (Drucker, 2006). Deciding whether an idea represents an opportunity often involves making judgements under conditions of complexity and uncertainty. Closely associated with uncertainty is risk, which is the probability that an entrepreneur will successfully turn an idea into an opportunity. As such, perceived risk is a significant aspect of how entrepreneurs evaluate available ideas; an idea will be evaluated more favourably where risks are deemed to be lower. Research has shown that cognitive biases influence the decision to start a business venture (Drucker, 2006).

## **Entrepreneurship Training**

Entrepreneurship education can enhance and develop traits that are associated with entrepreneurial success and provide skills that entrepreneurs will need later. Entrepreneurship education is based on a theory that solid learning can contribute to increase the knowledge management and to promote the psychological attributes associated with entrepreneurs (Armindia, Paco & Ferreira, 2011). In this sense, Lee, Lim and Pathank (2006) conclude that the school and the education system play a pivotal role in predicting and developing entrepreneurial traits. Policy makers believe that increased levels of entrepreneurship can be attained through education (European Commission, 2006) and particularly entrepreneurship education.

Entrepreneurship education has been described as one of the most significant achievements of the modern postsecondary educational system and a key factor in economic progress and the creation of jobs (Miller, Bell, Palmer & Petroleum, 2009). Katz (2007) argues that entrepreneurship education cannot avoid failure but can diminish the risk of failure. Basically, entrepreneurship education is about creating entrepreneurship competencies, which include knowledge, skills, and abilities (Markman 2007; Miller *et al.*, 2009). Evidence suggesting a positive link between education and entrepreneurship is robust. For example, Raposo, Ferreira, Paco and Rodrigues (2008) found that the most important effect on the propensity to start-up a firm among students was education. Research point out the importance of entrepreneurship education in the promotion of the entrepreneurial intention. These conclusions have support in others studies (Brice 2004; Hmieleski & Corbett, 2006). Florin, Karri and Rositter (2007) stated that the students need to perceive that the application of the skill is feasible and that an entrepreneurial approach is desirable and a focus on developing a positive attitude toward entrepreneurial behavior appears to be central to entrepreneurship education.

Johansen (2007) found that the start-up rate was significantly higher among participants with an “Enterprise-based” motivation (control group), so usually participants in

entrepreneurship education programmes are more likely to become entrepreneurs. Former evaluations of entrepreneurship education programmes have clearly shown these programmes' usefulness in developing young peoples' entrepreneurial competences (Johansen, 2007).

#### **2.3.4 Social Network Skills Impartation Strategy**

Early studies on business incubators focus mainly on the effects of physical proximity, economies of scale, and cross-fertilization between incubated firms and provide evidence that firms use incubators as an internal market place for subcontracting or purchasing goods (Hackett & Dilts, 2004). More recently, attention has shifted toward so-called networked incubators (Bøllingtoft & Ulhoi, 2005; Hansen, Chesbrough, Nohria & Sull, 2000; McAdam & Marlow, 2007; Tötterman & Sten, 2005). Most of these studies show which tools managers of business incubators have at their disposal to facilitate and foster the formation of networks, not only among entrepreneurs that are co-located in incubators but also between entrepreneurs in incubators and external business partners (Hansen *et al.*, 2000; Tötterman & Sten, 2005).

Both network and entrepreneurship studies have emphasized the importance of interpersonal ties—especially those with relevant people outside academia (Nicolaou & Birley, 2003; Shane, 2004). In this respect, people involved in university based business incubators start out with interpersonal networks that are primarily academic in nature; if they do not invest in ties with the industrial and financial world, industry representatives and investors are likely to consider them as academic ventures rather than real companies (Bekkers, Gilsing, & Van der Steen, 2006; Vohora, Wright, & Lockett, 2004).

Drawing on social capital theory, Nicolaou and Birley (2003) argued that networks around new ventures have four potential benefits. First, networks augment the opportunity identification process, as it enhances the entrepreneurs' recognition capabilities because entrepreneurs can discover the opportunity through the right personal contact. Second, networks provide access to resources. Third, networks

engender timing advantages, because the entrepreneur is able to know and use opportunities quicker. Fourth, a network such as the incubator network constitutes a source of trust and credibility with regard to the start-up company, because these network partners are credible organizations that back the start-up (Nicolaou & Birley, 2003). Because of these benefits, the establishment of a network is closely related to the success of the start-up (Hackett & Dilts, 2004).

According to McAdam and Marlow (2008) the role and value of networking in the entrepreneurial process lay in the supply of new ideas and information, which then supports the survival and growth of the venture. They argued that networks perform four key roles: (1) the provision of access to new ideas and resources that underpin entrepreneurial activity; (2) they facilitate the achievement of credibility through the formation of alliances with existing incumbents; (3) networks are utilized in order to share and create knowledge and learning; and (4) new networks also develop to connect the various relationships, which in turn facilitate the achievement of entrepreneurial goals and enterprise growth (McAdam & Marlow, 2008).

Business incubators can be seen as attempts to address market failures and the problem of a three-dimensional liability of newness' (McAdam & Marlow, 2008). One dimension relates to administrative support, the second dimension relates to age and related lack of visibility in the market and the third relates to being on your own versus being in a 'community'. They also provide evidence that (1) close physical proximity (e.g. being located on the same floor) plays a vital role in networking; (2) nurturing social capital needs some kind of investment and "some of the primary costs are paid for in the form of time invested in social activities and 'small talk'", (3) in networked incubators the line of demarcation between 'private' and 'business' is increasingly blurred and (4) unless the importance of social networks is addressed, it may be difficult to realize the full potential of business incubators (McAdam & Marlow, 2008).

According to Bøllingtoft (2012) all nascent entrepreneurs draw upon their existing social networks and construct new ones in the process of obtaining knowledge and resources

for their organization. Incubators can possibly fill in for an entrepreneur's impoverished network. On the other hand, a network made up of homogeneous ties will be of limited value to a nascent entrepreneur. As ties to the same kinds of people accumulate, the marginal value of each succeeding drops (Bøllingtoft, 2012).

Grimaldi and Grandi (2005) argued that when it comes to the flow of information the strength of ties is less important than whether they are non-redundant with other ties. This implies that being tied to a broad based loosely connected network is of great importance to entrepreneurs. In social network terms brokers are actors who facilitate links between persons who are not directly connected. Grimaldi and Grandi (2005) propose that incubators can also be viewed as brokers. This resonates with the idea that a huge part of the value of the incubator is its role as an intermediary to a much larger set of networks.

Lyons (2002) has divided networks that encompass an incubator into two different categories, these are internal and external. Moreover, Lyons (2002) stresses that the most important service offered by an incubator is the opportunity for (internal) networking among tenant companies. Therefore, tenants tend to use incubators to facilitate relationships with other incubator residents. In practice, these relationships may involve formal or informal partnerships, joint ventures, buy from/sell to relationships, bartering, or basic information exchanges (Lyons, 2002). Lyons points out that the fact that the tenants companies all operate under the same roof makes collaboration much more likely (Lyons, 2002). Similarly, co-located entrepreneurial firms provide the possibility to generate a symbiotic environment where entrepreneurs share resources and experiences, learn from one another, exchange business contacts and establish collaborative business relationships (Bøllingtoft, 2012).

An incubator and its external networks are useful to social capital building because they link client tenants with service providers and with other local businesses for partnership purposes (Lyons, 2002). More particularly, Bøllingtoft, (2012) describes an incubator's external networks as consisting of individuals drawn from the ranks of professional

business service providers as well as experienced business people and educators who are willing to provide advice and assistance to entrepreneurial enterprises. Further review of literature (McAdam & McAdam 2006), it is noted that firms naturally develop their networks through two mechanisms, self-organized networks or through networks they are directed to by business incubator management personnel.

### **Strength of Ties**

Ebbers (2013) makes a distinction between weak and strong ties among persons. Weak ties such as acquaintances are more likely to be sources of novel information and opportunities such as job openings. Strong ties such as family members are characterized by emotionally close relationships, high trust, and joint problem solving. In entrepreneurship, there is also an extensive stream of research on the effects of social networks. For example, strong ties such as family members and close friends are important in the early phase of setting up a new venture (Greve & Salaff, 2003) because they provide low-cost access to critical resources (Ebbers, 2013). Weak ties such as acquaintances, on the other hand, are more important for identifying opportunities (Elfring & Hulsink, 2003) and making the new venture profitable within a short period of time (Davidsson & Honig, 2003).

Strong ties are associated with the exchange of fine-grained information and tacit knowledge, trust-based governance, and resource cooptation (Ebbers, 2013). Their advantages are different from the benefits generated by weak ties. Weak ties are beneficial as they provide access to novel information as they offer linkages to divergent regimes of the network (Grimaldi & Grandi, 2005). They conclude that a key issue in the determination of network benefits is the search for the optimal mix of strong and weak ties. According to Bøllingtoft (2012), entrepreneurial networks can be categorized into two types derived from different sources: informal and formal. Informal entrepreneurial networks consist of personal relationships, families, and business contacts. Formal networks consist of venture capitalists, banks, accountants, creditors, lawyers, and trade associations.



In a business incubator setting, some studies have found that ties among tenants are weak and mainly characterized by information exchange instead of contractual relationships, possibly because of the large degree of diversity among the activities of tenants (Tötterman & Sten, 2005). In addition, it should be noted that entrepreneurs are at times also suspicious and cautious in their networking behavior within incubators in order to protect their business ideas and valuable relationships with investors (McAdam & Marlow, 2007).

### **Internal and External Networks**

According to Ebbers (2013) by being located on the same site, a symbiotic environment can be established where firms share experiences, exchange business contacts or establish collaborative projects as well as sharing the use of equipment or research facilities. Collaborations enable firms to utilize the existing expertise or technology of other firms. Incubator firms may also gain access to resources from their external networks. These might consist of researchers from research institutes or academics from universities, who are willing to provide advice and assistance. Ideally, incubators need to add value by bringing together a comprehensive array of networks with knowledge sources to match the needs of firms. Collaborations with universities, research centres or other knowledge-based institutions enable firms to enjoy economies of specialization, without the prior investments often needed for internal development (Tötterman & Sten, 2005).

Within business incubators, the external and internal networks developed may be different from firm to firm: each firm can have unique resource needs (Colombo, Mustar & Wright, 2010). The need for tangible and intangible resources can be different from firm to firm (Colombo *et al.*, 2010). Tangible resources include financial assets and physical assets. Intangible resources are assets which include intellectual property assets, organizational assets (Fernandez, Montes & Vazquez, 2000), reputational assets and skills/capabilities (Roberts & Dowling, 2002).

### **Frequency of Interaction**

Literature supports the idea that what matters in the process of founding a new organization is the size of the subset of people who are in some way involved with the entrepreneurs in founding it (Colombo, *et al.*, 2010). Yet an extended network must still process a great number of transactions in order to start up a new high-growth organization. McAdam and Marlow (2007), report a positive relationship between the average number of times per week that entrepreneurs contact their network members and the creation of a new venture. They argue that the frequency of communication linkage use is expected to be positively related to new-venture initial growth. These contributions suggest that the “frequency of interaction” between the founding team and external agents is a factor related to new-venture success.

### **2.3.5 Incubator Environment**

Tamasy (2007) investigated the critical success factors to operate UBI effectively. Among the factors that they noted as important was the physical infrastructure of the incubator. Specifically, they singled out on (1) easy access to facility and equipment and (2) common access to service space and office equipment. The support available in technology-oriented business incubators is often based on subsidized, and thus inexpensive, office spaces and office services, which eases the difficult start-up phase of technology-oriented businesses by reducing fixed costs. The spectrum of office services includes meeting rooms, telecommunication services, and secretarial functions, which are available in most of the incubators. In addition, many of the business incubators provide a cafeteria as a meeting place and platform for possible synergy effects (Tamasy, 2007).

This view is collaborated by Xu (2010) who indicates that Business incubators typically provide tenants with various types of physical resources or facility-related services to help reduce the costs faced by start-up enterprises. In a broader classification, the services offered include affordable and flexible office space and building facilities,

office equipment and shared office services. Office space is usually charged at a rate below market rents and is flexible in terms of both leasing arrangements and the changing needs of the incubator's tenants. Services related to building facilities typically include conference or meeting rooms, cafeteria/dining room, building security and other amenities. Shared office services include secretarial, reception services, mail handling, fax and copying services and the like, which are generally not affordable or neglected by start-ups. By offering these basic office services, business incubators provide at a minimum level opportunities to reduce costs and to save time for entrepreneurs who want to start their businesses immediately.

Lalkaka (1997) makes a case for the desirable physical facilities and layout of business incubators. He argues that for a business incubator it is generally fast and economical to utilize a renovated vacant building rather than construct a new one. A state-of-the-art building can become expensive, raising rental rates and making it difficult to break even at fewer than 85 percent occupancy. But for the technology business incubator, it is advisable to custom-build the facility. A good size is at least 2,500 square meters gross, in order to derive rental incomes for covering fixed costs. A start could be made with half this floor space and assured provision for expansion as warranted. The lab modules could be about 75 and 100 square meters each, light manufacturing spaces of about 250 square meters, and some office modules of 25 square meters.

The layout and design must be highly flexible, with good floor-load capability, loading docks, together with good security, clean rooms, sanitary facilities and after-hours access for tenants. Utility systems may call for individual air conditioning, good ventilation for fume hoods, fire protection, compressed air and steam connections, and systems for disposal of hazardous waste. For biotech-related activities, the incubator could provide basic shared equipment, such as autoclaves, high-speed centrifuge, spectrophotometer, deep-freezer, and water purification system (Lalkaka, 1997).

Importantly, all incubatees expect to be connected to the information highway. The need for a direct phone line and high speed data transfer can become expensive. Selected

production reference books and business/marketing journals are required. The entrepreneur doing creative work needs a pleasant but businesslike setting, with spaces to meet, communicate, and relax. This can be functional and modern, without extravagances (Lalkaka, 1997).

### **2.3.6 Enterprise Growth**

The importance of enterprise growth around the globe has been well recognized and documented by many scholars. For instance, Okpara and Wynn (2007) in their study reported that the potential contribution of enterprise growth to employment and income has been generally recognized. Entrepreneurs are widely recognized as the prime movers of economic development; the people who translate ideas into action. A basic definition of an entrepreneur is a person who has the ability to scan and identify opportunities in his or her environment, gather the resources necessary to take advantage of the opportunities and implement successful action to utilize the opportunities.

The role of Micro and Small Enterprises (MSEs) as symbols of enterprise growth in development of the global economy in general and the Kenyan economy in particular has also been well documented by studies (Peacock 2004; Ayyagari, Beck & Demirguc-Kunt 2003; St-ONge, 2005; RoK, 2013). The health of the economy as a whole has a strong relationship with the health and nature of micro and small enterprise sector. MSEs reflect the competitive spirit that a market economy needs for efficiency; they provide an outlet for entrepreneurial talents, a wider range of consumer goods and services, a check to monopoly inefficiency, a source of innovation, and a seedbed for new industries; they allow an economy to be more adaptable to change through continuous initiatives embodying new technologies, skills, processes or products (ROK, 2013).

Drucker (2006) argued that it was growth that distinguished entrepreneurs from small business owners. Audet and Couteret (2012) argued that growth was the characteristic of continued entrepreneurship. Therefore, growth is considered a defining characteristic of entrepreneurship and the primary outcome of entrepreneurial processes. Ardichvili, *et*

*al.*, (2003) suggest that entrepreneurship is about economic growth and that growth is seen as a purely economic phenomenon. They identified growth indicators comprising assets, employment, market share, physical output, branches, profits and sales.

### **Number of Employees in the Graduated Businesses**

While MMSEs are acknowledged for their contribution in addressing poverty and employment creation, particularly in times of shrinking public sector and big business, the conditions facing entrepreneurs, particularly in Africa, 'make simply surviving a miracle' (Al-Mubarak & Busler, 2010). Fortunately, business incubators have come to bridge this gap. Over time, the number of jobs created by previously incubated businesses on average has increased. To the extent that job creation can be used as a measure of enterprise success, this indicates increased success of the industry as a whole (Linder, 2003).

### **Additional Products Introduced**

Small enterprises have also been recognized as avenues for innovation (Okpara & Wynn, 2007). The innovation is mainly embodied in new products and services introduced by the enterprises into the market. It follows then that the more additional and new products then the more the enterprise can be said to be growing (Okpara & Wynn, 2007).

## **2.4 Empirical Literature Review**

A number of research studies have been done in relation to the role incubators in general and university based business incubators in particular play in promoting entrepreneurship across the world. Some of the studies, the scholars behind them, period undertaken, country and their findings are presented here.

### **2.4.1 Incubatee Selection Criteria Strategy**

Wynarczyk and Raine (2005) carried out a study on performance of business incubators and their potential development in the North East Region of England. Drawing on a survey of 17 incubators operating in the North East of England, this study empirically

examines the crucial role of existing incubators in the local economy in enterprise creation and attempts to identify areas of good practice that can be used as benchmarks for the creation of future incubators. Among the area of good practice examined by this paper include the incubate selection criteria strategy.

The study found out that the key incubatee selection criteria were as follows: Start-up or small businesses set-up within last 3–5 years (34%); Application, business plan, cash flow forecast (12%); Start-up businesses less than 12 months old (18%); Innovative (product/process/design), with job creation potential, growth oriented technology enterprises (12%); Bio-science support (6%); Graduate level, new technology-based enterprises (6%); Technology-based companies (6%); R&D, innovative companies linked to Universities (6%).

Becker and Gassman (2006) carried out a study on Corporate Incubators: Industrial R&D and What Universities Can Learn from Them. This study offers arguments validating a framework of what non-profit university incubators can learn from for-profit corporate incubators. While corporate incubators are for-profit organizations with which to enhance a corporation's technology development, university incubators try to leverage technological insights from the university in a similar manner. In accordance with their respective missions, organizational structures, incubator processes and resource flows, the study argues that it is possible to transfer lessons learned from the corporate incubator to the world of university incubator.

Among other learning points, the study established that University incubators can overcome 'failures' in the technology market and reduce transaction problems, such as adverse selection, moral hazard and holds up. Adverse selection might not support the best entrepreneur but the needy one. Sophisticated selection criteria strategy, such as pitches to a funding plenary, or business plan competitions as well as an improved interaction through a structured incubation process, increases the quality of supported ventures.

Adebite (2001) studied Business Incubators and Small Enterprise Development in Nigeria. The research reviews the development of business incubators in a developing country, namely Nigeria. The operational status of the then seven existing incubators were highlighted as well as the successes and shortcomings associated with the implementation of the programme. The research classified the existing seven Nigerian business incubators into two categories namely: industrial business incubators (four) (generalized industrial nurseries for nurturing new business start-ups with a view to promoting entrepreneurship and stimulating the emergence of industrial establishments at the small-medium enterprise level) and technology business incubators (three) (primarily aimed at innovative, technology-oriented small and medium scale enterprises desirous of commercializing R&D results, especially from the research institutions, with a view to promoting technological innovation and entrepreneurship development).

It was noted that among the industrial business incubators, there were no restrictions on tenant admission beyond the minimum basic requirements as may be stipulated in the admission procedure while among the technology business incubators, there were well laid down criteria for tenant admission. For the technology business incubators it was found out that strict admission and exit criteria as reflected in the tenancy agreement duly entered into between the contracting parties. The tenancy period was limited to three years in the first instance with provision for a further two year extension bringing the total to five years. Beyond five years tenants were made to pay the full commercial rent of incubator units in order to encourage voluntary movement out of the centre.

The study found out that one of the major factors impeding the periodic turnover of tenants from the incubators was the absence of objective criteria in tenant admission procedures. More often than not, tenants were offered admission on the basis of political connections rather than on merit and the potential commercial success of projects to be incubated. In some instances, genuine entrepreneurs are denied admission in favour of speculators, political appointees and top government functionaries. Consequently, the

study concludes by recommending among other things that there should be well laid down criteria for admission of tenants, in order to maximize the economic benefits accruable from the establishment of such centres. Similarly exit rules must be clearly spelt out in the tenancy agreement in order to facilitate a steady flow of tenants out of the centre at the end of the incubation period.

#### **2.4.2 Managerial Skills Impartation Strategy**

Lee and Osteryoung (2004) carried out a comparative study on Critical Success Factors for Effective Operations of University Business Incubators in the United States and Korea. Based on a detailed review of previous empirical studies, the authors of this study identified 14 factors as important to the effective operation of an incubator system. They classified them in four main categories namely: Goal/Operations Strategy (goal clarity, operational strategy concreteness); Physical/Human Resources (Easy access to facility and equipment, Common access to service space and office equipment, Networking of entrepreneurial support and Expert organization); Incubator Services (Technology transfer and research and development (R&D), Business and law consulting, Financial support and consulting and Entrepreneurial education program); Networked Program (Institutional networking, Networking of tenant/off-line firm, Networking of financing/business consulting firm and Government/local community support.

All the 14 factors were found to be significant as far as management of university based business incubators is concerned. Further the study revealed that that there appears to be no significant differences based on the critical success factors other than the goal/operations strategy. That is, the clarity/achievement of goal and concreteness/realization of operation strategy were perceived to be more important to the director of UBI in the United States than to her or his Korean counterpart. The study goes ahead and argue that this might be related to an unstable business incubating system, because the business incubating system in Korea does not have a lot of experience with business incubators.



Audet and Couteret (2012) undertook a study on coaching the entrepreneur: features and success factors in Canada. The purpose of this research was to examine the effectiveness of coaching as a support measure for young entrepreneurs and to identify the factors likely to have an impact on the success of coaching initiatives. According to the study, the coaching process is structured as follows: the firm is referred to the Incubator by a local development agency that has identified a need for support. The Incubator's manager visits the firm to diagnose the problems and decide on the type of coach required. A suitable coach is then identified from the manager's vast network of contacts.

Among the findings of the study is that the Incubator manager appears to have a certain facility for matching entrepreneurs with suitable coaches. The weakness of the process lies in the fact that it is based on the intuition, skill, and contact network of a single person. The Incubator manager also plays a significant information provision role. It is up to him to give the right instructions to the coaches, who usually have no prior experience of coaching. The Incubator's coaching program must also be explained to the entrepreneurs. Observations by the study suggest that declining frequency may be a symptom of discomfort in the relationship between the coach and the entrepreneur. Thus, when an entrepreneur begins spacing out meetings with the coach, this should be seen as an alarm signal. Contact by e-mail or telephone does not appear to be an adequate replacement for personal contact.

According to the data collected from the sample entrepreneurs, the coaches all had good listening skills, and with one exception, they all demonstrated empathy towards their protégés. Being receptive to coaching and especially being open to change seem to be the main conditions for coaching success. These conditions were not met by the two owner-managers of the firms whose coaching initiatives were unsuccessful. Commitment to the relationship and learning through action also appears to be a major success factor. Also upholding of moral contract was found important in ensuring success of the coaching initiative. Not only may the lack of a moral contract hinder the

smooth operation of the initiative, but failure to comply may actually be harmful. In conclusion, the findings suggest that the success of a coaching relationship is explained by a set of factors or “winning conditions”, some of which are more important than others. The most crucial one appears to be the entrepreneur’s open attitude to change.

### **2.4.3 Entrepreneurial Skills Impartation Strategy**

Hattab (2014) carried out a study on Impact of Entrepreneurship Education on Entrepreneurial Intentions of University Students in Egypt. The main objective of the study was to investigate the impact of entrepreneurship education on the entrepreneurial intentions of university students to start a new venture. The study assessed the impact of a dedicated entrepreneurship education module offered to a group of undergraduate students within an Egyptian university on their entrepreneurial intentions. Participants in the study consisted of students who were, at the time of the survey, in their final level at the British University in Egypt from three faculties, Engineering, Business Studies and Computer Science.

