DETERMINANTS OF SUCCESS IN INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) BUSINESS START-UP’S INCUBATION IN KENYA

MICHAEL NJOROGE RIUNGE

Reg No. p56/p/7942/2002

Supervisor: Prof Elijah I. Omwenga

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Dedications

I dedicate this thesis work to my family and many friends. A special feeling of gratitude to my loving parents.

I also dedicate this dissertation to my many friends who have supported me throughout the process. I will always appreciate all they have done, especially Henry Ndungu for helping me develop my research skills, Dr. Patrick Ngumi for the many hours of proofreading and guidance.

I dedicate this work and give special thanks to my best friend and wife Eddah, you have been a tower of immeasurable strength.

My wonderful sons, Bill, Bob and Brian for the wonderful company during entire research period. You have been my best cheerleaders and comrade Bravo! To my sons, may you live to be “fountains of knowledge, wisdom and humility?”
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DECLARATION

This research project is my original work and has not been presented for a degree in any other university

Signature…………………………….. Date…………………………

Michael Njoroge Riunge
Reg No: P56/P/7942/2002

This research project has been submitted for examination with my approval as university supervisor

Signature ……………………………….. Date ………………………

Prof. Elijah Omwenga
School of Computing and Informatics
University of Nairobi, Kenya
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ABSTRACT

Countries and regions around the world are striving to be successful in today’s dynamic global environment. Amid economic and political turbulence, each nation is looking for ways to improve and sustain its economy and to create more wealth for its citizens. One effective strategy is to nurture the spirit of entrepreneurship among citizens so that more local businesses can be created to enable self-sustainability and to build an innovation-based economy. The general objective of the study was to analyze the determinants of success of information and communication technology (ICT) business start-ups incubation in Kenya. This study was guided by the following specific objective. Firstly to establish whether selection criteria determine the successful incubation of ICT start-up firms in Kenya. The second objective was to find out whether financing determines the successful incubation of ICT start-up firms in Kenya. Thirdly, to evaluate whether monitoring and evaluation determines the successful incubation of ICT start-up firms in Kenya and finally to investigate whether training determines the successful incubation of ICT start-up firms in Kenya. This study adopted a correlation research design. The population of this research consisted of all the incubated and graduated ICT business startups from the six registered ICT business incubators in Kenya. There are approximately 50 ICT start up businesses that have graduated from business incubators since 2007. The target population in terms of respondents was business owners, its staff and incubation coaches of ICT start up businesses. The target population in terms of respondents was the business owners, its staff and incubation coaches. A target population of 50 active ICT businesses identified from the listing obtained from the National Business Incubation Association of Kenya (NBIAK). The population was stratified into three strata constituting 50 business owners, 230 employees and about 20 coaches. A sample of 169 respondents was selected using stratified random sampling using the Fishers et al formula for the small sample. The unit of analysis in the study is the ICT business that is made up of the workers (business owner, employee and coaches). The responses given by workers is aggregated to give indications of the performance of the ICT startup business and further aggregation gives indication of the determinants of success or lack of entire incubation of ICT startup businesses in Kenya. This study used primary data. Data collection methods used included a set of structured questionnaires. Data was analyzed quantitatively and qualitatively and presented descriptively and illustrated by use of tables and charts. Information was sorted, coded and input into the statistical package for social sciences (SPSS) for production of graphs, tables, descriptive statistics and inferential statistics. The study findings revealed that selection criteria, financing, monitoring and evaluation and training were key determinants of successful incubation of ICT start-up firms. Results indicated that selection criteria, financing, monitoring and evaluation and training were found to be statistically significant in explaining successful incubation of ICT firms. It is therefore possible to conclude that business incubators follow a more systematic approach in their selection processes in order to recruit the most innovative ideas, and then provide them with business development services to ensure a high success rate. It can be concluded that the firms had adequate funds for product development, marketing activities, human resources, networking, research, workshops and knowledge mobilization. The study concludes
that there were effective monitoring and evaluation policies in place at the firms which ensured that the incubation process was a success. It was possible to conclude that staff competence was highly emphasized in the firms. Results led to a conclusion that all employees received induction training and all the learning was incorporated on the job training.
CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Countries and regions around the world are striving to be successful in today’s dynamic global environment. Amid economic and political turbulence, each nation is looking for ways to improve and sustain its economy and to create more wealth for its citizens. One effective strategy is to nurture the spirit of entrepreneurship among citizens so that more local businesses can be created to enable self-sustainability and to build an innovation-based economy. Since start-ups are most vulnerable at their infancy period, having conducive environment that will help to develop and guide these initiatives is critical. One of the most notable enterprises designed to support entrepreneurship initiative is business incubators (Wagner, 2006).

According to National Business Incubation Association (NBIA), a business incubator provides business support to young companies with the goal of producing “successful firms that will leave the [incubation] program financially viable and freestanding” (www.nbia.org). The types of business support provided can range from tangible to intangible resources (Gassmann and Becker 2006). The most obvious type of tangible support provided by an incubator is access to an operating space and shared facilities. By having a group of entrepreneurs sharing physical locations and facilities, incubators help to reduce heavy financial burden often faced by start-ups. As for intangible resources, business incubators give guidance and advice that will assist start-ups in running and managing their businesses. Examples of guidance given are how to market products, how to secure funding, and how to expand the business. Since infancy period is often clouded with uncertainties, resources and support provided by business incubators are invaluable to new entrepreneur companies.

Business incubation provide entrepreneurs with expertise, networks and tools that they need to make their ventures successful (Al-Mubaraki 2008, Almubaraki and Busler, 2009). The support they provide in the initial phase of business is essential since the first five years are very critical for their survival (Monk, 2000). Incubation programs diversify economies, commercialize technologies, create jobs and build wealth.
According to National Business Incubation Association (NBIA), business incubators help entrepreneurs translate their ideas into sustainable and functioning businesses by guiding them through the starting and growing a thriving business (NBIA, 1996). With 20 to 25 years of history, business incubation has been a subject of numerous studies (Wagner, 2006). Incubators are driven by several objectives of significance for economic development including: technology transfer, acceleration of business growth, development of fast-track companies, reduction in the failure rate of new enterprises, empowerment / opportunities for specific groups of entrepreneurs and finally, development of an entrepreneurial culture / role models (ibid). Business incubators, especially the ones operated by governmental organizations, are used as tools to promote the economic development of a community, region or country (ibid). In the United States, in particular, such development strategies have been justified by the theoretical arguments and empirical evidence that innovation promotes economic growth (ibid).

The global shift from labour-intensive economies to knowledge economies has resulted in developing countries changing their strategic priorities to accommodate rapid global change (Chong, 2006). The knowledge economies provide fertile ground for the information and communications technology (ICT) sector to bloom. In this sector, small and medium sized enterprises (SMEs) are seen as potential drivers of the Kenyan economy in terms of their capabilities for creating employment, and their contributions to gross domestic product (