The results show that the percentage of students across three faculties of Engineering, Computer Science and Business Studies aspiring to pursue entrepreneurial careers is somewhat high. However, the percentage of students who confirmed their disinterest in entrepreneurship was higher among Engineering students, who were never exposed to entrepreneurship education. Among the group who studied entrepreneurship, Business Studies students were more inclined towards starting their own businesses compared to Computer Science students. The comparison between intentions of students before and after being exposed to a dedicated course in entrepreneurship reveals education has significant positive entrepreneurial outcomes: students’ intentions towards self-employment increases. Students acquire further knowledge about entrepreneurship; hence, their perception of self-employment alters to deem it a positive career choice. Education was found to increase the degree of favourability of entrepreneurship among Egyptian students.

Moreno (2011) undertook an empirical analysis of entrepreneurial opportunity identification and their decisive factors among new firms in Spain. The general objective of this study was to identify the factors influencing opportunity identification by entrepreneurs in Spain. The data used in this investigation were obtained by means of a survey carried out on a total of 701 firms located in the city of Madrid (Spain). The questionnaire used, gathered information about the manager's characteristics, of the managerial project, the research and development activity, the factors leading to success and problems found in the creation of the company, and the valuation of managerial spirit. The results revealed that the business opportunity identified and exploited by an entrepreneur depends initially on his work experience, his previous experience in activities related to the present business activity and his education level.

#### **2.4.4 Social Networks Skills Impartation Strategy**

Grandi and Grimaldi (2003) investigated the networking characteristics of new venture founding teams in Italy. The study deals with newly established ventures and their relations with external agents. The founding teams' intention to set up relations with external agents and their frequency of interaction with external agents are addressed as two features that are likely to lead to the success of academic spin-off companies. Two research hypotheses are then put forward: (a) that the intention of the founding teams to set up relations with external agents is influenced by the degree of articulation of roles and the completeness of the founding teams; (b) that the founding teams' frequency of interaction with external agents is influenced by the frequency of interaction with external agents of the research groups of origin and by their scientific and technological excellence.

The degree of completeness of the founding team negatively affects the dependent variable, thus confirming that one of the main drivers behind the intention to set up external linkages is represented by the search for resources not available in-house. As for the second hypothesis the study showed that the source organization affects the frequency of interactions with external agents of spin-off companies both through a

direct effect (frequency of interaction at the parent organization) and also through a more indirect effect, mainly related to reputation externalities (scientific and technological excellence).

Soetant and Jack (2013) carried out a study on business incubators and the networks of technology-based firms in the United Kingdom. The study looks to broaden understanding about the networks of firms located in Business incubators. The authors argue that networks at incubators can be seen in two dimensions. In the first dimension, they define incubator firm networking activities in terms of resource type, i.e. tangible and intangible resources. In the second dimension, they define networks of incubator firms as external and internal. Internal networks refer to the relationship among tenants while external networks refer to the firm's relationship with other institutions such as a university and/or research centre.

The empirical findings showed no significant difference between highly innovative firms and medium to low innovative firms in terms of networks they develop with internal (other incubator firms) and external partners (the STFC, universities). Interestingly, the findings reveal that highly innovative firms develop more networks with incubator firms compared to medium to low innovative firms. However, looking closely at the external network with the STFC and the universities, it was found that compared to highly innovative firms, medium to low innovative firms are more active in developing networks with such bodies.

The study goes ahead to give a possible explanation to this situation. It proposes that with highly innovative firms the product or service might be developed as early as possible and in conjunction with the university which could also be the source of the innovation. When starting to bring the product to market, highly innovative firms need to look beyond the university and their own resources for funding or access to markets or suppliers. This situation may lead highly innovative firms to develop a joint venture or business partnership with other firms at the incubator. On the other hand, medium to low innovative firms develop more linkages with external partners such as the STFC.

Medium to low innovative firms may enter a market with a product or service that may already be proven in the market. However, these firms face a relatively high level of obstacles in the long run (Van Geenhuizen & Soetanto 2009). These firms usually face high competition and the way to survive is by having the innovation endorsed through networking with external partners.

It was also noted that although most of the linkages of highly innovative firms with external and internal partners are higher than medium to low innovative firms, medium to low innovative firms have been quite active in developing networks with the STFC. From the survey, it was found that medium to low innovative firms use the networks with the STFC for several reasons, spanning from just exchanging information to technical consultation.

#### **2.4.5 Enterprise Growth**

Guceri-Ucar and Koch (2013) carried out a study on business incubation practices and software start-up success in Turkey. This study presents preliminary findings of a longitudinal qualitative study concerning business incubators in Turkey, and their effectiveness in enhancing the success and sustainability of new software ventures. The study covered five business incubators in Turkey. Two of the incubators were corporate private incubators, two were university business incubators while one was a business innovation centre.

Based on their preliminary findings, the researchers derive the following propositions regarding how business incubator practices may contribute to tenant success: first is that Location of the incubator will contribute to tenant success if it is in close proximity to an institution conducting innovative research in a similar area, if it provides locational advantage in terms of access to target customers, or if it provides ease of access to qualified employees. Second is that an open office structure will contribute to tenant success by enabling networking among tenants and creating opportunities for strategic partnerships. Third is that quality of the work environment provided by the incubator

will enhance tenants' efficiency in product development, and contribute to human capital by increasing employee motivation. Fourth is that the age of the incubator and the experience level of incubator management will affect multiple dimensions of tenant success, such as networking with potential clients and partners, cash flow, and human capital.

Peters, Rice and Sundararajan (2004) conducted a study on the role of incubators in the entrepreneurial process in USA. The study focused on the impact of incubator services offered, namely infrastructure, coaching and networks, on the graduation rates of the respective incubators' tenants. The study was done among three different types of incubators, for profit, non-profit, university-based incubators. The sampling frame for this study was the list of all incubators registered with the NBIA (USA). The results showed a significant difference in the number of companies graduating among the three types of incubators with different governance structures, namely non-profit, for-profit and university-based incubators.

The highest number of graduates was observed to be among the non-profit incubators. This could be because of the subsidized rates provided by the non-profits which are mostly state funded as noted from the interview responses. The data indicated that the services that distinguish the success of incubators relates mostly to the presence or absence of coaching and access to networks. The interviews also showed that there is variation in the characteristics and quality of networking offered by the different incubators. From the interviews, the importance of the selection process was also observed. Hence merely comparing the types of services offered will not be sufficient to explain the difference in the graduation rates among incubators.

## **2.5 Critique of Existing Literature**

The studies identified differ not only in their objectives, scope and methodology but also on their findings and recommendations. Wynarczyk & Raine (2005) considered enterprises that were 3-5 years old as suitable candidates for incubation. It would be

curious to see if the first and the most popular criteria applied by the studied incubators is applicable locally given that an enterprise that is 3 – 5 years old is regarded as relatively stable business that may not be targeted for incubation. This is also in view of the high mortality rate of startups in Kenya. The study by Audet & Couteret (2012) was majorly limited by the small number of cases observed (six in total). In the study by Grandi & Grimaldi (2003) the identification of the sample respondents was done in an unstructured and informal way, asking experienced and eminent academic professors, researchers, scientists and work colleagues to identify spin-off companies which they were aware of. This mode of sampling is very prone to bias and subjectivity from those few given the opportunity to recommend a respondent.

While as there are many studies conducted on university based business incubators it has been noted that with the exception of the study by Adegbite (2001) who looked at the Nigerian experience for incubators, the rest of the literature (Becker & Gassman, 2006; Lee & Osteryoung, 2004; Audet & Couteret, 2012; Grandi & Grimaldi, 2003; Soetant & Jack, 2013; Gueceri-Ucar & Koch, 2013; Peters *et al.*, 2004) is based outside of Africa particularly in Europe and United States of America. Though there are certainly lessons that can be borrowed from the operation of university based business incubators in this countries, the study recognizes that the political, economic and social context in these countries is significantly different from the African and particularly Kenyan context. This is further supported by the study of Lee & Osteryoung (2004) who noted that there may be differences in some of the generally held truths in literature about university based incubators from one society to another, like it is in the case between the United States and Korea.

## **2.6 Summary of Literature Reviewed**

Literature shows that university based business incubators have been in existence for some time now especially in developed nations. Developing nations are following and taking steps to develop and support these institutions (Chandra & Chao, 2011). Various studies have been reviewed in this study with some showing that university based

business incubators have a positive impact on enterprise growth (Peters *et al.*,2004; Becker & Gassman, 2006; McAdam & McAdam 2008; Guceru-Ucar & Koch 2013) while others have a contrary opinion (Barrow, 2001; Schwartz, 2011). Among the issues brought out by literature that are hypothesized to influence the effectiveness of university based business incubators in their core role of streaming out stable enterprises include incubatee selection criteria strategy (Wulung *et al.*, 2014), managerial skills (Salman & Majeed, 2009), entrepreneurial skills of the individuals behind the incubated businesses (Drucker, 2006), social networks (Bollingtoft, 2012) and the incubator environment (Xu, 2010).

## **2.7 Research Gaps**

This chapter reviewed the available literature on university based business incubators with a particular focus on their role on enterprise growth. Given the increasing attention given to business incubation facilities in Kenya as earlier noted in this study, and the fact that most of the current body of research is based in developed countries, this study aimed to contribute to a body of knowledge particularly on the Kenyan university based incubators. The studies reviewed focused on varying factors touching on university based business incubators such as financing, management facilities offered. This study aimed to look at these factors and in addition include those touching on the individual entrepreneur such as entrepreneurial skills and personality. More specifically the study focused on the following key areas relating to university based business incubators: entrepreneur selection criteria strategy, managerial skills impartation strategy, entrepreneurship skills impartation strategy, social networks skills impartation strategy and business incubator environment. This made the study more comprehensive.



## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

This chapter describes the research design and the methodology used in investigating the linkage between university based business incubators and enterprise growth and the specific objectives thereof. The research philosophy, research design, population, sampling technique, sample size, data collection instruments, pilot testing, data collection procedures, measurement of variables, data analysis and presentation are discussed.

#### **3.2 Research Philosophy**

Philosophy is defined as the general beliefs, concepts and attitudes of an individual or a group (Mertens, 2010). This study adopted a positivism philosophy. This philosophy is based on theories that are used to generate hypothesis that are tested to give statistical justification of conclusions from the empirically testable hypothesis (Bryman, 2012). Positivism is a position or approach that advocates the application of the methods of the natural sciences to the study of social reality and beyond (Bryman, 2012). The basic affirmation of positivism is that all knowledge regards matters of fact are based on the positive data of experience. Positivism states that knowledge is obtained using scientific methods which are objective and measurable.

Positivism is based on certain basic principles (Cooper & Schindler, 2011). The first principle is that of phenomenalism. This implies that only phenomena that are observable and measurable are regarded as knowledge. The second principle is deductivism. This implies that the purpose of the theory is to generate hypothesis that can be tested and allow explanation of laws to be assessed. The third principle is inductivism which states that knowledge is arrived at through gathering of facts that provides basis for laws (Cooper & Schindler, 2011).

### **3.3 Research Design**

The study adopted a descriptive research design. Cooper and Schindler (2011) define research design as the plan and structure of investigation so conceived as to obtain answers to research questions. According to Bryman (2012), descriptive designs are used in preliminary and exploratory studies, to allow researchers to gather information, summarize, present data, and interpret it for the purpose of clarification. The design has successfully been used in other studies (Ngugi, 2012). This design is appropriate for this study since descriptive survey research is intended to produce statistical information about the aspects of the research issue that may interest policy makers and aspiring entrepreneurs.

### **3.4 Study Population**

Cooper and Schindler (2011) observe that a population is the total collection of elements about which one wants to make inferences. Bryman (2012) defines population as the study's 'universe.' The population of this study comprised of all the 59 university based incubators' graduates in Kenya. There is no central organization or association for university based business incubators in Kenya. In light of this, the study obtained the list of all universities as provided by the Commission for University Education and then checked whether or not the individual university had a business incubator in place. Six (6) of the thirty nine (39) chartered universities had active business incubation initiatives as indicated in Table 3.1 below.

**Table 3.1: University Based Business Incubators in Kenya**

No.	University	University Based Incubator
1	Strathmore University	@iBizAfrica
2	Kenyatta University	Chandaria Business Innovation and Incubation Centre
3	University of Nairobi	C4D Lab centre
4	Mount Kenya University	Business Incubation Centre
5	Technical University of Kenya	Business/ Technology Incubation Unit
6	Kenya College of Accountancy University	KCA Business Incubator

**Source: Author (2017)**

### **3.4.1 Target Population**

The study focused on all the above mentioned university based business incubators. This makes the target population and the accessible population for this study to be the same. Specifically it focused on all the graduated incubatees of the above mentioned university based business incubators.

### **3.5 Sampling Frame**

A sampling frame describes the list of all population units from which the sample was selected (Cooper and Schindler, 2011). It is a physical representation of the accessible population and comprises all the units that are potential members of the sample (Kothari, 2004). Mugenda (2011) define a sampling frame as a list of all the items from where a representative sample is drawn for the purpose of a study. In this study, the sampling

frame was the list of all graduated incubatees from the university based incubators in Kenya as indicated in Table 3.2.

### 3.6 Sample and Sampling Technique

Mugenda (2011) define a research sample as a finite and representative number of individuals or objects in a population to be studied. The study adopted a census approach. For all incubators all the graduated incubatees were taken as part of the sample. This is considering that the incubators have so far, a fairly manageable number of graduated incubatees that would adequately be studied within the constraints of this study.

**Table 3.2:** Sample Size and Distribution

No	Host University	Incubator	Number of Graduated Incubatees
1	Strathmore University	@iBiz Africa	10
2	Kenyatta University	Chandaria Business Innovation and Incubation Centre	25
3	University of Nairobi	C4D Lab Centre	6
4	Mount Kenya University	Business Incubation Centre	6
5	Technical University of Kenya	Business/ Technology Incubation Unit	7
6	Kenya College of Accountancy University	KCA Business Incubator	5
	<b>TOTAL</b>		<b>59</b>

**Source: Author (2017)**

### **3.7 Data Collection Instruments**

Primary data was collected by use of self-administered semi structured questionnaires. Self-administered questionnaires involves the interviewer meeting the respondents physically and asking questions face to face as either the respondent or the interviewer fills in the questionnaires (Zickmund *et al.*, 2010). For some respondents, the drop and pick method was used. The questions in these questionnaires were both structured (present the respondents with a fixed set of choices, often called closed questions) and unstructured (they do not limit responses but do provide a room for respondents answer, sometimes referred to open-ended questions) (Cooper & Schindler, 2011).

Some of the questions were designed with alternative answers expressed in a Likert scale. Closed questions provide the study with standardized data and can be presented in an appropriate format that lends itself to being quantified and compared. The questionnaire was structured according to the specific objectives of the study – incubate selection criteria strategy, managerial skills impartation strategy, entrepreneurial skills impartation strategy, social networks skills impartation strategy and incubator environment. Secondary data was collected through a review of relevant literature on university business based incubators as obtained from academic journals, books, magazines, newspapers and related online searches.

### **3.8 Data Collection Procedure**

This study used a questionnaire as the main data collection tool. The questionnaire was either self-administered or dropped and picked. Telephone follow ups or reminders were put through to respondents who delayed in returning the filled questionnaire. The study used the services of two research assistants in the distribution, follow up and collection of the questionnaires. The research assistants were graduates of business studies who had basic social science research experience. An approval for the research was obtained from both the National Council for Science and Technology. A letter of introduction from the University also helped to ease the data collection process.

### **3.9 Pilot Study**

Pilot studies are used to ensure validity and reliability of the research instruments. Reliability is a measure of the degree to which a research instrument yields consistent results or data after repeated trials while validity has to do with the degree to which results obtained from the analysis of the data represent the phenomenon being studied (Cooper & Schindler, 2011). Zickmund *et al.*, (2010) note that pilot testing is useful since it helps to establish whether the study techniques are effective and helps to uncover internal variability, hence making the instrument more objective. In this study, pre-testing was conducted from among current incubatees of the identified incubators who were at an advanced stage of incubation. A total of six (6) respondents were randomly chosen (one from each university based business incubator) for pre testing. These pilot respondents had close characteristics as the study's sample.

#### **3.9.1 Reliability**

Split-half technique was used to assess the reliability of the instrument. It involves administering the questionnaire to the pilot group of respondents and then dividing the scored instrument into two halves and then computing the correlation coefficient of the two halves to see how they correlate. Based on Cronbach's alpha coefficient, 0.70 or higher value was considered to be an acceptable value for Cronbach's alpha reliability (Sekaran, 2003). In general, reliabilities less than 0.6 are considered to be poor, those in the 0.70 range, acceptable, and those over 0.80 good (Mugenda, 2011).

#### **3.9.2 Validity**

The validity of the questionnaire was determined using construct validity method. Construct validity is the degree to which a test measures an intended hypothetical construct (Mugenda & Mugenda, 2008). Using a panel of experts familiar with the construct is a way in which this type of validity can be assessed. The experts examine the items and decide what that specific item is intended to measure (Kothari, 2004). Faux (2010) asserts that an effective and practical approach to pre-testing questionnaire

instruments is to ensure that the questionnaire is understood by participants. This ensures that the response rates will be highly improved and the instrument will be able to yield responses relevant to the research objectives. The study used different groups of experts in the field of entrepreneurship and issued them with the questionnaire. The experts were required to assess if the questionnaire could effectively be used in establishing the role of university based business incubators strategy on enterprise growth in Kenya. This was in order to establish content and construct validity. The recommendations from the experts and the pilot study respondents were used to refine and improve the validity of the data collection instrument.

### **3.10 Measurement of Variables**

Various indicators were used in measuring the study variables. Measurement of variables was done for both independent and dependent variables. The study's independent variables were incubatee selection criteria strategy, managerial skills impartation strategy, entrepreneurial skills impartation strategy, social networks skills impartation strategy and incubator environment. The dependent variable is enterprise growth.

To measure incubatee selection criteria strategy, the innovativeness of the incubatee's business idea, the personality of the individual behind the business and fitness of the incubatee to the mission of the host university were evaluated. To measure the managerial skills impartation strategy of the incubator managers the study focused on their conceptual, interpersonal and technical skills. To evaluate the entrepreneurial skills impartation strategy the study looked into their opportunity recognition abilities, risk analysis skills and entrepreneurship training undertaken. To evaluate social networks skills impartation strategy, the focus was on the strength of the ties, internal and external networks and frequency of interactions. For the incubator environment the study focused on office/communication equipment, building infrastructure and operational routines in the incubator. The dependent variable of enterprise growth was measured by evaluating

the number of employees taken in by the graduated incubates, the market share and new product lines introduced by the graduated businesses and their profitability.

### 3.11 Data Analysis and Presentation

A combination of tools was used to analyze the data because whereas some aspects of the study are qualitative others are of a quantitative nature. Data was cleaned, coded and, where necessary, quantified for appropriate analysis. Qualitative data was analyzed using the Statistical Package for Social Sciences (SPSS) Version 21 and Microsoft Excel software through descriptive statistics; measures of central tendency (mean and mode), measures of dispersion (standard deviation and variance) and inferential statistics (correlation and multiple regression analysis). Thematic analysis was used for qualitative data. According to Mugenda and Mugenda (2008) qualitative data analysis seeks to make statements on how categories or themes of data are related. The study, therefore, grouped and analyzed qualitative data in themes along the lines of the predetermined research objectives. A multiple regression analysis was conducted to test and establish the form of relationship between variables. The multiple regression took the following form:

$$Y_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \beta_3 X_{3i} + \beta_4 X_{4i} + \beta_5 X_{5i} + e_i \dots\dots\dots \text{Equation 3.1}$$

$i = 1 \dots n$

Where:  $Y_i$  - Dependent variable (enterprise growth in Kenya)

$X_1$  - incubatee selection criteria strategy

$X_2$  - managerial skills impartation strategy

$X_3$  - entrepreneurship skills impartation strategy

$X_4$  - social networks skills impartation strategy

$X_5$  - incubator environment



$\beta_0$  - the constant

$\beta_1... \beta_5$  - corresponding coefficient for the respective independent variable

$e_i$  - error term

Analysis of Variance (ANOVA) was done to establish whether the whole model was a significant fit of the data. ANOVA is a method for testing the assumption that there is no significant difference among three or more sample means. It tests the assumption about means by comparing two different estimates of the population variances (Hinkelmann & Kempthorne, 2008). ANOVA consists of calculations that provide information about the levels of variability within a regression model and forms a basis for test of significance. Pagano (2004) indicated that ANOVA test can be used to determine the impact that the independent variables have on the dependent variable in a regression model.

Data was presented primarily in frequency tables, charts and graphs. This kind of presentation assists in bringing out comparisons between the various pieces of data collected during the study. Such comparison helped the study in making inferences and consequently conclusions and recommendations.

## CHAPTER FOUR

### RESEARCH FINDINGS AND DISCUSSION

#### 4.1 Introduction

This chapter presents the responses from target graduated business incubatees that formed the sample of the study whose main objective was to investigating the role of university based business incubators strategy on enterprise growth in Kenya. The data was analyzed through descriptive statistics and presented using tables, charts and graphs. The study also made valid replicable inferences on the data in various contexts. Analysis was conducted to statistically determine whether the independent variables had an effect or influence on the dependent variable.

#### 4.2 Response rate

The number of questionnaires that were administered was 59. Out of these 47 were properly filled, returned and found suitable for analysis. This represented an overall response rate of 79.66% as shown on Table 4.2. Cooper and Schindler (2011) asserted that return rates of above 50% are acceptable to analyze and publish, 60% is good, 70% is very good while above 80% is excellent. According to Mugenda and Mugenda (2008) a response rate of 50% is adequate for analysis and reporting.

**Table 4.1: Response Rate**

Response rate	Frequency	Percentage
Response	47	79.66%
Non response	12	20.34%
<b>Total</b>	<b>59</b>	<b>100%</b>

#### 4.3 Results of Pilot Study

From the findings of the study all the variables had a Cronbach alpha above 0.7 and thus were accepted. This represented high level of reliability and on this basis it was

supposed that scales used in this study is reliable to capture the internal consistency of the items being measured.

**Table 4.2: Reliability Coefficients**

<b>Variable</b>	<b>Cronbach's Alpha</b>	<b>Comment</b>
Selection criteria strategy	0.707	Acceptable
Managerial skills impartation strategy	0.848	Acceptable
Entrepreneurial skills impartation strategy	0.796	Acceptable
Social networks skills impartation strategy	0.872	Acceptable
Environment	0.936	Acceptable
Enterprise growth	0.920	Acceptable

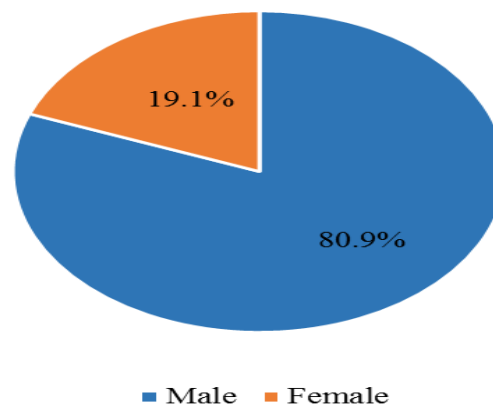
The validity of the questionnaire was determined using construct validity method. Construct validity is the degree to which a test measures an intended hypothetical construct (Mugenda & Mugenda, 2008). Using a panel of experts familiar with the construct is a way in which this type of validity can be assessed. The experts can examine the items and decide what that specific item is intended to measure (Kothari, 2004). Further, to ensure validity of the research instrument, the questionnaire was pre-tested on five respondents. All the issues raised by the pilot study were incorporated in the final questionnaire, taking caution not to lose the intended information.

#### **4.4. Demographic Statistics**

##### **4.4.1 Gender of Respondents**

The study aimed to establish the gender of the respondents who participated in the study. As presented in Figure 4.1 majority (80.9%) of the respondents were male, and 19.1% were female. These results are in agreement with those of Minniti, Arenius and Langowitz (2013) who found that although globally the absolute number of women

in self-employment has increased in recent years, significant differences still exist in the levels of new firm creation across genders, and the number of women involved in starting a business is significantly and systematically lower than that of men. Specifically in Kenya, there is a strong male domineering culture where men are seen as the financier and controller of most businesses (Karanja, 2011). This finding implies that there is still gender imbalance in enterprise formation in Kenya.



**Figure 4.1 Gender of Respondents**

#### **4.4.2 Age Distribution of the Respondents**

Table 4.3 shows the age of the respondents. The table shows that majority (80.9%) of the respondents were within the age bracket of 18-25 years, 19.1% of the respondents were within the age bracket of 26-35 years and 0.0% of the respondents were within the age bracket of 36-45 years. This result indicates that majority of the people involved in the study were within the age brackets of 18-25 years and the business incubators in Kenya are dominated by youth between the ages of 18-25 years. According to Bathula *et al.*, (2011) one of the main reasons for universities having business incubators is to provide training opportunities for students and as commercial outlets for faculty research. The findings are however contrary to those of Wulung, *et al.*, (2014) who, while studying six university based business incubators in the United States of America, found that the average age of entrepreneurs starting businesses was 40 years. This could be explained by the fact that the main catchment for university based business incubators

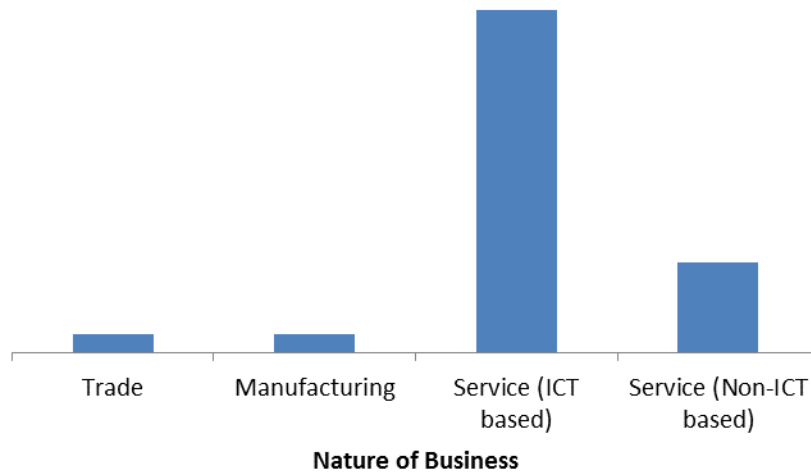
are undergraduate university students of whom a majority are within the 18-25 years age bracket.

**Table 4.3: Age Distribution of the Respondents**

	Frequency	Percent
18-25 years	38	80.90
26-35 years	9	19.10
36-45 years	0	0.00
Total	47	100.00

#### **4.4.3 Nature of Business**

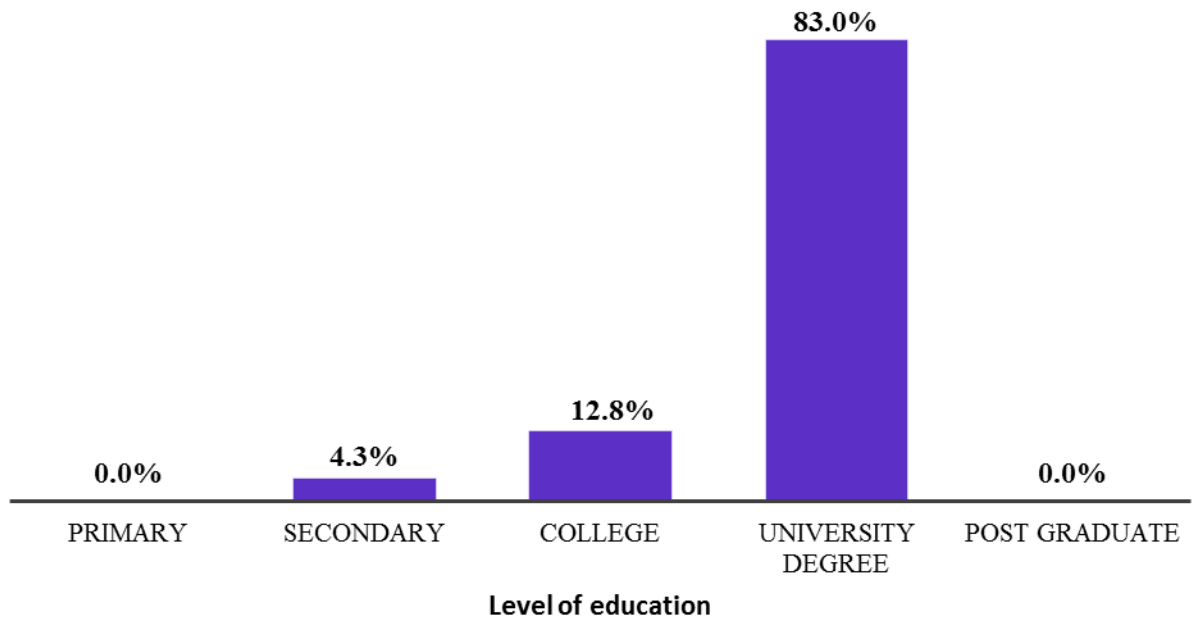
Respondents were requested to give a classification of their enterprises. The descriptions were analyzed and categorized into four: Trade, manufacturing, service (ICT based) and service (Non ICT based). The result was that a majority (73%) were in the ICT based services category, a significant (19%) were in the non-ICT based services while trade and manufacturing had least presentation (4%) each. These findings are in line with those of Bathula *et al.*, (2011) who noted that most of university-based business incubators focus on high-technology fields and as such incubatees with a strong focus on technology are preferred. This can be attributed to the fact that Kenya's ICT sector continues to enjoy a phenomenal growth as noted in the country's vision 2030 blue print. This coupled with a large base of well-educated youth may be the reason behind an overwhelming combined majority 92% of the enterprises being service focused and more so ICT service based. The ICT based enterprises were majorly involved in computer software development, mobile phone applications development and website/graphical design.



**Figure 4.2: Nature of Business**

#### **4.4.4 Education Level of the Respondent**

Figure 4.3 shows the education level of the respondents. The figure shows that majority (83.0%) of the respondents had a university degree, 12.8% of the respondents had a college certificate, 4.3% of the respondents had a secondary school certificate and there were no respondents with either post graduate degree or primary certificate. This result implies that the incubatees in the incubators generally have a higher level of education with majority having a university degree. These findings are in line with those of Wulung, *et al.*, (2014) who noted that most incubates in university based business incubators were university graduates. It is noteworthy that all the respondents had at least the basic education up to secondary level which implies they had the capacity to understand the knowledge and skills being disseminated in the incubator and also adequately support the running of their enterprises. According to Zahra and George (2002) the ability to understand new knowledge can be influenced by three attributes: Possession of prior-related knowledge, level of human capital (education and experience) and intent to learn.



**Figure 4.3: Education Level of the Respondent**

#### **4.4.5 Period Incubated**

Table 4.4 shows the period the respondents were incubated. The results shows that majority (53.2%) of the respondents were incubated for less than 6 months, 23.4% of the respondents were incubated for between 6 months- 1 year, 19.1% of the respondents were incubated for a period of between 1- 2 years and 4.3% of the respondents were incubated for over 2 years. From the findings, an aggregate majority of 95.7% of the respondents were incubated for between six months and two years. According to Becker & Gassmann (2006) the length of time at which an incubate remains in the incubator is correlated to among other things, the total physical space of the incubator itself (an incubator with large physical space can accommodate a growing incubatee longer). Space demand in university based business incubators is high given their rich catchment and therefore incubatees are unlikely to be allowed extended tenancy. This explains the relatively high turnover rate of incubatees in university based business incubator in Kenya.

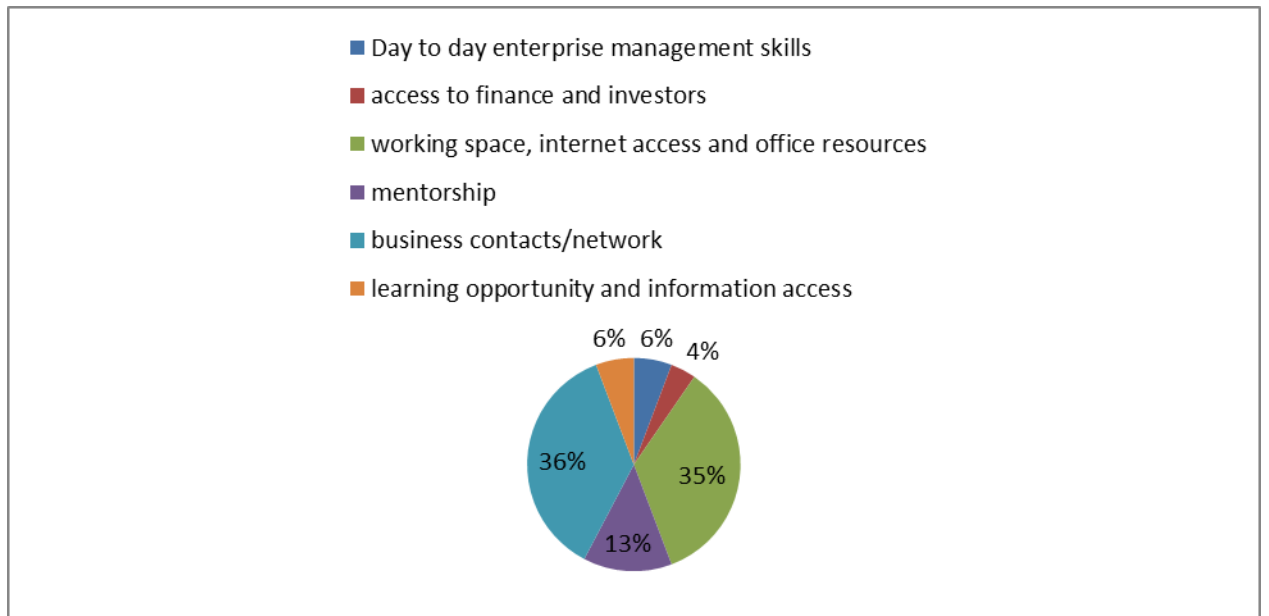
**Table 4.4 Incubation Period**

	Frequency	Percent
Less than 6 months	25	53.2
6 months - 1 year	11	23.4
1 - 2 years	9	19.1
Beyond 2 years	2	4.3
Total	47	100.0

#### **4.4.6 Benefit Obtained from Incubation**

Respondents were requested to indicate the key benefit they obtained from being incubated. They mentioned business contacts/networks (36%), physical facilities (35%), mentorship (13%), day to day enterprise management skills (6%), learning opportunity and information access (6%) and finally a minimal (4%) mentioned access to finance/investors. Ironically, access to finance has been mentioned as a key challenge facing enterprise growth in Kenya yet it ranked least in the list of benefits provided by university based business incubators (Mwobobia, 2012). This implies that the incubators are not doing enough as far as financing startups is concerned.





**Figure 4.4: Benefit Obtained from Incubation**

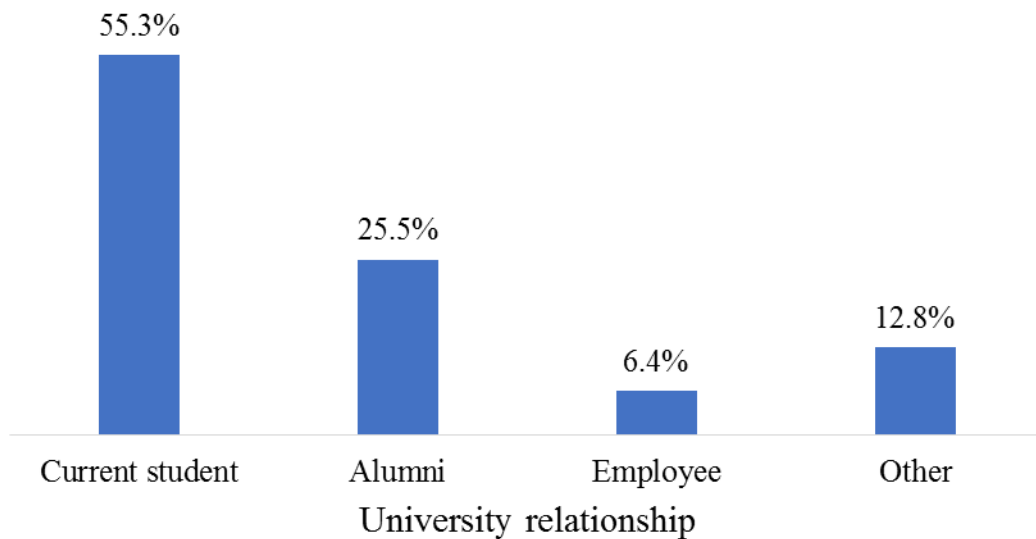
#### **4.5 Relationship Between Incubatee Selection Criteria Strategy and Enterprise Growth in Kenya**

The study sought to find out the role of incubatee selection criteria strategy in the university based business incubators on enterprise growth in Kenya. More specifically, the study looked into innovativeness of the potential incubatee; the personality and experience of the individual entrepreneur behind the enterprise; and the fitness of the proposed incubatee to the incubator’s strategy or area of expertise.

##### **4.5.1 Relationship Between Incubatee and the University Hosting the Incubator**

Figure 4.5 shows the relationship of respondents with the university hosting the incubator. The figure shows that majority (55.3%) of the respondents were current students of the hosting university, 25.5% of the respondents were former students, 6.4% of the respondents were workers in the university and 12.8% of the respondents were external parties who had no relationship with the university hosting the incubator. The results imply that in total, an overwhelming 87.2 % of incubatees in university based

business incubators have a direct connection to the host university. This is attributed to the fact that the incubators categorically gave preference to their own students and faculty. According to Adegbite (2001), university based business incubators tend to prefer enterprises geared towards commercializing research and development results, especially from the parent universities and also provision of opportunities to faculty and students.

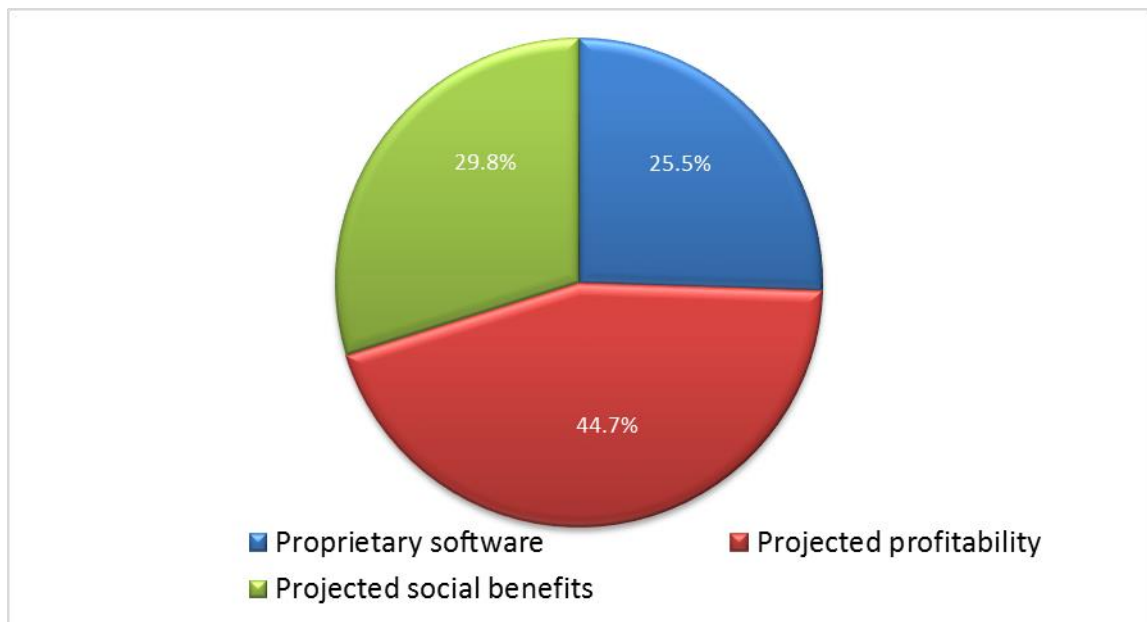


**Figure 4.5: Relationship Between Incubatee and the university hosting the incubator**

#### **4.5.2 Unique Incubatee Characteristic/Strength**

Figure 4.6 shows the unique characteristic/strength of the business that led to the respondents being selected into the incubator. The results shows that, majority (44.7%) of the respondents were admitted on the basis of projected profitability, 29.8% of the respondents were admitted on the basis of projected social benefits and 25.5% of the respondents were admitted on the basis of proprietary software. This results indicates that majority of the incubators were admitted on the basis of potential profitability. The findings agree with those of Macadam and Marlow (2007) who found that potential incubatees that have high potential (in that they have a product or service that is based

on technological knowledge; and are likely to achieve significant growth) are preferred by incubators. Notably, a significant 29.8% of the respondents were chosen for incubation on the basis of the social benefits their enterprises proposed to offer. This finding implies that university based business incubators in the country are concerned about providing solutions to social problems, beyond profitability. None of the respondents was admitted on account of a patented product. This implies that Kenyan startup entrepreneurs are not very keen to patent their products perhaps because of the fairly weak intellectual property regime in the country.



**Figure 4.6: Unique Incubatee Characteristic/Strength**

#### **4.5.3 Incubatee Selection Tools**

The study sought to investigate the types of selection tools used by university based business incubators in Kenya when selecting those that will finally be incubated. As the results show, the incubators use a variety of tools and in some cases a mixture of more than one tool. A significant 35% of the respondents were selected on the basis of oral presentations made during the incubator-organized pitching sessions, 29% were selected on the basis of a combination of a written business plan and oral presentation, 12% were

selected through a combination of written business plan, oral presentation and experience of the entrepreneur in running own enterprise, 8% were selected based purely on their experience of running the enterprise, 6% were chosen through a combination of oral presentation and written test, another 6% on the basis of a combination of oral presentation and experience in running the enterprise, 4% on the basis of a combination of oral presentation and having a prototype and the remainder 2% on the basis of a written business plan only. The finding that only a negligible 2% of respondents were selected by use of a written business plan only is supported by the argument of Wulung *et al.*, (2014) who note that the candidates' business plans often includes exaggerated or highly optimistic values and are therefore not a reliable selection tool. It is however, contrary to the guidelines of the four phase model of incubation given by Becker & Gassmann (2006) who propose that incubators looks for start-ups that have among other characteristics, a developed business plan.

Overall, a majority 57% of the respondents were selected using a combination of more than one selection tool. This selection approach is supported by Bergek & Norrman (2008) who note that incubatee selection can be divided into idea-focused selection and entrepreneur-focused selection. In the idea-focused selection approach, the incubator manager evaluates candidate incubatees based on market and profit potential, while the entrepreneur-focused approach evaluates the characteristics of the entrepreneur, including his experiences and skills. The weakness of the business plan can be compensated by evaluating the personality of the entrepreneur.

#### **4.5.4 Operational Period Prior to Incubation**

Table 4.5 shows the period respondents had been running their own incubated enterprises before they were admitted into the incubator. The result shows that majority (70.2%) of the respondents had an experience of less than 6 months in running the incubated business, 14.9% of the respondents had an experience between 6 months- 1 year and 1- 2 years and none of the respondents had an experience of over 2 years. They could then all be comfortably classified as startups. This finding is in line with literature on business incubation which emphasize that the main goal of business incubators is to

support startups by providing management guidance, technical assistance and consulting tailored to young growing companies (NBIA, 2013).

**Table 4.5: Operational Period Prior to Incubation**

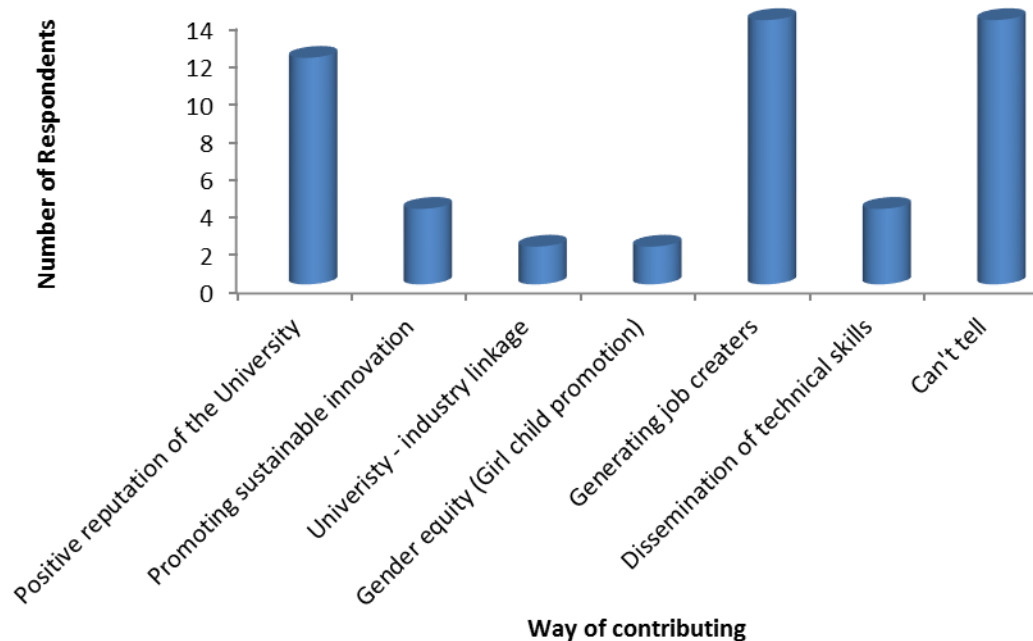
	Frequency	Percent
Less than 6 months	33	70.2
6months – 1 year	7	14.9
1 – 2 years	7	14.9
2-5 years	0	0.0
5 years and beyond	0	0.0
Total	47	100.0

#### **4.5.6 Contribution to Host University Mission**

The study probed the respondents on what they thought was their contribution to the host university’s mission. Their responses were grouped along themes of reputation, promotion of innovation, industry linkage, gender equality, job creation, and skills dissemination. More specifically the study found that 27% of the respondents mentioned generation of job creators as their contribution, 23% said they contributed by building the positive image/reputation of the university, promoting sustainable innovation and skills dissemination were each mentioned by 8% of the respondents, university-industry linkage and gender equality were each mentioned by 4% of the respondents. However, 27% of the respondents declined or could not tell how their incubation assisted the respective university achieve its mission.

The main focus of university based business incubators is on the generation and transfer of scientific and technological knowledge from universities to companies and an outlet for commercialising university research (Grimaldi & Grandi, 2005). Universities play a significant role in establishing linkages with the industry so as to provide their faculty a

platform to conduct research and an opportunity for their students to be job creators (Marwanga, 2009). Though in a negatively critical tone, Salman & Majeed (2009) notes that it becomes a conventional symbol for a university to have an incubator; which can be translated to mean that universities have a mission of image building when they set up incubators. This finding implies that to a significant extent university based business incubators are assisting their host universities attain their goal of churning out job creators and at the same time, building on the host university's image.



**Figure 4.7: Contribution to Host University's Mission**

#### **4.5.7 Traits of Respondents and Their Incubated Enterprises**

The respondents were given a range of statements aimed at assessing their individual traits and those of the enterprises they owned. They were requested to respond to the statements on a scale of 1-5, with 1 indicating strongly disagree, 2-Disagree, 3-Can't say, 4-Agree and 5 indicating strongly agree to the statement. The results were as follows:

**Table 4.6: Information on Respondents and their Incubated Businesses**

STATEMENT	SD %	D %	Can't say %	A %	SA %
The product(s) offered are completely new in the market	2.1	21.3	2.1	34.0	40.4
The product(s) offered are an improved extension of existing product(s)	2.1	12.8	6.4	31.9	46.8
The product(s) are offered in a different way/medium compared to competitors	0.0	10.6	12.8	27.7	48.9
The degree of innovativeness depends on an organization's size	0.0	2.1	17.0	21.3	59.6
I consider myself to have high self- efficacy (I believe in my abilities as an individual)	0.0	0.0	0.0	31.9	68.1
I consider myself a risk taker	0.0	0.0	0.0	31.9	68.1
Success of my business depends on access to superior technology	0.0	2.1	0.0	21.3	76.6
The incubator is an effective tool for commercialization of research by students and lecturers	0.0	0.0	6.4	25.5	68.1

The above results show that a majority of the respondents felt that there was something substantially new/different regarding the products they offered to the market relative to what existed previously. This is in agreement with the study of Wulung *et al.*, (2014) who noted that incubators prefer new and innovative businesses. A majority of the respondents (59.4%) strongly agreed with the statement that the size of the organization determines its degree of innovativeness. Startups and small businesses are considered more innovative than larger matured businesses because of the less associated

bureaucracy, despite their limited resources. A majority 68% of the respondents also indicated they strongly believed in their abilities as individuals and also considered themselves as risk takers. An appetite for risk and strong internal locus of control have been mentioned as desirable characteristics of entrepreneurs (Drucker, 2006). A majority 76.6% of respondents strongly agreed that the success of their businesses depends on having superior technology. This could be attributed to the fact that most of the respondents were in information communication and technology based businesses particularly software and mobile application development. A combined majority of 93.6% either agreed or strongly agreed that university based business incubators are effective tools for commercialization of research by students and lecturers. This is in agreement with those of other scholars in this field (McAdam & McAdam, 2008).

#### **4.6 Managerial Skills Impartation Strategy**

##### **4.6.1 Managerial Skills Impartation Strategy in University Based Business Incubators**

The respondents were given a range of statements aimed at assessing the managerial skills impartation strategy of the incubator managers who managed the incubators where the respondents' enterprises had been incubated. They were requested to respond to the statements on a scale of 1-5, with 1 indicating strongly disagree, 2-Disagree, 3-Can't say, 4-Agree and 5 indicating strongly agree to the statement. The results were as indicated in table 4.7 below.

A majority 78.7% agreed that the incubator management was visionary with a clear plan and goals for the incubator. According to Xu (2010), incubator managers have a long term conceptual role to play that involves making a realistic assessment of the profile of the local entrepreneur and the gaps in knowledge, facilities, and functions that the incubator must be designed to fill. This forms the base of a good business plan, which then serves to mobilize broad sponsor support, raise finance, market, and monitor performance of the incubator.



The respondents were also of the view that the incubator management was competent in start-up management with a majority 70.2% agreeing with the statement and an additional 17% strongly supporting the statement. This finding implies that the incubatees felt well guided and advised during their incubation period. According to Lalkaka (1997) a competent incubator manager should possess various attributes including specific knowledge in aspects of small business, marketing, finance, and technology management.

An aggregate total of 87.2% of the respondents were of the view that university based business incubators' managers in Kenya possessed wide network of contacts. This is in support of Lalkaka (1997) who suggested that suitable incubator managers should among other things possess a wide network of contacts. Such a network becomes an important source of ideas and resources for the incubator and its incubatees (Wulung *et al.*, 2014).

A simple majority of 53.2% agreed that incubator managers had had good interpersonal/communication skills while an additional 38.3% strongly agreed with the statement. Interpersonal skills were mentioned by Lalkaka (1997) as part of requirements for incubator managers. Effective interpersonal skills enable incubator managers to unleash incubatees' energy and help them grow (Sorenson, 2006). A simple majority of 53.2% of respondents strongly agreed that incubator managers were good at mentoring and counseling incubatees. A further 36.2% agreed with the statement. Incubator managers should have good counseling, mentoring and teaching capabilities (Lalkaka, 1997) since they are expected to pass on some knowledge, skills and even motivation to the incubatees.

A simple majority of 48.9% of respondents strongly agreed that incubators managers spent adequate time with incubatees while another 31.9% agreed with the statement. According to Lalkaka, (1997) the bulk of the manager's time should be devoted to first, providing support to help the companies grow. A simple majority of 42.6% strongly agreed that the incubator managers were good at fundraising while another 38.3% agreed with this view. Raising funds for the incubator and its tenants was mentioned as a

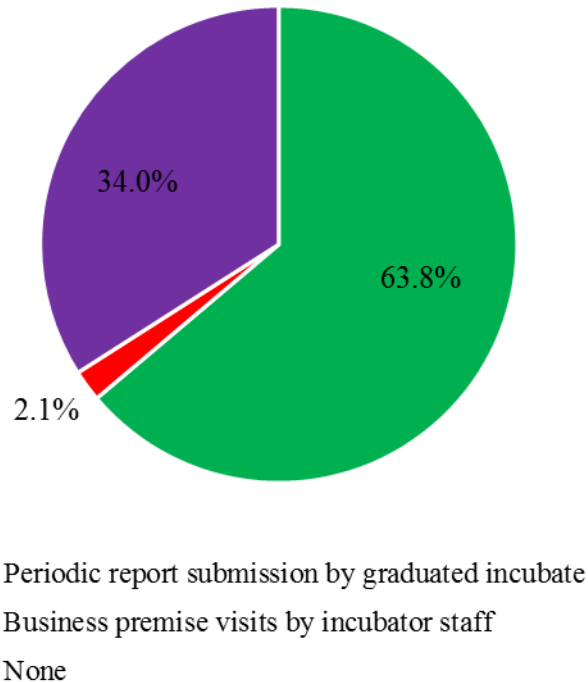
key role of incubator managers by Lalkaka (1997). A simple majority 48.9% of respondents were of a strong view that the incubator fully utilized resources available (lecturers, students and laboratories) in the host university while another 34% agreed with the statement. This finding is contrary to that of Salman and Majeed (2009) who noted that the most serious managerial challenge facing university based business incubators is that of undercapitalization of in-house university resources which includes faculty, students and laboratories.

**Table 4.7: Managerial skills in University Based Business Incubators**

STATEMENT	SD %	D %	Can't say %	A %	SA %
The incubator management was visionary with a clear plan and goals for the incubator	6.4	0.0	8.5	78.7	6.4
The incubator management was competent in start-up management	6.4	2.1	4.3	70.2	17.0
The incubator management possessed wide network of contacts	0.0	2.1	10.6	72.3	14.9
Incubator managers had good interpersonal/communication skills	0.0	4.3	4.3	53.2	38.3
Incubator managers were good at mentoring and counseling incubatees	0.0	8.5	2.1	36.2	53.2
Incubators managers spent adequate time with incubatees	0.0	10.6	8.5	31.9	48.9
Incubator management was good at fundraising for incubatees	2.1	6.4	10.6	38.3	42.6
The incubator fully utilized resources available (lecturers, students and laboratories) in the host university	4.3	6.4	6.4	34.0	48.9

#### **4.6.2 Monitoring and Evaluation Mechanism Incubators use for Their Graduated Incubatees**

Figure 4.8 below shows monitoring and evaluation mechanism incubators use for their graduated incubatees. The figure shows that majority (63.8%) of the respondents said incubators employed periodic report submission by graduated incubates as their monitoring and evaluation mechanism. A significant 34.0% of the respondents said the incubators did not monitor nor evaluate their graduated incubates. A minimal 2.1% of the respondents said incubator staff visited the business premises of graduated incubatees to monitor and evaluate their progress. This result indicates that majority of the people who involve in the study practiced periodic report submission by graduated incubate mechanism. Incubator managers need to keep track of the incubator's performance (Lalkaka, 1997) and as such they require skills and capacity in performance management (Hackett & Dilts 2004). A significant 34.0% of respondents said university based business incubators in Kenya do not make a follow up of their graduated incubatees. This could perhaps be attributed to the limited resources, especially in human resources, facing the incubators. This possible explanation can further be supported by the fact that only 2.1% of the respondents said the incubators engaged in physical visits to their premises, which can be considered as an active and demanding approach to monitoring, compared to 63.8% who said the incubators use submitted reports, which can be considered as a passive approach to monitoring, as the key monitoring and evaluation tool.



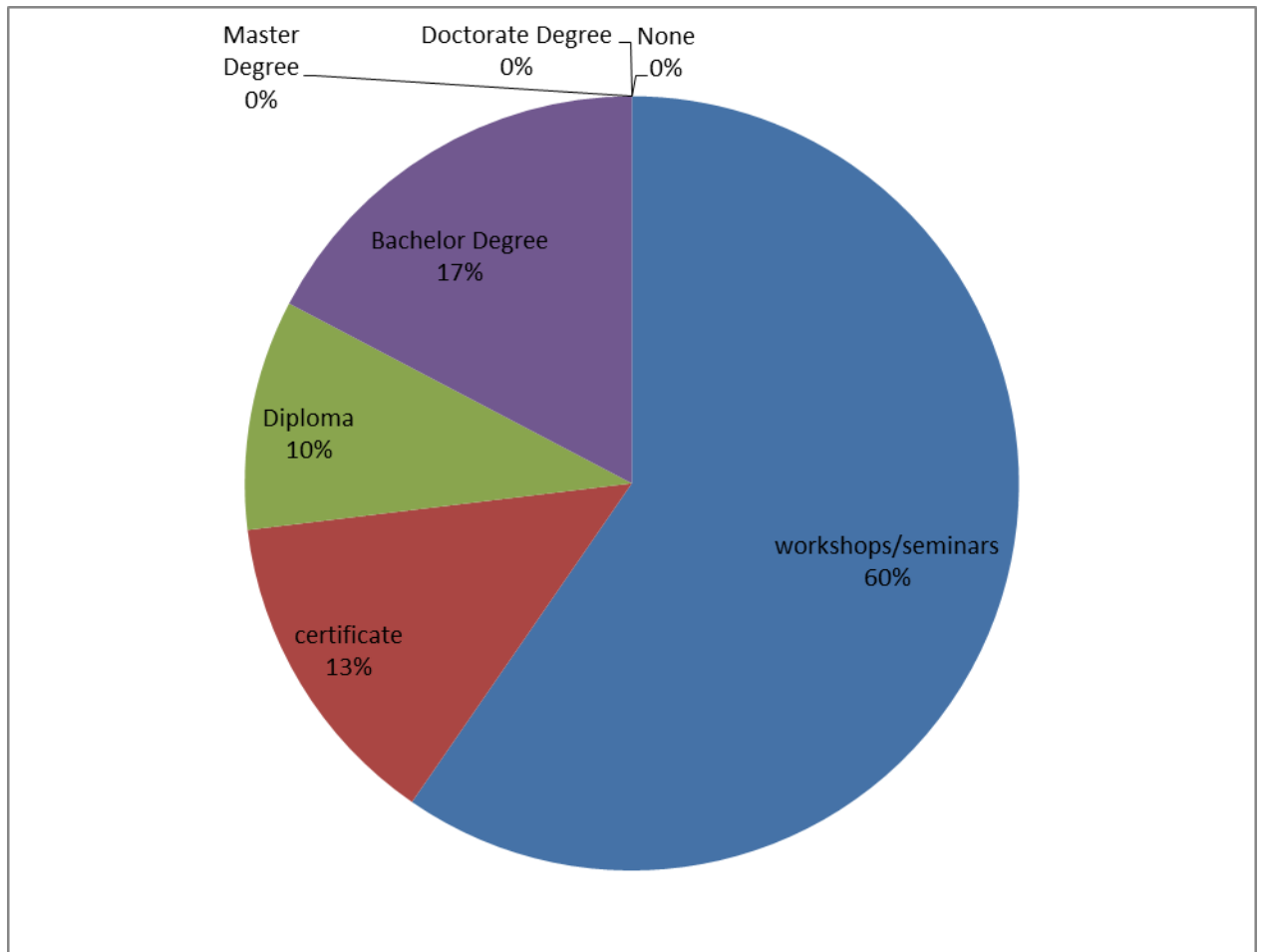
**Figure 4.8: Monitoring and Evaluation Mechanism**

#### **4.7 Entrepreneurship Skills Impartation Strategy**

##### **4.7.1 Highest Level of Entrepreneurship Training**

Respondents were asked to indicate their highest level of entrepreneurship training. The data collected showed that all the respondents had undergone some form of entrepreneurship skills training. A majority 60% of the respondents had obtained entrepreneurship skills training through workshops and seminars. A small 17% got entrepreneurship skills training at bachelor’s degree, 13% at certificate level while 10% at diploma level. None of the respondents had postgraduate entrepreneurship training. It is well acknowledged in literature that entrepreneurship education can enhance and develop traits that are associated with entrepreneurial success and provide skills that entrepreneurs will need later (Arminda, *et al.*, 2011). The finding also support that of Johansen (2007) who found that the start-up rate was significantly higher among

participants with an “enterprise-based” motivation, so usually participants in entrepreneurship education programmes are more likely to become entrepreneurs.



**Figure 4.9: Highest Level of Entrepreneurship Training**

#### **4.7.2 Entrepreneurship Skills Impartation Strategy in University Based Business Incubators**

The respondents were given a range of statements aimed at assessing their entrepreneurship skills. They were requested to respond to the statements on a scale of 1-5, with 1 indicating strongly disagree, 2-Disagree, 3-Can't say, 4-Agree and 5

indicating strongly agree to the statement. The results were as indicated in table 4.8.below.

In total a strong majority 78.7% of the respondents either agreed or strongly agreed that they were in a position to prepare a business plan. Business plans are considered a key component for successful enterprises and as such it is a valuable skill for an entrepreneur to be able to prepare one. It is the entrepreneur's roadmap to a successful enterprise (Cynthia, 2006). A comfortable majority of 76.6% of the respondents either agreed or strongly agreed with the statement that they were able to carry out a market analysis and identify market opportunities and threats facing their enterprises. The identification of opportunities has been recognized as one of the most important abilities of successful entrepreneurs (Ardichvili, *et al.*, 2003).

A total majority of 78.7% said they were in a position to scrutinize the risks involved in a given entrepreneurial opportunity prior to decision making. This is important for enterprise growth considering that Petrakis (2007) noted that all entrepreneurship is indeed about uncertainty and risk. An aggregate of 87.2% of the respondents said they were in a position to identify strengths and weaknesses facing their businesses. The finding agrees with that of Petrakis (2007) who argued that successful entrepreneurs should be able to conduct SWOT analysis for their enterprises.

A simple majority of 48.9% said they were able to prepare financial statements such as balance sheet, profit and loss account for their enterprises. A significant 38.3% indicated they were not in a position to prepare such statements. This finding implies that a significant number of entrepreneurs do not possess book keeping or accounting skills. A comfortable majority of 63.8% of the respondents said they were aware of the required government regulations and licenses governing conduct of their businesses. Perhaps this could be attributed to the high growth of information and communication technology in Kenya which has made access to information very easy. More so, the government of Kenya has in recent years made access to government information easy by introducing

online information portals such as e-government and physical information facilities that are closer to the people particularly Huduma Centres. However a significant 29.8% said they were not aware of such regulations which may imply that there is still more informational/sensitization work to be done among entrepreneurs.

Respondents were asked whether the Kenya education system adequately equips learners with entrepreneurship skills. In total 36.2% either strongly agreed or agreed that the Kenya education system adequately equips learners with entrepreneurship skills while another 36.2% of respondents either strongly disagreed or disagreed. The remainder 27% of respondents could not tell whether or not the Kenya education system adequately equips learners with entrepreneurship skills. This finding collaborate that of Kedogo (2013) who notes that the integration of entrepreneurial training into the country's education system has remained a challenge. When asked whether they thought businesses of those who have undergone entrepreneurship training perform better than of those who haven't undergone the training, a simple majority of 46.8% either strongly agreed or agreed with the statement while smaller 21.3% of respondents either strongly disagreed or agreed with the statement. A significant 31.9% could not tell whether or not businesses of those who have undergone entrepreneurship training perform better than of those who haven't undergone the training. Increased levels of entrepreneurship success can be attained through education and particularly entrepreneurship education (European Commission, 2006). Also Katz (2007) argues that entrepreneurship education cannot avoid failure but can diminish the risk of failure. This finding implies a justification for continued entrepreneurship training in learning institutions in the country.

**Table 4.8: Entrepreneurship Skills Impartation Strategy in University Based Business Incubators**

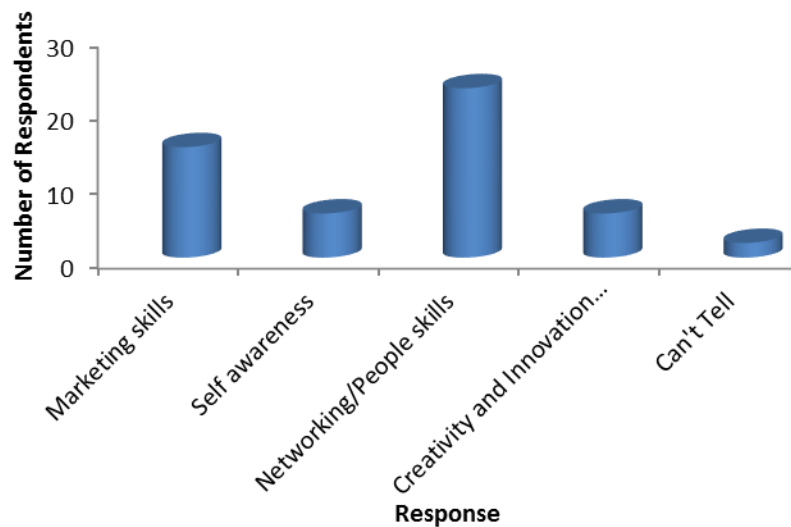
STATEMENT	SD	D	Can't say	A	SA
	%	%	%	%	%
I can prepare a business plan	8.5	8.5	4.3	40.4	38.3
I am able to carry out a market analysis and identify market opportunities and threats	8.5	4.3	10.6	51.1	25.5
I am able to scrutinize the risks involved in each opportunity for decision making	4.3	8.5	8.5	48.9	29.8
I know the strengths and weaknesses facing my business	8.5	4.3	0.0	48.9	38.3
I am able to prepare financial statements (e.g. balance sheet, profit and loss account) for my business	4.3	34.0	12.8	29.8	19.1
I am aware of the required government regulations and licenses governing conduct of my business	6.4	23.4	6.4	53.2	10.6
The Kenya education system adequately equips learners with entrepreneurship skills	8.5	27.7	27.7	12.8	23.4
Businesses of those who have undergone entrepreneurship training perform better than of those who haven't undergone the training	6.4	14.9	31.9	27.7	19.1

#### **4.7.3 Other Entrepreneurial skills Impacted During Incubation**

Respondents were asked how else incubation had contributed to their entrepreneurial skills. That is, what other entrepreneurship related skills would they say they obtained as a result of being incubated. The results showed that a significant 44% felt that they



gained networking skills, 29% mentioned marketing skills, 12% mentioned creativity and innovation skills particularly new product development ability, and another 12% mentioned self- awareness/discovery whereby they were able to understand themselves as individuals and their desires and goals in life. A small 4% could not tell what other skills they had obtained from the incubation process.



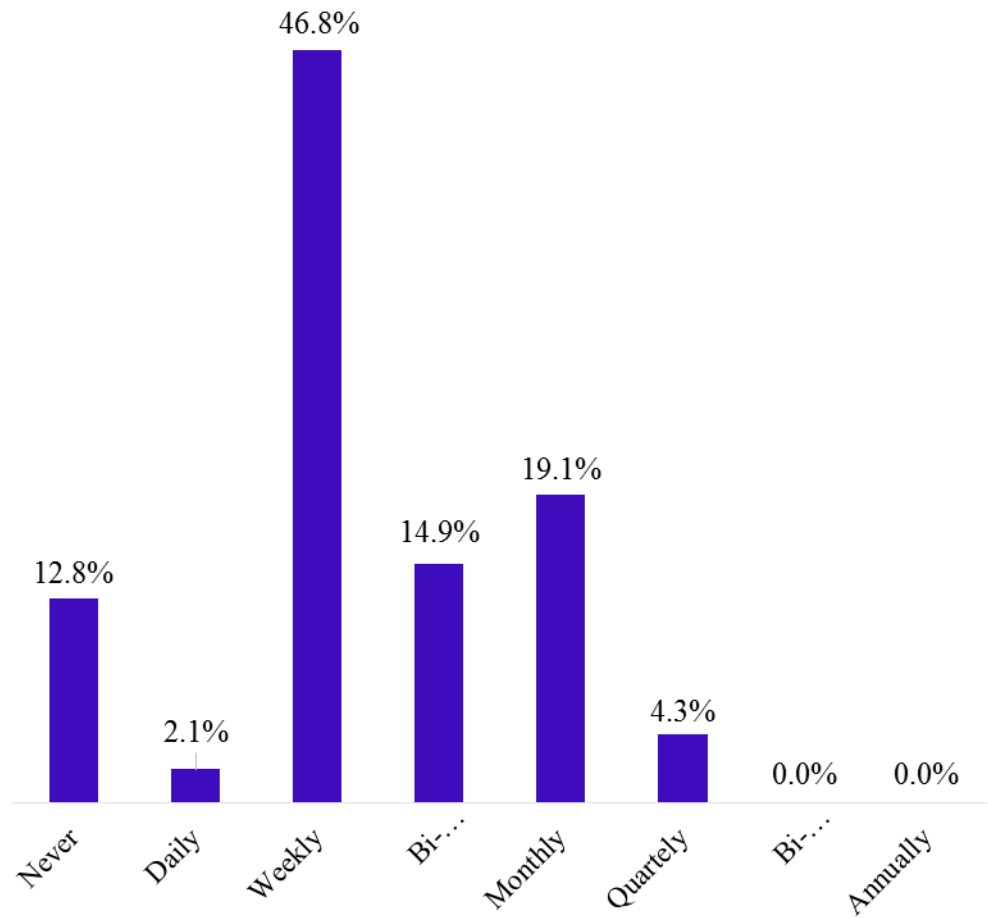
**Figure 4.10: Other Entrepreneurship skills Impacted During Incubation**

As noted in the above findings, the majority of the respondents in each of the above mentioned skills and competencies either strongly agreed or agreed to the statements put to them indicating they possessed certain entrepreneurial competencies. Further the respondents gave additional entrepreneurial competencies that they had obtained as a result of the incubation process. This finding would then collaborate that of Jorgensen, (2011) who concluded that the driving force behind new venture creation process is the entrepreneur; and the incubator seeks to develop this entrepreneurial talent by providing complementary services that support and promote his skills and expertise.

## **4.8 Social Networks Skills Impartation Strategy**

### **4.8.1 Brainstorming Meeting With Incubator Manager/Staff**

Figure 4.11 shows how often respondents held brainstorming meetings with the incubator manager/staff. The figure shows that majority (46.8%) of the respondents held meetings weekly with incubator manager/staff, 19.1% of the respondents held brainstorming meetings monthly, 14.9% of the respondent held meetings bi-weekly, 12.8% never held such meetings with incubator managers, 4.3% of respondents held such meetings quarterly while the remaining negligible 2.1% of the respondents held such meetings daily with incubator manager/staff. None of the respondents held brainstorming meetings annually or bi-annually with incubator manager/staff. The frequency of interaction between the founding team (entrepreneurs) and external agents is a factor related to new-venture success (McAdam & Marlow, 2007). In total a majority 82.9% of the respondents held such meetings at least once a month. This is a relatively longer period than the one week period found by McAdam & Marlow, (2007). This implies there are fairly frequent meeting between incubatees and incubator manager/staff in university based business incubators which encourages information exchange.



**Figure 4.11: Brainstorming Meeting With the Incubator Manager/Staff**

#### **4.8.2 Relationship With Parties/Stakeholders**

Respondents were requested to describe their relationship with various internal and external incubation stakeholders. The relationships were to be described as either strong, weak or non-existent. The results were as follows:

**Table 4.9: Relationship With Parties/Stakeholders**

Stakeholder	Non-existent	Weak	Strong
Fellow incubatees	0.0%	12.8%	87.2%
Incubator manager/staff	0.0%	40.4%	59.6%
Academia staff of the host university	17.0%	55.3%	27.7%
External Industry players	8.5%	53.2%	38.3%
External business mentors	8.5%	40.4%	51.1%

A majority 87.2% of respondents said they considered their relations with fellow incubatees as strong. While in the incubator the incubatees share a lot of physical facilities and working layout in all the incubators investigated in this study is that of shared work stations which leads to close physical proximities between the incubatees. Studies provide evidence that close physical proximity (e.g. being located on the same floor) plays a vital role in networking (McAdam & Marlow, 2008). Moreover, Lyons (2002) stresses that the most important service offered by an incubator is the opportunity for (internal) networking among tenant companies. However, the finding is against that of Tötterman & Sten, (2005) found that ties among tenants are weak and mainly characterized by information exchange instead of contractual relationships, possibly because of the large degree of diversity among the activities of tenants. In addition they noted that entrepreneurs are at times also suspicious and cautious in their networking behavior within incubators in order to protect their business ideas and valuable relationships with investors (Tötterman & Sten, 2005).

A simple majority of 59.6% of respondents said they had strong relations with the incubator manager/staff. This finding disagrees with that of Honig & Karlsson, (2007) who found ties between incubated firms and incubator management to be weak and infrequent. A majority 55.3% of respondents said they had weak relations with the host university's academic staff while 27.7% said they had strong relations with host

university's academic staff. In total 83% of the respondents had a relationship, strong or weak, while a small 17% of respondents said they had no relations with the academia staff. The finding is supported by Bekkers *et al.*, (2006) who note that entrepreneurs involved in university based business incubators start out with interpersonal networks that are primarily academic in nature prior to forming non-academic networks. This study however notes a majority of those relationships are weak.

A simple majority of 53.2% said they had weak relations with external industry players such as experienced competitors, financiers, professional organizations and government bodies. The findings are against those of Greve and Salaff (2003) who noted that incubatees need to have strong relations with such external industry players as they provide low-cost access to critical resources. A majority 51.1% of respondents said they had strong relations with external business mentors. One of the key aims of incubation is to provide mentorship (Xu, 2010) and therefore having a majority of incubatees having strong relationship with external mentors implies that the incubators are attaining their aims.

#### **4.8.3 Benefits Obtained from Various Stakeholders**

The research sought to find out the specific kind of benefit(s) that respondents had obtained from association with their fellow incubatees, incubator managers/staff, academic staff of host universities external industry players and external business mentors. The findings were as presented in table 4.10:

**Table 4.10: Benefits Resulting From Relationship with Other Parties**

Stakeholder	Increase sales %	Stronger credibility/reputation %	New business opportunity %	Financing %	New business contacts %	Joint venture %
Fellow incubatees	0.0	27.7	55.3	0.0	8.5	8.5
Incubator manager/staff	6.4	38.3	31.9	19.1	4.3	0.0
Academia staff of the host university	14.9	40.4	19.1	17.0	8.5	0.0
External Industry players	12.8	19.1	29.8	14.9	19.1	4.3
External business mentors	10.6	19.1	21.3	6.4	36.2	6.4

As shown in the results above, the main benefit obtained by respondents from fellow incubatees is that of new business opportunities (55.3%). The findings are in agreement with that of Bøllingtoft (2012) who noted that co-located entrepreneurial firms provide the possibility to generate a symbiotic environment where entrepreneurs share resources and experiences, learn from one another, exchange business contacts and establish collaborative business relationships. The findings also showed that the main benefits incubatees obtained from incubator managers were stronger credibility (38.3%), new business opportunity (31.9%) and financing at 19.1%. The findings agree with those of Tamásy (2001) who notes that the incubator and incubator management takes the position of an intermediary, helping the tenants to establish contacts to incubator external actors and to gain access to their resources and knowledge. This includes access to a wide network of specialized service providers and financial institutions (e.g., banks, venture capitalists) among other actors. The benefit of stronger credibility was also mentioned by McAdam & McAdam (2008) as a key benefit that incubatees obtain from the incubator and its managers.

The main benefits incubatees gain from association with academic staff of host universities are stronger credibility (40.4%) and new business opportunity (19.1%).

Academic staff members are taken to be repositories of knowledge and expertise (ILO, 2000) and perhaps the reason as to why an association with them will bring along positive reputation beyond the fact that they are sources of information on opportunities. External industry players such as experienced competitors, financiers, government bodies and professional bodies were mentioned to present new business opportunities (29.8%), new business contacts (19.1%) and stronger credibility (19.1%) as their greatest benefits to incubatees. Similar benefits were mentioned by Nicolaou & Birley (2003) proposed that external networks around new ventures have several potential benefits. First, networks augment the opportunity identification process, as it enhances the entrepreneurs' recognition capabilities because entrepreneurs can discover the opportunity through the right personal contact. Second, networks engender timing advantages, because the entrepreneur is able to know and use opportunities quicker.

New business contacts (36.2%) and new business opportunities (21.3%) came out as the greatest benefits presented by external business mentors to incubatees. Mentors are normally more experienced and successful compared to mentees and they tend to have more contacts some of which they share with their mentees. As noted by Nicolaou & Birley (2003) through the right personal contact (in this case mentors), an entrepreneur can identify new business opportunities.

#### **4.8.4 Social Networks Skills Impartation Strategy in University Based Business Incubators**

The respondents were given a range of statements aimed at assessing their view on social networks. They were requested to respond to the statements on a scale of 1-5, with 1 indicating strongly disagree, 2-Disagree, 3-Can't say, 4-Agree and 5 indicating strongly agree to the statement given. The response was as tabulated in table 4.11:

**Table 4.11: Social networks skills impartation strategy in University Based Business Incubators**

STATEMENT	SD %	D %	Can't say %	A %	SA %
Social networks influence business success	0.0	0.0	2.1	66.0	31.9
The number of social ties one has influences business success	0.0	0.0	6.4	51.1	42.6
The variety of social networks one has influences his business success	0.0	0.0	4.3	63.8	31.9
The more frequently you engage/interact with your social network influences your business success	0.0	2.1	0.0	51.1	46.8
University based incubators help in expanding incubatees' social networks	0.0	2.1	8.5	55.3	34.0
Businesses that are closely located (physically) to one another are likely to trade among themselves	0.0	2.1	0.0	57.4	40.4
Incubatees are likely to steal each other's business idea	0.0	2.1	8.5	48.9	40.4
Incubatees have more academic connections than industry connections	0.0	4.3	10.6	55.3	29.8

The results show that social networks skills impartation strategy influence business success with a majority 66% agreeing with this view and a further 31.9% strongly agreeing with the statement. This finding collaborate the various social capital theories discussed earlier. A majority of respondents also agreed that the number of social ties one has influences business success (51.1%), the variety of social networks one has influences his business success (63.8%) and the more frequently you engage/interact



with your social network influences your business success (51.1%). The findings are in agreement with existing literature on social networks and entrepreneurship. For example Colombo, *et al.*, (2010) what matters in the process of founding a new organization is the size of the subset of people who are in some way involved with the entrepreneurs in founding it. While emphasizing on the need to have a variety of relations/networks Bøllingtoft (2012) notes that a network made up of homogeneous ties will be of limited value to a nascent entrepreneur. As ties to the same kinds of people accumulate, the marginal value of each succeeding drops (Bøllingtoft, 2012). McAdam and Marlow (2007), report a positive relationship between the average number of times per week that entrepreneurs contact their network members and the creation of a new venture. They argue that the frequency of communication linkage use is expected to be positively related to new-venture initial growth.

A majority of respondents (55.3%) agreed to the statement that university based incubators help in expanding incubatees' social networks. A further 34% strongly agreed with the statement. This finding support those of Hansen *et al.*(2000) and Tötterman and Sten (2005) who noted that one of the key role of business incubators is to facilitate and foster the formation of networks, not only among entrepreneurs that are co-located in incubators but also between entrepreneurs in incubators and external business partners. Most (57.4%) of respondents agreed with the statement that businesses that are closely located (physically) to one another are likely to trade among themselves. A further 40.4% of respondents strongly agreed with this statement. Incubated firms use incubators as an internal market place for subcontracting or purchasing goods (Hackett & Dilts, 2004).

As to whether incubatees are likely to steal each other's business idea while in incubation, a majority 48.9% agreed that this was likely while a further 40.4% strongly agreed with this likelihood. Perhaps this possibility will function to limit the degree of interaction and sharing among fellow incubatees thereby curtailing the benefits that such networks among incubatees would have brought forth. A majority 55.3% of respondents

agreed that incubatees have more academic connections than industry connections with a further 29.8% strongly agreeing with the statement. This finding supports that of Bekkers *et al.*, (2006) who noted that people involved in university based business incubators start out with interpersonal networks that are primarily academic in nature.

## **4.9 Incubator Environment**

### **4.9.1 Incubator Environment in the University Based Business Incubator**

The respondents were given a range of statements aimed at assessing their view on incubator environment in university based business incubators and its role on enterprise growth. They were requested to respond to the statements on a scale of 1-5, with 1 indicating strongly disagree, 2-Disagree, 3-Can't say, 4-Agree and 5 indicating strongly agree to the statement. The results were as follows:

**Table 4.12: Incubator Environment**

<b>Statement</b>	<b>SD</b>	<b>D</b>	<b>Can't</b>	<b>A</b>	<b>SA</b>
	<b>%</b>	<b>%</b>	<b>say</b>	<b>%</b>	<b>%</b>
			<b>%</b>		
The incubator's physical facilities affect effectiveness of incubation	0.0	0.0	2.1	42.6	55.3
The incubator provided adequate physical space	0.0	0.0	2.1	29.8	68.1
The incubator has a suitable workstation layout	0.0	0.0	0.0	42.6	57.4
The incubator has suitable physical facilities (furniture, internet, office equipment)	0.0	0.0	0.0	34.0	66.0
The rent charged by the incubator to the incubatees is affordable	0.0	2.1	2.1	40.4	55.3
The shared front office/secretarial services offered by the incubator are adequate for the incubatees	0.0	2.1	0.0	34.0	63.8
The incubator's established routines (e.g. scheduled breaks, scheduled meetings etc) affect its effectiveness	0.0	2.1	4.3	40.4	53.2
The incubator's routines were helpful to incubatees	0.0	2.1	4.3	31.9	61.7

Respondents were probed on various incubator environment factors such as physical facilities, adequacy of space, layout suitability, rent charged, central office services offered and routines prescribed in the incubators. As shown above a majority (55.3%) of the respondents strongly agreed that the incubator's physical facilities had an effect on the effectiveness of the incubator. A further 42.6% agreed with this view. A majority of respondents also strongly agreed that university based business incubators in Kenya provided suitable incubation environment with 68.1% saying the incubators provided adequate physical space, suitable work station layout (57.4%), suitable physical facilities

(66.0%), affordable rent (55.3%) and adequate shared front office services (63.8%). These findings collaborates those of Tamasy (2007), Xu (2010) and Lalkaka (1997) who all stated that these incubator environment factors had an effect on the effectiveness of the incubator. A majority 53.2% of respondents strongly agreed that the routines an incubator sets affects its effectiveness. Most (61.7%) said that the incubators had helpful routines. According to Tamasy (2007) such routines serve as a platform for possible synergy effects among incubatees.

#### **4.10 Enterprise Growth**

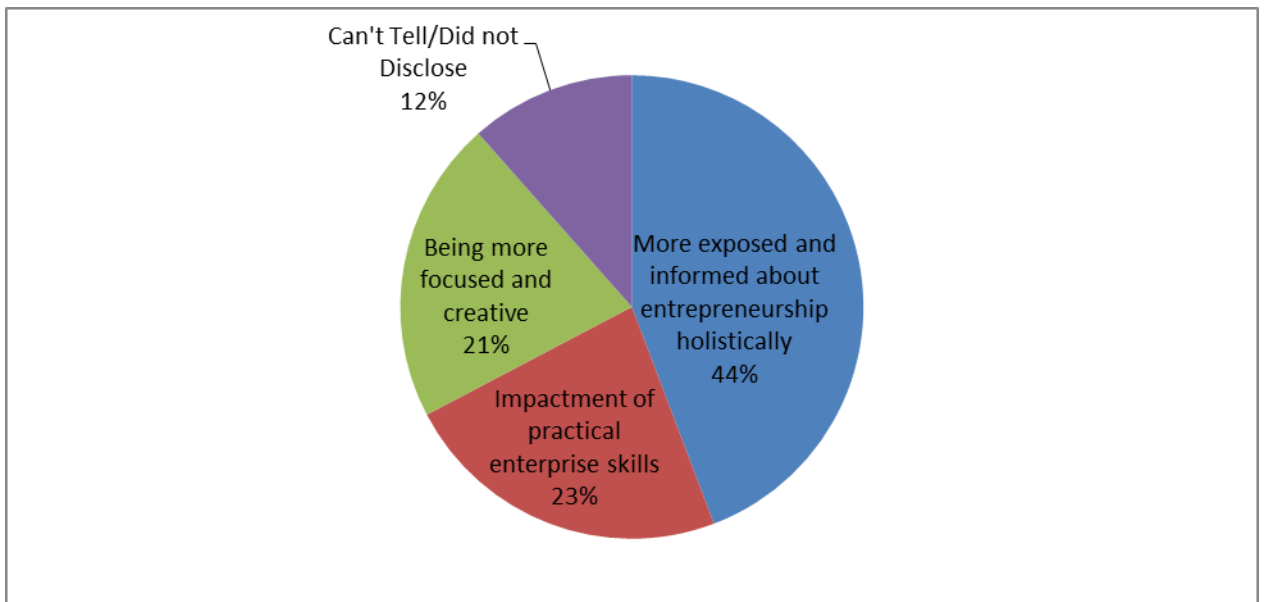
##### **4.10.1 Enterprise Growth Factors**

The study's independent variable was enterprise growth. The study aimed to find out the role of university based business incubation on enterprise growth in Kenya. Enterprise growth was measured using metrics such as incremental change in number of employees, market share, sales, profits, asset base, number of product lines and number of outlets. Respondents were therefore, requested to provide information pertaining these factors for their enterprises for the last five years or the years the enterprise was in operation if that period was less than five years. The respondents declined or were not in a position to give actual figures of number of employees, sales, profits, market share, asset base, product lines citing confidentiality of their business information.

A majority of respondents agreed or strongly agreed that factors such as number of employees, market share size, volume of sales, profits, number of product lines, asset base and number of branches were suitable indicators of an enterprise's growth. A majority of the respondents also agreed or strongly agreed that there was an increase in the values of these metrics for their enterprises since graduating from the university based business incubators. A growth in the graduated incubates can then be implied from the fact that a majority of them had an increase in the values of measures used to measure growth of an enterprise.

#### 4.10.2 Change in Entrepreneurial Perspective

The study sought to find out what entrepreneurial mind shift the respondents had experienced because of undergoing the incubation process. The results show that 44% of the respondents said they had an increased level of awareness of the entrepreneurship concept, 23% said they had obtained particular enterprise related skills such as marketing and idea presentation skills, 21% said the process had increased their focus and creativity at individual level, while 12% did not disclose what kind of mind change they had undergone as a result of the incubation process. The finding is in line with the position taken by Jorgensen (2011) who notes that incubators seek to develop entrepreneurial talent by providing complementary services that support and promote the skills and expertise of the entrepreneur. It was also noted by Rice (2002) that business incubators exist to among other things provide business assistance services which aid to promote entrepreneurial thinking and the understanding of vital day-to-day business processes among incubatees.



**Figure 4.12: Change in Entrepreneurial Perspective**

#### 4.11.1 Tests for Normality

The Shapiro Wilk test was used to examine the normality for the residuals of the variables under discussion. Critical to the debate is the fact that the test for normality could be checked using the Shapiro Wilk's test or the Kolmogorov-Smirnov tests could be used to check for normality. However, as Chattefuee and Hadi (2006) argue, the Kolmogorov-Smirnov should be used when the number of observations is greater than 2000. The author also reveals that the Shapiro Wilk's tests should be used when the number of observations is less than 2000, which explains why the latter test was used. The results in Table 4.14 indicate that residuals of the variables came from a normal distribution because the p value is greater than 0.05 in all cases. Therefore, we reject a hypothesis that the residuals for variables are not normally distributed.

**Table 4.14: Test for Normality**

	<b>Shapiro-Wilk</b>	
	<b>Statistic</b>	<b>Sig.</b>
Selection criteria strategy	0.909	0.257
Managerial skills impartation strategy	0.889	0.072
Entrepreneurial skills impartation strategy	0.830	0.322
Social networks skills impartation strategy	0.891	0.066
Environment	0.736	0.081
Enterprise growth	0.788	0.114

#### 4.11.2 Test of Outliers

All the variables were checked for the presence of significant outliers using the box plot depicted in figure below. From the plot, it is evident that some of the variables had significant outliers. Specifically, the social networks of the incubatees, the entrepreneurial skills of the incubatees, and managerial skills impartation strategy of the incubator managers had significant outliers. As Chattefuee and Hadi (2006) argue, outliers should only be deleted from the data set if the analyst can identify errors to be the cause of the outliers. From Figure 4.13, the outliers are between two and four, which indicates that the observations with the outliers could be way below the means of individual observations, but are not due to errors. It follows that the outliers were maintained in the dataset. Further, deleting the outliers from the data set could result in the loss of significant information. Consequently, the study examined all the cases that had outliers to establish the cause of the outliers. Specifically, the study established that the outliers were not caused by errors because a follow up was made on the questionnaires.

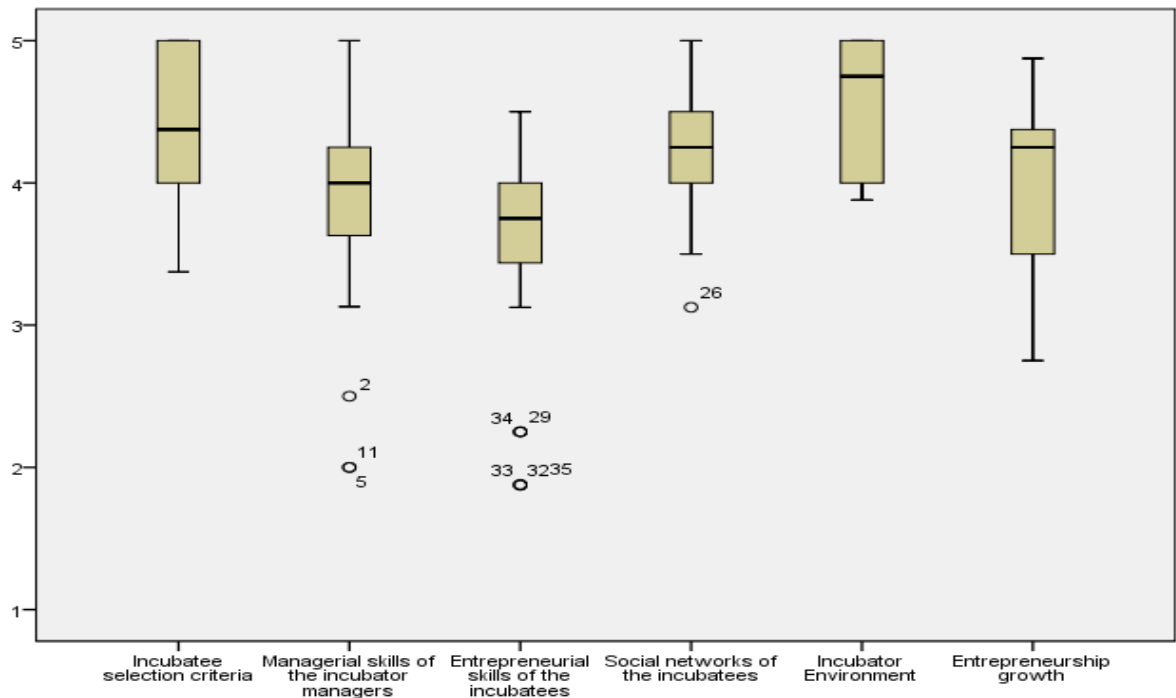


Figure 4.13: A Box Plot for Checking Outliers

It is notable that other assumptions of linear regression were not checked together because the tests can only be checked with individual variables. Simply put, the remaining two assumptions require that a regression analysis be conducted before the researcher could examine the assumptions.

#### **4.12 Correlation Analysis**

The Pearson's correlation coefficient was used to check whether the variables are related. This owes to the fact that Jahangir and Begum (2006) argued that the Pearson Correlation coefficient could be used to examine the existence of a correlation between variables. In a different publication, Mugenda and Mugenda (2008) reveal that the above mentioned statistic always ranges from positive one to negative one. The authors further reveal that a correlation coefficient that is close to positive one indicates the presence of a strong positive relationship between two variables while a correlation coefficient that is close to negative indicates the presence of a strong negative relationship between two variables. It follows that the strength of the relationship between the variables decreases positively as the coefficient moves from positive one towards zero and increases negatively as it reduces from zero towards negative one. Critical to the discussion is the fact that the correlation coefficient could be used to check for the existence of multicollinearity. As evidenced, Nduati (2015) posits that multicollinearity exists between two variables if the two variables are correlated. Further, Ngumi (2013) reveals that two variables are linearly related if the p value obtained from the correlation coefficient between the variables is less than 0.05, otherwise the variables are not related. The results in Table 4.15 shows there a significant linear relationship between the dependent variable and the independent variables. It is also evident that there is no collinearity between the independent variables as they are not highly correlated to one another. (where X1-Selection criteria strategy, X2-Managerial skills impartation strategy, X3-Entrepreneurship skills impartation strategy, X4-Social Network skills impartation strategy, X5-Incubator Environment, Y-Enterprise growth).



**Table 4.15: Pearson Correlation Coefficients**

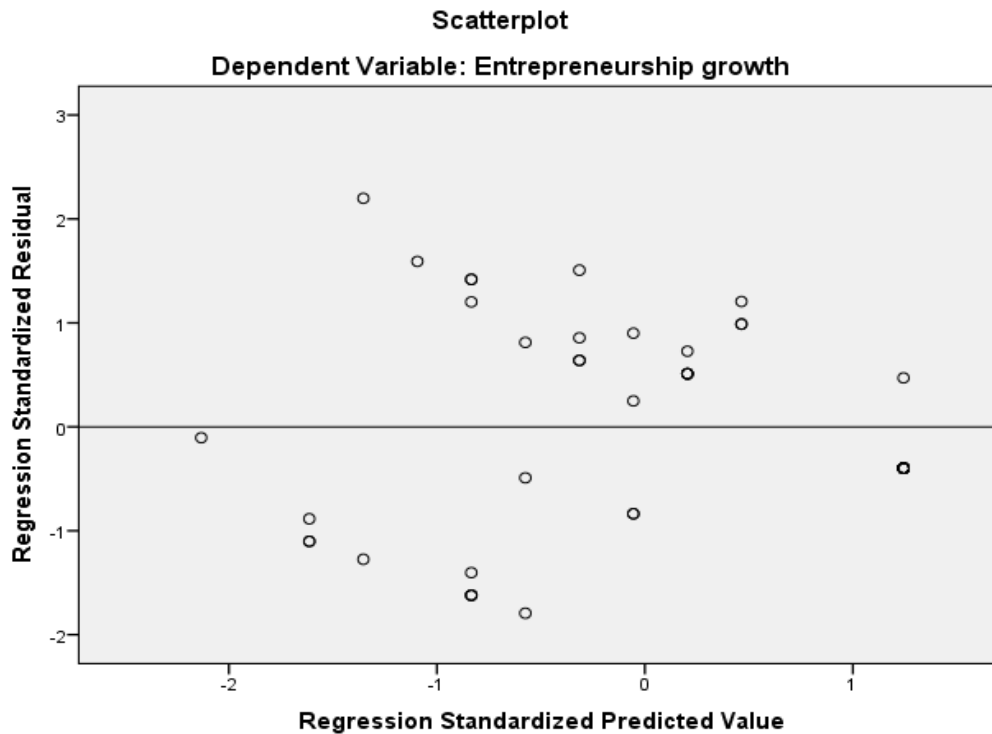
		X1	X2	X3	X4	X5	Y
X1	Pearson	1	0.168	0.112	-0.334	.423	0.558
	Correlation						
	Sig. (2-tailed)		0.260	0.453	0.022	0.003	0.000
X2	Pearson	0.168	1	-0.105	-0.079	0.145	0.303
	Correlation						
	Sig. (2-tailed)	0.260		0.482	0.598	0.329	0.039
X3	Pearson	0.112	-0.105	1	-0.109	0.013	-0.137
	Correlation						
	Sig. (2-tailed)	0.453	0.482		0.467	0.931	0.360
X4	Pearson	-0.334	-0.079	-0.109	1	0.096	-0.544
	Correlation						
	Sig. (2-tailed)	0.022	0.598	0.467		0.522	.000
X5	Pearson	0.423	0.145	0.013	0.096	1	-0.083
	Correlation						
	Sig. (2-tailed)	0.003	0.329	0.931	0.522		0.581
	N	47	47	47	47	47	47
Y	Pearson	0.558	0.303	-0.137	-.544	-0.083	1
	Correlation						
	Sig. (2-tailed)	0.000	0.039	0.360	0.000	0.581	

### 4.13 Regression Analysis

#### 4.13.1: The Relationship Between Incubatee Selection Criteria Strategy and Enterprise Growth in Kenya

Prior to examining the relationship between the two variables, the study examined the remaining assumptions of linear regression. For instance, study examined the homogeneity of variance assumption by plotting the plotting a scatter plot of the regression standardized residuals against the regression standardized predicted value.

From the plot below, it could be deduced that the homogeneity of variance condition was fulfilled. This owes to the fact that the points in the scatter plot do not follow a specific pattern (Chattefuee & Hadi, 2006).



**Figure 4.14: Scatter Plot Used to Check For Homogeneity of Variance**

The Durbin Watson statistic was used to check for the independence of observations assumption. From the results depicted in Table 4.16 below, the Durbin-Watson statistic is 1.759, which is above the cutoff point of one. This implies that the error terms of observations are independent of each other. The results presented in Table 4.16 present the goodness of fit of the regression model in explaining the study phenomena. From this results 31.3% of the variation in entrepreneurial growth was explained by the variation in the incubate selection criteria strategy.

Table 4.16 depicts results on the analysis of the variance (ANOVA). The results imply that an Incubatee selection strategy is a good predictor of enterprise growth. This was supported by an F statistic of 20.361 on 1 and 45 degrees of freedom and the reported p value (0.000) which was less than the conventional probability of 0.05 significance

levels. This result indicates that the overall model fitted on the data is statistically significance.

**Table 4.16: Analysis of Variance**

<b>Model</b>		<b>Sum of Squares</b>	<b>df</b>	<b>Mean Square</b>	<b>F</b>	<b>Sig.</b>
1	Regression	6.751	1	6.751	20.361	0.000
	Residual	14.920	45	0.332		
	Total	21.672	46			

*R*=.558      *R-Square*=.312      *Adjusted R-Square*=.296      *Durbin-Watson*=1.759

From Table 4.17, the specific model was;  $Y = .499 + .796X1$  Where  $X1$  is Incubatee selection criteria strategy and  $Y$  is the Enterprise growth. These results indicate that Incubatee selection criteria strategy has a significant positive effect on the Enterprise growth. This implies that a unit improvement in incubatee selection criteria strategy will lead to .796 improvement in enterprise growth.

**Table 4.17: Regression of Coefficient**

		<b>B</b>	<b>Std. Error</b>	<b>t</b>	<b>Sig.</b>
1	(Constant)	0.499	0.781	0.639	0.526
	Selection criteria strategy	0.796	0.176	4.512	0.000

### **Hypothesis Testing**

The hypothesis was tested by running an ordinary least square regression model. The acceptance/rejection criteria was that, if the p value is greater than 0.05, the  $H_0$  is not rejected but if it is less than 0.05, the  $H_0$  fails to be accepted. The null hypothesis for the first objective was: incubatee selection criteria strategy to university based business incubators does not have a significant influence on enterprise growth in Kenya while the alternative hypothesis was incubatee selection criteria strategy to university based

business incubators has a significant influence on enterprise growth in Kenya. As presented in Table 4.16, the calculated F-statistic was 20.361 on 1 and 46 degrees of freedom with a p-value of 0.000. This indicated that the null hypothesis was rejected hence incubatee selection criteria strategy in university based business incubators has a significant influence on enterprise growth in Kenya.

#### **4.13.2 The Relationship Between Managerial Skills Impartation Strategy in University Based Business Incubators and Enterprise Growth in Kenya**

The results presented in Table 4.18 present the fitness of model used of the regression model in explaining the study phenomena. From the results 9.2% of the variation in enterprise growth was explained by the variation in the managerial skills impartation strategy. Table 4.18 below depicts results on the analysis of the variance (ANOVA). The results imply that managerial skills impartation strategy is a good predictor of enterprise growth. This was supported by an F statistic of 4.545 on 1 an 45 degrees of freedom with a reported p value (0.039) which was less than the conventional probability of 0.05 significance levels. This result indicates that the overall model fitted on the data was statistically significance.

**Table 4.18: Analysis of Variance**

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	1.988	1	1.988	4.545	0.039
Residual	19.684	45	0.437		
Total	21.672	46			

*R=.303      R-Square=.092    Adjusted R-Square=.072    Durbin-Watson=1.340*

From Table 4.19, the specific model was;  $Y=2.703+.334X_2$  Where  $X_2$  is Managerial skills impartation strategy and Y is the Enterprise growth. These results indicate that managerial skills impartation strategy has a significance positive effect on the enterprise growth. This implies that a unit increase in managerial skills impartation strategy will lead to .039 improvement in enterprise growth.

**Table 4.19: Regression Coefficients**

	B	Std. Error	T	Sig.
(Constant)	2.703	0.617	4.378	0.000
Managerial skills impartation strategy	0.334	0.157	2.132	0.039

### **Hypothesis Testing**

The hypothesis was tested by running an ordinary least square regression model. The acceptance/rejection criteria was that, if the p value is greater than 0.05, the Ho is not rejected but if it is less than 0.05, the Ho fails to be accepted. The null hypothesis for the second objective was: managerial skills impartation strategy in university based business incubators does not have a significant influence on enterprise growth in Kenya while the alternative hypothesis was managerial skills impartation strategy in university based business incubators has a significant influence on enterprise growth in Kenya. As presented in Table 4.17, the calculated F-statistic was 4.545 on 1 and 45 degrees of freedom with a p-value of 0.039. This indicated that the null hypothesis was rejected hence managerial skills impartation strategy in university based business incubators have a significant influence on enterprise growth in Kenya.

### **4.13.3 The Relationship Between Entrepreneurial Skills Impartation Strategy in University Based Business Incubators and Enterprise Growth in Kenya**

The results presented in Table 4.20 present the fitness of model used of the regression model in explaining the study phenomena. Entrepreneurial skills impartation strategy explained 39.3% of variation Enterprise growth in Kenya.

In statistics testing the p-value indicates the level of relation of the independent variable to the dependent variable. If the significance number found is less than the critical value also known as the probability value (p) which is statistically set at 0.05, then the

conclusion would be that the model is significant in explaining the relationship; else the model would be regarded as non-significant.

Table 4.20 provides the results on the analysis of the variance (ANOVA). The results imply that entrepreneurial skills impartation strategy is a good predictor of entrepreneurial growth in Kenya. This was supported by an F statistic of 23.267 and the reported p value (0.000) which was less than the conventional probability of 0.05 significance levels. This result indicates that the overall model fitted on the data is statistically significant.

**Table 4.20: Analysis of Variance**

	<b>Sum of Squares</b>	<b>df</b>	<b>Mean Square</b>	<b>F</b>	<b>Sig.</b>
Regression	0.048	1	0.048	23.267	0.000
Residual	0.075	45	0.002		
Total	0.123	46			

*R=0.627 R-Square=0.393 Adjusted R-Square=0.376 Std. Error of the Estimates =0.0456*

From Table 4.21, the specific model was;  $Y=0.353+0.419X_3$ , Where  $X_3$  is entrepreneurial skills impartation strategy and  $Y$  is the entrepreneurial growth. This result indicates that entrepreneurial skills impartation strategy has a significant positive effect on the entrepreneurial growth in Kenya. This implies that a unit increase in entrepreneurial skills impartation strategy will lead to 0.419 improvement in enterprise growth in Kenya.

**Table 4.21: Regression of Coefficient**

<b>Variable</b>	<b>B</b>	<b>Std Error</b>	<b>t</b>	<b>Sig</b>
(Constant)	0.353	0.050	7.038	0.000
Entrepreneurship Skills	0.419	0.087	4.824	0.000

### **Hypothesis Testing**

The hypothesis was tested by running an ordinary least square regression model. The acceptance/rejection criteria was that, if the p value is greater than 0.05, the  $H_0$  is not rejected but if it is less than 0.05, the  $H_0$  fails to be accepted. The null hypothesis for the third objective was: entrepreneurial skills impartation strategy in university based business incubators does not have a significant influence on enterprise growth in Kenya while the alternative hypothesis was entrepreneurial skills impartation strategy in university based business incubators has a significant influence on enterprise growth in Kenya. As presented in Table 4.19, the calculated F-statistic was 23.367 p-value of 0.000. This indicated that the null hypothesis was rejected hence entrepreneurial skills impartation strategy in university based business incubators has a significant influence on enterprise growth in Kenya.

#### **4.13.4 The Relationship Between Social Networks Skills Impartation Strategy In University Based Business Incubators and Enterprise Growth in Kenya**

The results presented in Table 4.22 present the fitness of model used of the regression model in explaining the study phenomena. Social networks skills impartation strategy explained 29.6% of variation in enterprise growth in Kenya.

Table 4.22 provides the results on the analysis of the variance (ANOVA). The results imply that there is significant relationship between social networks skills impartation strategy and enterprise growth in Kenya. This was supported by an F statistic of 18.95 and the reported p value (0.000) which was less than the conventional probability of 0.05 significance levels. This results indicates that the overall model fitted on the data is statistically significant.

**Table 4.22: Analysis of Variance**

		Sum Squares	of df	Mean Square	F	Sig.
1	Regression	6.422	1	6.422	18.950	0.000
	Residual	15.250	45	0.339		
	Total	21.672	46			
<i>R=.544 R-Square=.296 Adjusted R-Square=.281 Durbin-Watson=1.570</i>						

The result in Table 4.23, the specific model was;  $Y=7.478+0.810X_4$  Where  $X_4$  is social networks skills impartation strategy and Y is enterprise growth. These results indicate that social networks skills impartation strategy has a significant positive effect on enterprise growth. This implies that a unit increase in social networks skills impartation strategy will lead to 0.81 improvement in enterprise growth.

**Table 4.23: Regression of Coefficient**

		B	Std. Error	Beta	T	Sig.
1	(Constant)	7.478	0.803		9.314	0.000
	Social networks skills impartation strategy	0.810	0.186	0.544	4.353	0.000

### Hypothesis Testing

The hypothesis was tested by running an ordinary least square regression model. The acceptance/rejection criteria was that, if the p value is greater than 0.05, the  $H_0$  is not rejected but if it is less than 0.05, the  $H_0$  fails to be accepted. The null hypothesis for the fourth objective was: social networks skills impartation strategy in university based business incubators does not have a significant influence on enterprise growth in Kenya while the alternative hypothesis was social networks skills impartation strategy in university based business incubators has a significant influence on enterprise growth in



Kenya. As presented in Table 4.23, the calculated F-statistic was 18.95 on 1 and 45 degrees of freedom with a p-value of 0.000. This indicated that the null hypothesis was rejected hence social networks skills impartation strategy in university based business incubators has a significant influence on enterprise growth in Kenya.

#### **4.13.5 The Relationship Between Incubator Environment in University Based Business Incubators and Enterprise Growth in Kenya**

The results presented in Table 4.24 present the fitness of model used of the regression model in explaining the study phenomena. Environment explained 0.7% of variation in enterprise growth in Kenya. Thus incubator environment does not play a significant role in determining the entrepreneurial growth and it cannot be used alone in explaining the growth among incubatees.

Table 4.24 provides the results on the analysis of the variance (ANOVA). The results imply that incubator environment is a poor predictor of enterprise growth in Kenya. This was supported by an F statistic of 0.309 and the reported p value (0.581) which was greater than the conventional probability of 0.05 significance levels. This result indicates that the overall model fitted on the data is not statistically significant and cannot be relied in predicting enterprise growth.

**Table 4.24: Analysis of Variance**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	0.148	1	0.148	0.309	0.581
	Residual	21.524	45	0.478		
	Total	21.672	46			
		<i>R=.085      R-Square=.007    Adjusted R-Square=-.015    Durbin-Watson=1.134</i>				

From Table 4.25, the specific model was;  $Y=4.468-0.124X5$  Where X5 is incubator environment and Y is enterprise growth. These results indicate that incubator

environment has no significant effect on enterprise growth. This is supported by a p-value of 0.581 which is greater than the conventional probability of 0.05.

**Table 4.25: Regression of Coefficient**

	B	Std. Error	Beta	T	Sig.
(Constant)	4.568	1.023		4.465	0.000
Incubator Environment	-0.124	0.222	-0.083	-0.556	0.581

### **Hypothesis Testing**

The fifth null hypothesis was that there is no significant relationship between incubator environments in university based business incubators and enterprise growth in Kenya while the alternative hypothesis was incubator environment in university based business incubators has significant influence on enterprise growth in Kenya. As presented in Table 4.24, the calculated F-statistic was 0.309 p-value of 0.581. This indicated that the null hypothesis was not rejected hence incubator environment in university based business incubators has no significant influence on enterprise growth in Kenya.

### **4.13.6 The Combined Effect of Selection Criteria Strategy, Managerial Skills Impartation Strategy, Entrepreneurial Skills Impartation Strategy, Social Networks Skills Impartation Strategy and Incubator Environment on Enterprise Growth in Kenya**

The results presented in Table 4.26 present the fitness of model used of the regression model in explaining the study phenomena. Selection criteria strategy, Managerial skills impartation strategy, Entrepreneurial skills impartation strategy, Social networks skills impartation strategy and Incubator Environment combined explained 61.6% of variation in enterprise growth in Kenya. Thus Selection criteria strategy, Managerial skills impartation strategy, Entrepreneurial skills impartation strategy, Social networks skills impartation strategy and Incubator Environment combined play a role in determining

enterprise growth and they can all be used together in explaining the growth in incubated businesses.

Table 4.26 provides the results on the analysis of the variance (ANOVA). The results imply that Selection criteria strategy, Managerial skills impartation strategy, Entrepreneurial skills impartation strategy, Social networks skills impartation strategy and Incubator Environment are good predictors of enterprise growth. This was supported by an F statistic of 13.178 on 5 and 41 degrees of freedom and the reported p value (0.000) which was less than the conventional probability of 0.05 significance levels. This result indicates that the overall model fitted on the data is statistically significant.

**Table 4.26: Analysis of Variance**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	13.359	5	2.672	13.178	0.000
	Residual	8.312	41	0.203		
	Total	21.672	46			
		<i>R=.785 R-Square=.616 Adjusted R-Square=.570 Durbin-Watson=1.493</i>				

From Table 4.26, the specific model was:

$$Y=4.592+0.817X1+0.227X2+0.216X3+0.490X4-.48X5$$

Where X1 is Selection criteria strategy, X2 Managerial skills impartation strategy, X3 Entrepreneurial skills impartation strategy, X4 Social networks skills impartation strategy and X5 Incubator Environment and Y is Enterprise growth. This result indicates that Selection criteria strategy, Managerial skills impartation strategy, Entrepreneurial skills impartation strategy, Social networks skills impartation strategy and Incubator Environment have a significant effect on Enterprise growth. This implies that a unit increase in Selection criteria strategy, Managerial skills impartation strategy, Entrepreneurial skills impartation strategy, Social networks skills impartation strategy

and Incubator Environment will lead to 0.817,0.227,0.216, 0.490, and -0.480 respectively improvement in entrepreneurial growth.

**Table 4.27: Regression of Coefficient**

<b>Variable</b>	<b>B</b>	<b>Std Error</b>	<b>T</b>	<b>sig</b>
(Constant)	4.592	1.201	3.825	0.000
Selection criteria strategy	0.817	0.169	4.846	0.000
Managerial skills impartation strategy	0.227	0.110	2.066	0.045
Entrepreneurial skills impartation strategy	0.216	0.101	2.142	0.038
Social networks skills impartation strategy	0.490	0.160	3.068	0.004
Environment	-0.480	0.167	-2.873	0.006

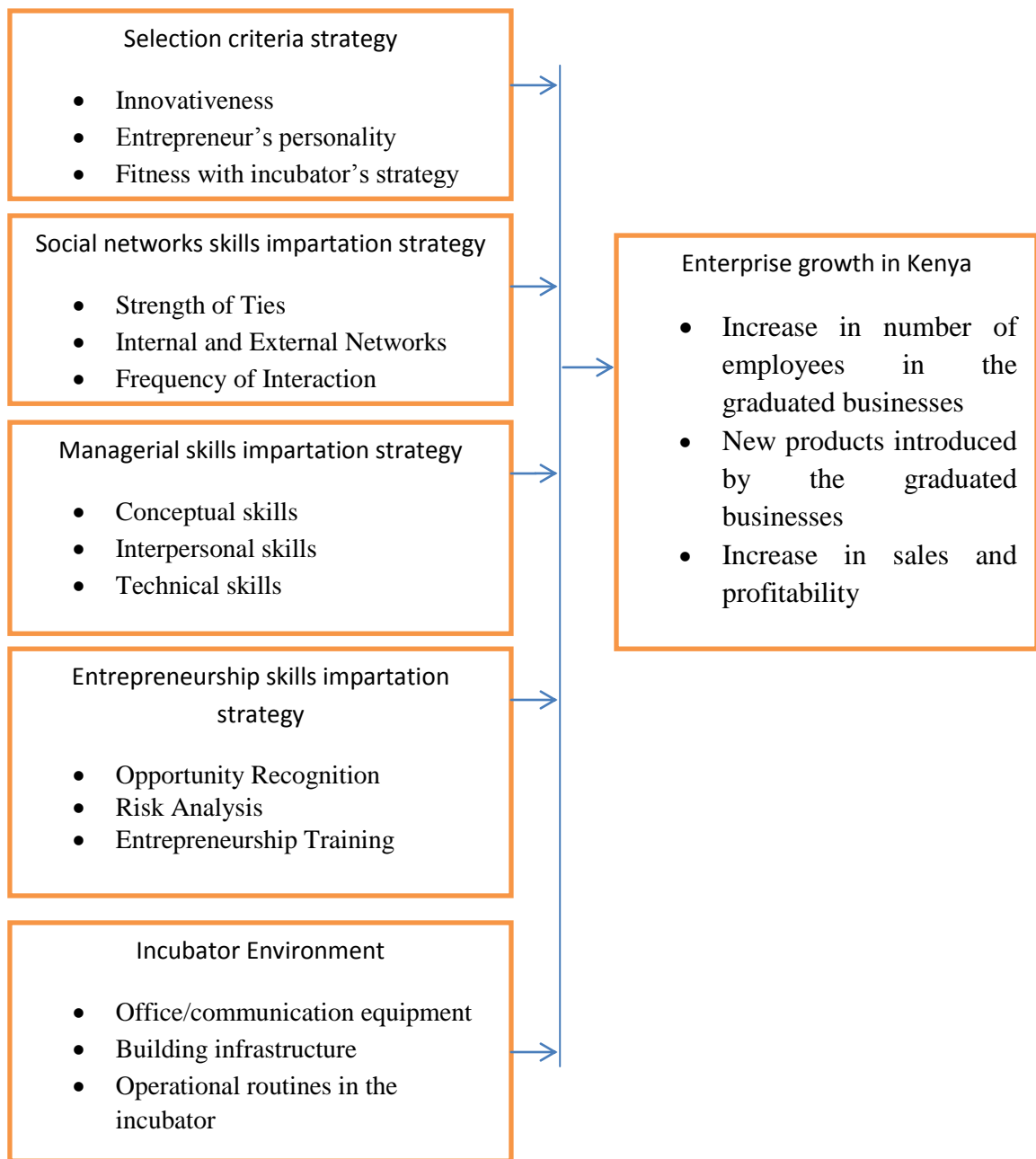
### **Hypothesis Testing**

The hypothesis was tested by running an ordinary multiple least square regression analysis. The null hypothesis for the sixth objective was: Selection criteria strategy, Managerial skills impartation strategy, Entrepreneurial skills impartation strategy, Social networks skills impartation strategy and Incubator Environment does not have a combined significant influence on enterprise growth in Kenya while the alternative hypothesis was Selection criteria strategy, Managerial skills impartation strategy, Entrepreneurial skills impartation strategy, Social networks skills impartation strategy and Incubator Environment have a combined significant influence enterprise growth in Kenya. As presented in Table 4.26, the calculated F-statistic of 13.178 on 5 and 41 degrees of freedom was greater than the tabulated/critical f statistic (2.658). The findings were further supported p-value of 0.000 (t values are greater than the tabulated t-value at 5% of significant and 41 degree of freedom). This indicated that the null hypothesis was rejected hence Selection criteria strategy, Managerial skills impartation strategy,

Entrepreneurial skills impartation strategy, Social networks skills impartation strategy and Incubator Environment have a combined significant influence enterprise growth in Kenya.

#### **4.14 Revised Conceptual Model**

The study's revised optimal model was presented as follows:  $Y=4.592+0.817X_1+0.490X_2+0.227X_3+0.216X_4-.48X_5$  where  $X_1$  is selection criteria strategy,  $X_2$  social networks skills impartation strategy,  $X_3$  managerial skills impartation strategy,  $X_4$  entrepreneurship skills impartation strategy,  $X_5$  incubator environment and  $Y$  is enterprise growth. From the research findings above, the revised conceptual framework is as in Figure 4.15



Independent Variables

Dependent Variable

**Figure 4.15: Revised Conceptual Framework**

## **CHAPTER FIVE**

### **SUMMARY, CONCLUSIONS AND RECOMMENDATIONS**

#### **5.1 Introduction**

The study sought to investigate the role of university based business incubators strategy on enterprise growth in Kenya. It had incubatee selection criteria strategy, managerial skills impartation strategy, entrepreneurship skills impartation strategy, social networks skills impartation strategy and incubator environment as its independent variables while enterprise growth was the dependent variable. This chapter presents a summary of the findings made in chapter four, the resultant conclusions and recommendations. The recommendations made are directly inferred from the conclusions. The conclusions and the recommendations presented are categorized based on the key objectives that formed the basis of the study. Also highlighted in this chapter are possible suggestions for further research.

#### **5.2 Summary of Findings**

Literature reviewed indicate that entrepreneurship in Kenya is still minimal as characterized by the high mortality rate of startups (Mwobobia, 2012). Scholars have taunted university based business incubators as potential tools of reversing this trend and therefore promoting enterprise growth (Chandra & Chao, 2011). This study's main objective was to find out the role of university based business incubators strategy on enterprise growth in Kenya. The study targeted all the 59 graduated incubatees from the six active university based business incubators. A semi structured questionnaire was administered to the respondents. A response of 47 questionnaires was obtained representing a 79.66% response rate. Statistical Package for Social Science (SPSS) version 21 was used for data analysis. Quantitative data was analyzed and described using descriptive and inferential statistics. Qualitative data was content analyzed for themes and categories

### **5.2.1 Incubatee Selection Criteria Strategy**

The first specific objective of the study was to find out the role of incubatee selection criteria strategy on enterprise growth in Kenya. The study found out that the selection criteria strategy used to admit potential incubatees into the incubator had a significant positive effect on enterprise growth. An improvement in the selection criteria strategy would lead to a 79.6% improvement on enterprise growth. A suitable incubatee selection criteria strategy will lead to the incubator choosing the most qualified incubatees that have high probabilities of succeeding upon receiving incubation assistance.

### **5.2.2 Managerial Skills Impartation Strategy**

The second specific objective of the study was to find out the role of managerial skills impartation strategy among university based business incubators' managers on enterprise growth. It was found out that the level of managerial skills impartation strategy among the incubator managers had a significant positive effect on enterprise growth. An improvement in managerial skills impartation strategy of the incubator managers would lead to a 33.4% improvement on enterprise growth. A manager with better conceptual, interpersonal and technical skills is likely to guide incubatees and the incubator as a whole into success.

### **5.2.3 Entrepreneurship skills**

The third specific objective of the study was to find out the role entrepreneurial skills impartation strategy among the entrepreneurs behind the incubated enterprises on enterprise growth. The study revealed that entrepreneurial skills impartation strategy has a positive effect on enterprise growth. More specifically, the study found out that an improvement in entrepreneurship skills impartation strategy would lead to a 41.9% improvement in enterprise growth. Entrepreneurship skills of an individual influence his entrepreneurship success as depicted by growth in the enterprise he is involved in.



#### **5.2.4 Social networks skills impartation strategy**

The fourth specific objective of the study was to find out the role social networks skills impartation strategy on enterprise growth. The study found out that social networks skills impartation strategy has a significant positive effect on enterprise growth. An improvement in social networks skills impartation strategy would lead to an 81% improvement on enterprise growth. Resources and opportunities are transmitted through the network of people an entrepreneur is connected to. The more the variety of relations and the higher the frequency of interaction with associates the better for enterprise growth.

#### **5.2.5 Incubator Environment**

The fifth specific objective of the study was to find out the role social networks skills impartation strategy on enterprise growth. The study found out that incubator environment has no significant effect on enterprise growth. A change in incubator environment would lead to an insignificant effect on enterprise growth.

#### **5.2.6 Combined Effect of all Independent Variable**

The last objective of the study was to find out the effect of all the independent variables (Incubatee selection criteria strategy, Managerial skills impartation strategy, Entrepreneurship skills impartation strategy, Social networks skills impartation strategy and Incubator Environment) combined. It was found out that these variables while combined have a significant effect on enterprise growth. A unit increase in Selection criteria strategy, Managerial skills impartation strategy, Entrepreneurial skills impartation strategy, Social networks skills impartation strategy and Incubator Environment will lead to a 61.2% improvement in entrepreneurial growth.

### **5.3 Conclusion**

University based can assist reduce the high mortality rates of MSE startups and as such lead to enterprise growth in the country. For this to happen, the incubators need to adopt

a suitable incubate selection criteria strategy to ensure that only the most qualified are taken on board. The incubator managers need to build on their managerial skills impartation strategy since they have a significant effect on enterprise growth. The individual entrepreneurs running the incubated enterprises also need to possess and or develop certain entrepreneurial skills such as ability to recognize new entrepreneurial opportunities and analyze the risks associated with those opportunities. Incubatees need to develop a rich network of associates from where resources and opportunities come. They need to frequently engage these associates so as to gain more from the relations.

#### **5.4 Recommendations of the Study**

The number of university based business incubators is very small with only six universities having active business incubator. Individual university managements and the Ministry of Education should set aside resources and enact policies for more universities to start business incubators. The existing university based business incubators also need to be expanded and enhanced given the high demand from potential incubatees. This will enable them accommodate more incubatees and possibly create an increased number of successful startups.

The kind of selection criteria strategy adopted by an incubator is crucial. As such university based business incubators in Kenya need to develop and use rich criteria to admit potential incubatees. Preferably the criteria should be one that considers and balances both the viability of the enterprise (potential profitability and innovativeness) and suitability of the entrepreneur running the enterprise (experience and entrepreneurial skills).

University based business incubator should de-link incubator management from ordinary university department management. University based business incubators' managers need not to be academicians but rather professional managers who understand and probably have experienced the challenges of startups. This will ensure that the

managers are properly placed to guide the incubatees and the incubatees will in turn feel confident to approach and share with the managers.

In order to create wider social networks for incubatees, university based business incubators need to reach out more to industry players and the already successful entrepreneurs. The incubators need organize more workshops and seminars which will serve to create a platform for contact between incubatees and these external parties. Specifically, incubators need to create close links with financial institution so as to avail funds to incubatees.

### **5.5 Suggested Areas for Further Research**

This study focused on university based business incubators only. Comparative studies could therefore be done to find out the role of other commercial incubators outside of universities. Studies could also be done that focus on business incubators in technical and vocational training institutes and other non-university research institutes. Such studies would help deepen the knowledge on business incubation in the Kenyan context.

## REFERENCES

- Adegbite, O. (2001). Business Incubators and Small Enterprise Development: The Nigerian Experience, *Small Business Economics* (17), 157- 166.
- Adler, P. & Kwon, S. W. (2002). Social capital: Prospects for a new concept. *Academy of Management Review*, 27(1), 17–40.
- Aernoudt, R. (2004) Incubators: Tool for Entrepreneurship? *Small Business Economics*, (23), 127-135.
- Aerts, K., P. Matthyssens, & K. Vandenbempt (2007). Critical role and screening practices of European business incubators. *Technovation* 27(5), 254–267.
- Aldrich, H. & Zimmer, C. (1986). Entrepreneurship through Social Networks, in D. Sexton and R. Smilor (eds.), *The Art and Science of Entrepreneurship*, New York: Ballinger
- Aldrich, H. E., & Ruef, M. (2006). *Organizations evolving*. London: Sage Publishing, Adelaide.
- Aldrich, H., Rosen. B and Woodward, W. (1987). ‘The Impact of Social Networks on Business Foundings and Profit: A Longitudinal Study’, in N. C. Churchill, J. A. Hornaday, B. A. Kirchoff, O. J. Krasner and K. H. Vesper (eds.), *Frontiers of Entrepreneurship Research*, Center for Entrepreneurial Studies, Wellesley, MA: Babson College
- Allen, D. (1988). Business Incubator Lifecycles. *Economic Development Quarterly*, (2) 19-29.
- Al-Mubarak, H. & Busler, M. (2010). Sustainable Development Through the Inclusion of Business Incubators: A SWOT Analysis. *World Sustainable Development Out-look*, 51-63.

- Amezcuca A., Bradely, S., & Wiklund, J., (2011) *Cutting the Apron Strings of Business Incubation Firms: Is the Liability of Newness...A Liability?* Paper presented at the Academy of Management Annual Meeting Proceedings
- Ardichvili, A., Cardozo, R. & Ray, S. (2003). A theory of entrepreneurial opportunity identification and development. *Journal of Business Venturing* 18 (1), 105-123.
- Arminda, M., Paco, F. & Ferreira, J. (2011). Behaviours and entrepreneurial intention: Empirical findings about secondary students. *Journal of International Entrepreneurship*, (9), 20-38.
- Audet, J. & Couteret, P. (2012). Coaching the entrepreneur: features and success factors. *Journal of Small Business and Enterprise Development*.19 (3), 515-531
- Ayyagari, M., Beck, T., & Demircuc-Kunt, A. (2003). *Small and medium enterprises across the globe: A new database* (No. 3127), The World Bank, Washington, DC.
- Babbie, E. (2004). *The practice of Social Research*. Belmont, BC: Wadsworth.
- Bakouros, Y.L., D.C. Mardas, & N.C. Varsakelis (2002). Science park, a high tech fantasy? An analysis of the science parks of Greece. *Technovation* 22 (2), 123-128.
- Barrow, C. (2001) *Incubators: A Realist's Guide to the World's Business Accelerators*. Chichester: Wiley.
- Bathula, H., Karia, M., & Abbott, M. (2011). *The Role of University-Based Incubators in Emerging Economies*. Working Paper No. 22
- Becker, B., & Gassmann, O. (2006). Gaining leverage effects from knowledge modes within corporate incubators. *R&D Management*

- Bekkers, R., Gilsing, V., & Van der Steen, M. (2006). Determining Factors of the Effectiveness of IP Based Spinoffs: Comparing the Netherlands and the US. *Journal of Technology Transfer* 31(5), 545–566
- Bergek, A., & Norrman, C. (2008) Incubator best practice: a framework. *Technovation* 28, 20–28
- Bhattacharya, M. and Bloch, H. (2004). Determinants of innovation. *Small Business Economics*. 22, 155-62.
- Bøllingtoft, A. (2012). The bottom-up business incubator: Leverage to networking and cooperation practices in a self-generated, entrepreneurial-enabled environment. *Technovation*, 32(5), 304- 315.
- Bøllingtoft, A., & J.P. Ulhøi (2005). The networked business incubator-leveraging entrepreneurial agency. *Journal of Business Venturing* 20 (2), 265–290.
- Bolton, W.K. & Thompson, J.L. (2002). *The Entrepreneur in Focus: Achieve Your Potential*, Thomson Learning, London.
- Bourdieu, P. (1986). *The forms of capital*. In J. G. Richardson (Ed.), *Handbook of theory and research in the sociology of education*. New York: Greenwood Press.
- Brice, J. (2004). The role of personality dimensions on the formation of entrepreneurial intentions, USASBE *Small Business Advancement National Center*. University of Central Arkansas, USA
- Brockhaus, R.H. (1980). Risk taking propensity of entrepreneurs. *Academy of Management Journal*, 23,509-520.
- Bryman, R. (2012). *Social Research Methods*. (4th Ed.). New York: Oxford University press Inc.

- Burt, R.S. (1992). *Structural holes: The social structure of competition*. Cambridge, MA: Harvard University Press.
- Cainelli, G., Evangelista, R. and Savona, M. (2006). Innovation and economic performance in services: A firm-level analysis. *Cambridge Journal of Economics*, 30(3), 435–458.
- Camagni, R. (1991) *Innovation Networks: Spatial Perspectives*. London: Belhaven Press.
- Camp, W. G. (2010). Formulating & Evaluating Theoretical Frameworks for Career & Technical Education Research. *Journal of Vocational Education Research*, 26 (1).
- Capello, R. (1999). Spatial Transfer of Knowledge in High-technology Milieux: Learning versus Collective Learning Processes. *Regional Studies* 33(4), 353–65.
- Chan, K.F., & T. Lau (2005). Assessing technology incubator programs in the science park: The good, the bad and the ugly. *Technovation* 25(10), 1215–1228.
- Chandra, A., & Chao, C. (2011). Growth and evolution of high-technology business incubation in China. *Human Systems Management* 30 55–69
- Chang, C. H. (2008). Some thoughts of entrepreneurship education for vocational colleges. *Journal of Jinan Vocational College*, 4, 25–27.
- Chattefuee, S., & Hadi, A. S. (2006). *Regression Analysis by Example* (New Jersey, A John Wiley & Sons, Inc., Publication).
- Chen, S., Hsiao, H. & Chang, J. (2013). Can the entrepreneurship course improve the entrepreneurial intentions of students? *International Entrepreneurship Management Journal*.

- Chen, Y.S, Lin M.J. & Chang C. H. (2009) The positive effects of relationship learning and absorptive capacity on innovation performance and competitive advantage in industrial markets. *Industrial Marketing Management* 38(2), 152-158.
- Ciavarella M.A, Buckholtz A.K, Riordan C.M, Gatewood R.D & Stokes G.S. (2004) The big five and venture survival: is there a linkage? *Journal of Business Venture*, 19, 465–483
- Coleman, J. S. (1990). *Foundations of social theory*. Cambridge, UK: Harvard University Press.
- Colombo, M., Mustar, P., & Wright, M. (2010). Dynamics of science-based entrepreneurship. *Journal of Technology Transfer*, 35(1), 1–15.
- Cooper, D.R., & Schindler, P.S. (2011). *Business research methods*, (11th, ed.). New Delhi: McGraw-Hill Publishing, Co. Ltd.
- Cooper, S., & Park, J. (2008). The Impact of ‘Incubator’ Organizations on Opportunity Recognition and Technology Innovation in New, Entrepreneurial High technology Ventures. *International Small Business Journal*. 26(1), 27–56
- CSES (2002). *Benchmarking of Business Incubators*. Final report to the European Commission Enterprise Directorate.
- Cynthia G. (2006). *Entrepreneurship ideas*. South –Western of Thomson Learning Inc. 3<sup>rd</sup> Ed.
- Davidsson, P. & Honig, B. (2003). The role of social and human capital among nascent entrepreneurs. *Journal of Business Venturing*, 18(3), 301–331.
- Dawson, P. (2014). Beyond a Definition: Toward a Framework for Designing and Specifying Mentoring Models. *Educational Researcher*. 43,(3),137-145



- Djokovic, D. and Souitaris, V. (2006). Spinouts from Academic Institutions: A Literature Review with Suggestions for Further Research. *Journal of Technology Transfer*
- Drucker, P. F. (1971). What we can learn from Japanese management. *Harvard Business Review*, 49(2), 110–122.
- Drucker, P. F. (1985). *Innovation and entrepreneurship*. New York: Haper & Row.
- Drucker, P.F (2006) *Innovation and entrepreneurship*. Harper Collins, New York.
- Ebbers, J. (2013). Networking Behavior and Contracting Relationships Among Entrepreneurs in Business Incubators. *Entrepreneurship Theory and Practice*
- Eisenhauer, J.G. (1995). The entrepreneurial decision: Economic theory and empirical evidence. *Entrepreneurship theory & practice*.
- Elfring, T. & Hulsink, W. (2003). Networks in entrepreneurship: The case of high technology firms. *Small Business Economics*, 21(4), 409–422.
- European Commission (2006). *Entrepreneurship education in Europe: Fostering entrepreneurial mindsets through education and learning*, Final Proceedings of the Conference on Entrepreneurship Education in Oslo
- Fernandez, E., Montes, J. M., & Vazquez, C. J. (2000). Typology and strategic analysis of intangible resources: A resource-based approach. *Technovation*, 20, 81- 92.
- Florin, J., Karri, R. & Rossiter, N. (2007). Fostering entrepreneurial drive in business education: an attitudinal approach. *Journal of Management Education* 31(1)17–42
- Freeman, R.E. (1984). *Strategic Management: A Stakeholder Approach*, Pitman, Boston, MA.

- Fukuyama, F. (1995). *Trust: The social virtues and the creation of prosperity*. London: Penguin Publications.
- Galindo, M.A & Mendez-Picazo, M.T. (2013). Innovation, entrepreneurship and economic growth. *Management Decision* 51, (3), 501-514
- Garcia, R. and Calantone, R. (2002). A critical look at technological innovation typology and innovativeness terminology: A literature review. *Journal of Product Innovation Management*, 19,(2), 110–132.
- Gartner, W.B. (1990). What are we talking about when we talk about entrepreneurship? *Journal of Business Venturing* 5,(1), 15–29.
- Gibb, A. (2000). SME policy, academic research, and the growth of ignorance, mythical concepts, myths, assumptions, rituals, and confusions. *International Small Business Journal*, 18 (3),13-34
- Granovetter, M.S. (1985). Economic action and social structure: A theory of embeddedness. *American Journal of Sociology*, 91, 481–510.
- Greve, A. & Salaff, J.W. (2003). Social networks and entrepreneurship. *Entrepreneurship Theory and Practice*, 28,(1), 1–22.
- Grimaldi, R. & Grandi, A. (2005). Business incubators and new venture creation: An assessment of incubating models. *Technovation*, 25,(2), 111-121.
- Guceri-Ucar, G. & Koch, S. (2013). Business Incubation Practices and Software Start-up Success in Turkey. Herzworm and T. Margaria (Eds.): ICSOB 2013, LNBIP 150,178–182
- Hacket, S.M. & Dilts, D.M. (2004). A systematic review of business incubation research. *Journal of Technology Transfer* 29,(1), 55–82.

- Hackett, S. M. & Dilts, D. M. (2008). Inside the black box of business incubation: Stud Scale assessment, model refinement, and incubation outcomes. *Journal of Technology Transfer*, 33,(5), 439–471.
- Halpern, D. (1999). *Social capital: The new golden goose*. Unpublished review of Faculty of Social and Political Sciences, Cambridge University, Cambridge.
- Hansen, M.T., Chesbrough, H.W., Nohria, N., & Sull, D.N. (2000). Networked incubators: Hothouses of the new economy. *Harvard Business Review*, 78,(5), 74–84.
- Hinkelmann, K., & Kempthorne, O. (2008). Design and Analysis of Experiments. A John Wiley & Sons. Inc., *Publication, Canada*.
- Hmieleski, K. & Corbett, C. (2006). Proclivity for improvisation as a predictor of entrepreneurial intentions. *Journal of Small Business Management* 44,(1), 45-63
- Honig, B. (2001). Human capital and structural upheaval: A study of manufacturing firms in the West Bank. *Journal of Business Venturing*, 16, 575–594.
- Honig, B. & Karlsson, T. (2007). Social capital and the modern incubator: A comparison of in group and out-group social networks. *Frontiers of Entrepreneurship Research*, 27,(15), 1–14.
- Howard, K. (2005). *The GTi2 project: Independent Evaluation of Achievements against Objectives and Targets*, Minds-i Consultancy Services, Cardiff.
- Huffman,D. & Quigley, J.M. (2002). The role of the university in attracting high tech entrepreneurship: A Silicon Valley tale. *The Annals of Regional Science*, 36, 403–419.
- International Chamber of Commerce (2013). *Promoting and Protecting Intellectual Property in Kenya*.

- Jaffe, A. (1986). Technological opportunity and spill-overs from R&D: Evidence from Firm's Patents, Profits and Market Value. *American Economic Review* 76, (5): 984–1001.
- Jahangir, N., Akbar, M., & Begum, N. B. (2006). The role of social power, procedural justice, organizational commitment, and job satisfaction to engender organizational citizenship behavior. *ABAC Journal*, 26, (3).
- Johannisson, B., Ramirez-Pasillas, M. & Karlsson, G. (2002). The Institutional Embeddedness of Local Inter-firm Networks: A Leverage for Business Creation. *Entrepreneurship and Regional Development* 14,(4), 297–315.
- Johansen, V. (2007). *Entrepreneurship education and entrepreneurial activity*, Proceedings of Internationalizing Entrepreneurship 2007 – 17th Global Conference, Internationalizing Entrepreneurship Education and Training, Gdansk, Poland
- Johnson, B. (1990). Toward a multidimensional model of entrepreneurship: The case of achievement and the entrepreneur. *Entrepreneurship Theory & Practice*, (14), 39-54.
- Jørgensen, S.B. (2011). *Literature review of business incubation*. Paper presented at the 6<sup>th</sup> European Conference on Entrepreneurship and Innovation (ECEI), University of Aberdeen, Aberdeen, 15-16 September.
- Kaiburi, S., Mobegi, O., Kombo, A., Omari, A. & Sewe, T. (2012). Entrepreneurship Challenges in Developing Economies: a case of Kenyan Economy. *International Journal of Arts and Commerce* 1 (4)
- Karanja, J. (2011). Improving water provision in Nairobi through control of non revenue water. Global water summit 2011. *Global Water Intelligence*, (7), 212-213.

- Katz, J. A (2007). Education and training in entrepreneurship. In: Baum JR, Frese M, Baron RA (eds) *The psychology of entrepreneurship*. Erlbaum, Mahway
- Keat, O. Y., Selvarajah, C., & Meyer, D. (2011). Inclination towards entrepreneurship among university students: an empirical study of Malaysian university students. *International Journal of Business and Social Science*, 2, (4), 206–220.
- Kedogo, B.K. (2013). Factors Influencing Growth and Development of Small and Medium Enterprises in Kenya, A Case of Huruma Division, Nairobi County. Unpublished Thesis. University of Nairobi.
- Keeble, D. and Wilkinson, D. (1999). Collective Learning and Knowledge Development in the Evolution of Regional Clusters of High Technology SMEs in Europe. *Regional Studies* 33,(4), 295–303.
- Keeble, D., Lawson, C., Moore, B. and Wilkinson, F. (1999) ‘Collective Learning Processes, Networking and “Institutional Thickness” in the Cambridge Region’, *Regional Studies* 33, (4) 319–32.
- Kenya National Bureau of Statistics (2016). Economic Survey 2016. Government Printer.Nairobi.
- Kochan, T.A. & Rubinstein, S.A. (2000). Toward a stakeholder theory of the firm: the Saturn partnership. *Organization Science*, (4), 367-86.
- Kombo D. K., & Trom D. L. A. (2006). *Proposal and Thesis Writing*. Nairobi: Paulines Publications.
- Lalkaka, R. (1997). *Technology Business Incubators: Critical Determinants of Success*. New York UNDP.
- Lalkaka, R. (2000). *Assessing the Performance and Sustainability of Technology Business Incubators*. Paper presented to New Economy & Entrepreneurial

Business Creation in Mediterranean Countries (International Centre for Science & High Technology, International Centre for Theoretical Physics, and Third World Academy of Sciences), Trieste, Italy.

Lalkaka, R. (2002) Technology Business Incubators to Help Build an Innovation-Based Economy. *Journal of Change Management* 3, (2), 167–76

Lechner, C., & C. Leyronas. (2007). Network-centrality versus network-position in regional networks: What matters most?—A study of a French high tech cluster. *International Journal of Techno entrepreneurship* 1, (1), 78–91.

Lee, S., Lim, S. & Pathank, R. (2006). Influences on students attitudes toward entrepreneurship: a multi country study. *International Entrepreneurship Management Journal* (2), 351-366

Linder, S. (2003). *2002 State of the Business Incubation Industry*, Athens, OH: NBIA.

Loftsten, H., & Lindelöf, P. (2005). R&D networks and product innovation patterns academic and non academic new technology-based firms on Science Parks. *Technovation*, 25, (9), 1025-1037.

Longenecker, J. G., Petty, C. W., Moore, J. W. & Palich, L. E. (2006). *Small business*

Luger, M.I. & H.A. Goldstein. (1991). *Technology in the garden. Research parks & regional economic development*. Chapel Hill, London: University of North Carolina Press.

Lyons, T. S. (2002). *Building Social Capital for Sustainable Enterprise Development in Country Towns and Regions: Successful Practices from the United States*. Paper presented in Conference on the Future of Australia's Country Towns. Bendigo: Australia. October, 2001.

- Malmberg, M. & Maskell, P. (2002). The Elusive Concept of Localisation Economies: Towards a Knowledge-based Theory of Spatial Clustering. *Environment and Planning A* 34, (3), 429–49.
- Markman, G. and Baron R. (2003). Person-entrepreneurship fit: Why some people are more successful as entrepreneurs than others. *Human Resource Management Review* 13,(2), 281-302.
- Markman, G., Baron, R. and Balkin, D. (2005). Are perseverance and self-efficacy costless? Assessing entrepreneurs' regretful thinking. *Journal of Organizational Behavior* 26, (1), 1-19.
- Marshall, A. (1947) *Principles of Economics*. Cambridge: Cambridge University Press.
- Marwanga, R.O.(2009, September). *Technology and Business Incubation Technology and Business Incubation for Entrepreneurship in Kenya*. Paper presented at the 10<sup>th</sup> Annual ICT Conference, Strathmore University, Kenya.
- McAdam, M. & Marlow, S. (2007). Building Futures or Stealing Secrets? Entrepreneurial Cooperation and Conflict Within Business Incubators. *International Small Business Journal* 25, (4), 25–42.
- McAdam, M., & McAdam, R. (2006). The networked incubator: the role and operation of entrepreneurial networking with the university science park incubator (USI). *The international Journal of Entrepreneurship and Innovation*, 7 (2), 87-97.
- McAdam, M., & R. McAdam (2008). High tech start-ups in university science park incubators: The relationship between the start-ups's lifecycle progression and the use of the incubator's resources. *Technovation* 28, (5), 277–290.
- McClelland, D. C. (1965). *The Achieving Society*. Cambridge, MA: Harvard University.

- McMullan, W. E., & Long, W. A. (1984). Entrepreneurship education in the nineties. *Journal of Business Venturing*, 2, (3), 261–275.
- Mertens, D.M (2010). *Research and evaluation in education and psychology. intergrating diversity with quantitative, qualitative and mixed methods.* London: Sage Publishers
- Micro Small and Medium Enterprises. (2010). Perspectives (Bronchure). National Business Incubation Association (1992). *The state of the business incubation industry - 1991.* Ohio: NBIA.
- Minniti, M., Arenius, P. & Langowitz, N, (2013). 2004 Global Entrepreneurship Monitor Special Topic Report: Women and Entrepreneurship. Center for Women's Leadership at Babson College, Babson Park, MA.
- Moreno, J. (2011). *An Empirical Analysis of entrepreneurial opportunity identification and their decisive factors: The case of new Spanish firms.* University of Alcala, Spain
- Mugenda O. M., & Mugenda A. G. (2008). *Research Methods; Quantitative and Qualitative Approaches.* Nairobi: Acts Press.
- Mugenda, A.G. (2011). *Social science research; theory and principles.* Nairobi: Act Press.
- Mungai, E.N. & Ogot, M. (2010). *Ethnicity, Culture and Entrepreneurship in Kenya*
- Mutambi J. (2015). *Stimulating industrial development in Uganda through open innovation business incubators.* (PhD Thesis, Makerere University, Uganda).
- Mwobobia, F. (2012). *The Challenges Facing Small-Scale Women Entrepreneurs: A Case of Kenya.* *International Journal of Business Administration* 3 (2)



- National Business Incubation Association (2013). *The state of the business incubation industry 2012*. Ohio: NBIA.
- Ndabeni L. (2008). The contribution of business incubators and technology stations to small enterprise development in South Africa. *Development Southern Africa* 25(3)
- Nduati, C. S. (2015). *Effect of Computer Assisted Learning on Secondary School Students' Achievement in Chemistry in Murang'a South Sub-County, Murang'a County, Kenya*. Doctoral dissertation, Nairobi: Kenyatta University.
- Ngugi, P. K. (2012). Challenges Hindering the Sustainability of Small and Medium Family Enterprises After the Exit of the Founders in Kenya. Unpublished PhD Thesis, Juja: JKUAT, Kenya.
- Ngumi, W. G. (2013). Use of mobile applications to gain sustainable competitive advantage at the Kenya Medical Supplies Authority (KEMSA).
- Nicolaou, N. & Birley, S. (2003). Academic Networks in a Trichotomous Categorisation of University Spinouts. *Journal of Business Venturing*, 18, (3), 333–359.
- Oakley, A. (1990). *Schumpeter's Theory of Capitalist Motion*, Edward Elgar, Aldershot.
- OECD. (2001). *The well-being of nations: The role of human and social capital*. Paris: Centre for Educational Research and Innovation.
- Okpara, J. O., & Wynn, P. (2007). Determinants of Small Business Growth Constraints in a Sub Saharan African Economy. *SAM Advanced Management Journal* .
- Orodho, A.J., & Kombo, D.K. (2002). *Research methods*. Nairobi: Kenyatta University Institute of Open Learning.
- Otuki, N. Varsityes' incubation hubs key to Kenya growth. *The Business Daily*, 2013 April, 26

- Peacock, R.W. (2004). *Understanding small business: Practice, theory and research*
- Pervin, L.A. (1980). *Personality: Theory, Assessment and Research*. New York: John Wiley & Sons.
- Peters, L., Rice, M. & Sundararajan, M. (2004). The Role of Incubators in the Entrepreneurial Process. *Journal of Technology Transfer*, (29), 83–91
- Petrakis, P.E. (2007). The effects of risk and time on entrepreneurship. *International Entrepreneurship Management Journal*, (3) 277-291
- Pfeffer, J.& Salancik, G.R. (1978). *The External Control of Organizations: A Resource Dependency Perspective*, Harper and Row, New York, NY.
- Phan, P., Siegel, D.S., & Wright, M. (2005). Science parks and incubators: Observations, synthesis and future research. *Journal of Business Venturing*, 20, (2), 165–182.
- Pieper, T.M. (2007). *Mechanisms to Assure Long-term Family Business Survival: A Study of the Dynamics of Cohesion in Multigenerational Family Business Families*. Frankfurt: Peter Lang.
- Portes, A. (1998). Social capital: Its origin and application in modern sociology. *Annual Review of Sociology*, 24, (1), 1–24.
- Putnam, R. D. (1993). *The prosperous community: Social capital and public life*. In E. Ostrom & T. Ahn (Eds.), *Foundations of social capital* (pp. 529–536). Cheltenham: Elgar.
- Putnam, R. D. (2000). *Bowling alone: The collapse and revival of American community*. New York: Simon & Schuster.
- Raposo, M., Ferreira, J., Paço, A. & Rodrigues, R. (2008). Propensity to firm creation: empirical research using structural equations. *International Entrepreneurship Management Journal* 4 (4), 485–504

- Rauch, A. and Frese, M. (2007) Let's put the person back into entrepreneurship research: A meta analysis on the relationship between business owners' personality traits, business creation and success. *European Journal of Work and Organizational Psychology* 16 (4) 353–385.
- Ray, S. & Cardozo, R. (1996). *Sensitivity and creativity in entrepreneurial opportunity recognition: a framework for empirical investigation*. Presented at the Sixth Global Entrepreneurship Research Conference, Imperial College, London.
- Republic of Kenya (2005). *Sessional paper No.4 of 2005 on Youth Development*. Government Printer. Nairobi
- Republic of Kenya, (2013). *Economic survey*, the Government printer, Nairobi: Kenya.
- Rice, M. P. & Matthews, J. B. (1995) *Growing New Ventures, Creating New Jobs: Principles & Practices of Successful Business Incubation*. Westport, CT: Quorum Books.
- Rice, M.P. (2002). Co-production of business assistance in business incubators: An explorative study. *Journal of Business Venturing* 17, (2): 163–187.
- Roberts, P. W., & Dowling, G. R. (2002). Corporate reputation and sustained superior financial performance. *Strategic Management Journal*, (23), 1077–1093.
- Rothaermel, F.T., & M. Thursby. (2005). University-incubator firm knowledge flows: Assessing their impact on incubator firm performance. *Research Policy* 34,(3), 205–320.
- Rue, W. L., & Byars, L. L. (2004). *Management Skills and Application*. (8<sup>th</sup>ed). Richard: Irwin Inc.
- Salman, A. & Majeed, A. (2010) Sustainable Incubator Management—A Case Study for Pakistan. *The Pakistan Development Review*, Vol. 48, No. 4, Papers and Proceedings PARTS I and II The Silver Jubilee Annual General

Meeting and Conference of the Pakistan Society of Development Economists Islamabad, March 16-18, 2010 (Winter 2009), pp. 425-438. Pakistan Institute of Development Economics, Islamabad

- Schumpeter, J.A. (1961). *The Theory of Economic Development*. Cambridge, MA: Harvard University Press.
- Schwartz, M. (2011) Incubating an Illusion? Long-Term Incubator Firm Performance after Graduation *Growth and Change* 42, (4), 491–516
- Shane, S. & Khurana, R. (2003). Bringing individuals back in: The effects of career experience on new firm founding. *Industrial and Corporate Change* 12,(3), 519–543.
- Shane, S. & Venkataraman, S. (2000). The promise of entrepreneurship as a field of research. *Academy of Management Review*, 25, 217–226
- Shane, S. (2000). Prior knowledge and the discovery of entrepreneurial opportunities. *Organization Science*, 11, 448–469.
- Shane, S. (2004). *Academic Entrepreneurship: University Spinoffs and Wealth Creation*. Cheltenham, UK: Edward Elgar.
- Shane, S., Locke, E. & Collins, C. J. (2003). Entrepreneurial motivation. *Human Resource Management Review*, 13, 257-279.
- Shaver, K.G. & Scott, L.R. (1991). Person, process, choice: the psychology of new venturecreation. *Entrepreneurship Theory & Practice*, 16, 23-45.
- Smilor, R., & Gill, M. (1986). *The new business incubator: Linking talent, technology and knowhow*. Massachusetts: Lexington Books.
- Smit P. J., & Cronje J. G. (2002). *Management Principles*. Capetown: Juta Publishers.

- Soetanto, D. & Jack, S. (2013). Business incubators and the networks of technology-based firms. *Journal of Technology Transfer*. 38, 432–453
- Sorenson, R. L. (2006). The Contribution of Leadership Style and Practices to Family And Business Success. *Family Business Review*, 13, (3), 183-200.
- Sternberg, R., H. Behrendt, H. Seeger, and C. Tamásy. (1997). Bilanz eines Booms Wirkungsanalyse von Technologie- und Gruenderzentren in Deutschland, 2<sup>nd</sup> ed. Dortmund, Germany: Dortmunder Vertrieb für Bau- und Planungsliteratur.
- Stevenson I & St-Onge, A. (2005). *Support for growth –Oriented Women Entrepreneurs in Kenya*. International Labour Organization, Geneva.
- Storper, M. (1997) *The Regional World: Territorial Development in a Global Economy*. New York: Guildford Press
- Suchman, M.C. (1995). Managing legitimacy: strategic and institutional approaches. *Academy of Management Review*, 20, 571-610.
- Szpiro, G. (1986). Measuring risk aversion: An alternative approach. *Review of Economics and Statistics*, 68, 156-159.
- Tamásy, C. (2001). Evaluating innovation centres in Germany: Issues of methodology, empirical results and international comparison. In *Promoting local growth*.
- Tamasy, C. (2007). Rethinking Technology-Oriented Business Incubators: Developing a Robust Policy Instrument for Entrepreneurship, Innovation, and Regional Development? *Growth and Change*, 38, 460 -473.
- Theodorakopoulos, N., Sanchez, D. and Bennett, D. (2012). Transferring technology from academia to rural industry within a developing economy context: the case for nurturing communities of practice. *Technovation*, 32, (10), 550-559.

- Thompson, J & Downing, R. (2007). The entrepreneur enabler: identifying and supporting those with potential. *Journal of Small Business and Enterprise Development*. 14, (3) 528-544.
- Tötterman, H. & Sten, J. (2005). Start-ups: Business incubation and social capital. *International Small Business Journal*, 23,(5), 487–511.
- University Business Incubators Index (2014). Retrieved July 27, 2015 from <http://ubiindex.com/>
- Van Geenhuizen, M. & Soetanto, D. P. (2009). Academic spin-offs at different ages: A case study in search of obstacles to growth. *Technovation*, 29, (10), 671–681.
- Vecchio, R. (2003). Entrepreneurship and leadership: Common trends and common threads. *Human Resource Management Review* 13, (2), 303–327.
- Venkataraman, S. (1997). The distinctive domain of entrepreneurship research. *In Advances in Entrepreneurship, Firm Emergence and Growth*, 3, 119-138.
- Vohora, A., Wright, M., and Lockett, A. (2004). Critical Junctures in the Development of University High Tech Spinout Companies. *Research Policy*, 33, (1), 147–175.
- Weinberg, M., Allen, D. & Schermerhorn, J. (1991). Interorganizational challenges in the design and management of business incubators. *Policy Studies Review*, 10, 149-160.
- Welsh European Funding Office (WEFO) (2003). *A Practical Guide to Measuring Soft Outcomes and Distance Travelled*, WEFO, DWP, Mountain Ash, June.
- Wenger, E. (1998). *Learning, Meaning and Identity*, Cambridge University Press, New York, NY.
- Whetten, D. (1987). Inter-organizational relationships. In Lorsch, J. (Ed), *Handbook of Organizational Behavior* . Englewoods Cliffs, NJ: Prentice Hall.

- Wong, P. K., Ho, Y. P., & Autio, E. (2005). Entrepreneurship, innovation and economic growth: evidence from GEM data. *Small Business Economics*, 24, (3), 335–350.
- World Bank. (1999). *Bonds and bridges: Social capital and poverty*. Washington DC.
- Wulung, R., Takahashi, K., & Morikawa, K. (2014). An interactive multi-objective incubate selection model incorporating incubator manager orientation. *Springer Publication Online*.
- Wynarczyk & Raine (2005). The Performance of Business Incubators and their Potential Development in the North East Region of England. *Local Economy*, Vol. 20, (2), 205-220,
- Xu, L. (2010). Business incubation in China: Effectiveness and perceived contributions to tenant enterprises. *Management Research Review*. 33, 90 – 99.
- Yulk, G. (2006). *Leadership in Organizations*. (6<sup>th</sup> ed). Upper Saddle River: Pearson Prentice Hall.
- Zahra, S.A. (1999). The challenging rules of global competitiveness in the 21st century. *Academy of Management Executive*, 13, 36–42.
- Zahra, S.A & George, G. (2002). Absorptive capacity: A review, reconceptualisation, and extension. *Academy of Management Review*, 27,(2), 185–203.
- Zikmund, G.W., Babin, B. J., Carr, C. J. & Griffin, M. (2010). Business research methods, (8<sup>th</sup> ed.). South-Western, Cengage Learning.

## **APPENDICES**

### **Appendix I: Letter of Introduction**

**Kevin Wachira,**

**College of Human Resource Development,**

**Jomo Kenyatta University of Agriculture and Technology (JKUAT),**

**P.O. Box 62000-00200,**

**Nairobi.**

#### **LETTER OF INTRODUCTION**

I am Kevin Wachira, a postgraduate student pursuing a Doctorate Degree in Entrepreneurship in the College of Human Resource Development, Jomo Kenyatta University of Agriculture and Technology. I am currently conducting research in the area of entrepreneurship. The topic is **Role of university based business incubators strategy on enterprise growth in Kenya.**

The purpose of this letter, therefore, is to kindly request you to respond to the attached questionnaire. The information you give will be treated confidentially and at no time will your name be referred to directly. The information given will only be used for academic research purpose.

Thank you in advance for your time and cooperation.

KEVIN WACHIRA



## Appendix II: Questionnaire for Graduated Incubatees

### Part A: Background Information

1) Gender

Male

Female

2) Age group

18 – 25 years

26 – 35 years

36 – 45 years

3) Briefly describe the nature of your business

.....

.....

.....

4) What is your highest level of education?

Primary

Secondary

College

University Degree

Post Graduate

5) For how long were you in the incubator?

Less than 6 months

6months – 1 year

1 – 2 years

Beyond 2 years

6) What would you say was the greatest benefit(s) you obtained from being in the incubator?

.....  
.....  
.....

**Part B: Incubatee selection criteria strategy**

The kind of incubate selection criteria strategy used to admit incubatees into a university based incubator is considered crucial in the incubator’s effective support of startups and the resultant enterprise growth. The following questions relate to incubate selection criteria strategy. Kindly tick (√) where appropriate.

1. What is your relationship with the university hosting the incubator?

Current student

Alumni

Employee

Other (Explain)

.....  
.....

2. What would you say is the most unique characteristic/strength of your business that may have led to your selection into the incubator?

- Proprietary software
- Patented product
- Projected profitability
- Projected social benefits

Other (please specify)

.....  
.....  
.....

3) Where do you see your enterprise in the next five years based on the indicated criteria below?

<b>Criteria</b>	<b>Current</b>	<b>Next 5 years</b>
Market penetration ( market share)		
Turnover		
Profitability		
Number of employees		
Number of product lines		
Asset base		

4. Which of the following selection tool(s) were used to select you in to the incubator?

Written business plan

Oral presentation

Written test

Proof of ability to pay incubator rent

Experience in running your own enterprise

Any other (explain).....

5) How long had you been running your incubated enterprise prior to being admitted into the incubator

Less than 6 months

6months – 1 year

1 – 2 years

2 – 5 years

5 years and beyond

6) In what way(s) would you say you have contributed to the mission of the university hosting the incubator?

.....  
 .....  
 .....

7) Kindly indicate your opinion on the following statements regarding your business and yourself by ticking (√) where appropriate

Where 1 – Strongly Disagree, 2- Disagree, 3- Can't Say, 4- Agree, 5 - Strongly Agree

	1	2	3	4	5
The product(s) developed are completely new in the market					
The product(s) developed are an improved extension of existing product(s)					
The product(s) are provided in a different way/medium compared to competitors					
The degree of innovativeness depends on an organization's size					
I consider myself to have high self- efficacy (I believe in my abilities as an individual)					
I consider myself a risk taker					
Success of my business depends on access to superior technology					
The incubator is an effective tool for commercialization of research by students and lecturers					

9) What recommendation(s) would you make to managers of university based business incubators so as to improve their incubatee selection criteria strategy?

.....  
 .....  
 .....

**Part C: Managerial skills impartation strategy**

Managerial skills impartation strategy is considered to affect the effectiveness of university based business incubators to support start-ups and therefore enterprise growth. The following questions relate to managerial skills impartation strategy in university based business incubators.

1) Kindly indicate your opinion on the following statements relating to incubator’s managerial skills impartation strategy by ticking (√) where appropriate

Where 1 – Strongly Disagree, 2- Disagree, 3- Can’t Say, 4- Agree, 5 - Strongly Agree

	1	2	3	4	5
The incubator management is visionary with a clear plan and goals for the incubator					
The incubator management is competent in start-up management					
The incubator management possess wide network of contacts					
Incubator managers have good interpersonal/communication skills					
Incubator managers are good at mentoring and counseling incubatees					
Incubators managers spend adequate time with incubatees					
Incubator management are good at fundraising for incubatees					

The incubator fully utilizes resources available (lecturers, students and laboratories) in the host university					
--	--	--	--	--	--

2) What kind of monitoring and evaluation mechanism does the incubator use for its graduated incubatees?

Periodic report submission by graduated incubatee

Business premise visits by incubator staff

None

Other  
(Describe).....  
.....

3) What recommendations would you make to the incubator management so as to improve on the running of the incubator?

.....  
.....

**Part D: Entrepreneurship skills impartation strategy**

Entrepreneurship skills are thought to have a role in the effectiveness of university based business incubator’s support for start-ups and the resultant enterprise growth. The following questions relate to the role of entrepreneurship skills impartation strategy in university based business incubators on enterprise growth. Indicate by ticking (√) where appropriate.

1) What is your highest level of entrepreneurship training?

- Workshops/seminars
- Certificate
- Diploma
- Bachelor Degree
- Master Degree
- Doctorate Degree
- None

2) Kindly indicate your opinion on the following statements by ticking (√) where appropriate

Where 1 – Strongly Disagree, 2- Disagree, 3- Can't Say, 4- Agree, 5 - Strongly Agree

	1	2	3	4	5
I can develop a business plan					
I am able to carry out a market analysis and identify market opportunities and threats					
I am able to scrutinize the risks involved in each opportunity for decision making					
I know the strengths and weaknesses facing my business					
I am able to prepare financial statements (e.g. balance sheet, profit and loss account) for my business					
I am aware of the required government regulations and licenses governing conduct of					



my business					
The Kenya education system adequately equips learners with entrepreneurship skills					
Businesses of those who have undergone entrepreneurship training perform better than of those who haven't undergone the training					

3) How would you say the incubation process contributed to your entrepreneurship skills?

.....

.....

.....

4) What recommendations would you make to the incubator management so as to improve on entrepreneurship skills impartment for incubatees?

.....

.....

.....

**Part E: Social networks skills impartation strategy**

Social networks are thought to have a role in the effectiveness of university based business incubator's support for start-ups and the resultant enterprise growth. The following questions relate to the role of social networks skills impartation strategy in university based business incubators on enterprise growth. Indicate by ticking (√) where appropriate.

1) How often did you hold brainstorming meetings with the incubator manager/staff?

- Never
- Daily
- Weekly
- Bi-weekly
- Monthly
- Quarterly
- Bi-annually
- Annually

2) How would you describe your relationship with the following parties/stakeholders?  
Indicate by ticking (√) where appropriate

Stakeholder	Nature of relationship/strength of ties		
	Non-existent	Weak	Strong
Fellow incubatees			
Incubator manager/staff			
Academia staff of the host university			
External Industry players			
External business mentors			

3) What benefits would you say resulted from your relationship with the following parties/stakeholders? Indicate by ticking (√) where appropriate

Stakeholder	Nature of benefit							
	None	Increased sales	Stronger credibility/reputation	New business opportunity	Financing	New business contact	Joint venture	Other (describe)
Fellow incubatees								
Incubator manager/staff								
Academia staff of the host university								
External Industry players								
External business mentors								

4) Kindly indicate your opinion on the following statements regarding to social networks skills impartation strategy in university based business incubators by ticking (√) where appropriate

Where 1 – Strongly Disagree, 2- Disagree, 3- Can't Say, 4- Agree, 5 - Strongly Agree

	1	2	3	4	5
Social networks influence business success					
The number of social ties one has influences business success					
The variety of social networks one has influences his business success					
The more frequently you engage/interact with your social network influences your business success					
University based incubators help in expanding incubatees' social networks					
Businesses that are closely located (physically) to one another are likely to trade among themselves					
Incubatees are likely to steal each other's business idea					
Incubatees have more academic connections than industry connections					

5) What recommendations would you make to the incubator manager to improve on networking of incubates with other stakeholders

.....  
 .....

**Part F: Incubator Environment**

Incubator environment is thought to have a role in the effectiveness of university based business incubator's support for start-ups and the resultant enterprise growth. The following questions relate to the role of incubator environment in university based business incubators on enterprise growth.

1) Kindly indicate your opinion on the following statements regarding incubation environment by ticking (√) where appropriate:

Where 1 – Strongly Disagree, 2- Disagree, 3- Can't Say, 4- Agree, 5 - Strongly Agree

	1	2	3	4	5
The incubator's physical facilities affect effectiveness of incubation					
The incubator provided adequate physical space					
The incubator has a suitable workstation layout					
The incubator has suitable physical facilities (furniture, internet, office equipment)					
The rent charged by the incubator to the incubatees is affordable					
The shared front office/secretarial services offered by the incubator are adequate for the incubatees					
The incubator's established routines (e.g. scheduled breaks, scheduled meetings etc) affect its effectiveness					
The incubator's routines were helpful to incubatees					

2) How else would you say the incubator's environment affected you/your enterprise during incubation?

.....  
 .....  
 .....

3) What recommendations would you make to the incubator manager so as to improve on the incubator's environment?

.....  
 .....  
 .....

**Part G: Enterprise growth**

The following questions relate to enterprise growth.

1) Kindly provide the following information for the applicable years your business has been in operation

<b>Criteria</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>
Number of employees					
Market share (%)					
Turnover/sales volume(Kshs)					
Profits (Kshs)					
Asset base (Kshs)					
Number of products offered (product lines)					
Number of branches/outlets					

2) How would you say the incubation process changed the way you view your enterprise and entrepreneurship in general

.....  
 .....  
 .....

3) What would you recommend to university based business incubators to help them promote enterprise growth at a faster pace?

.....  
.....  
.....

*(Thank you for your cooperation)*

### Appendix III : Top University Based Business Incubators in the World

University	University Incubator	Based	Country
Rice University	Rice Alliance for Technology and Entrepreneurship		United States
Georgia Institute of Technology	VentureLab		United States
University at Buffalo State University of New York	The UB Technology Incubator		United States
Universities of Bath, Bristol, Exeter, Southampton, Surrey	SETsquared		United Kingdom
University of the Sunshine Coast	Innovation Centre Sunshine Coast		Australia
University of Tennessee	Tech 20/20		United States
	ATP Innovations		Australia
University of Sydney; University of New South Wales; University of Technology, Sydney; Australian National			



University	University Incubator	Based	Country
Dublin City University; Institute of Art, Design & technology; National College of Art & Design; Trinity College Dublin; University College Dublin.	NDRC LaunchPad		Ireland {Republic}
KTH Royal Institute of Technology	STING		Sweden
National Chiao Tung University	NCTU Incubation Center	Innovation	Taiwan
Aalto University	Startup Sauna		Finland
Tel Aviv University	StarTau		Israel

Source: University Business Incubators Index (2014)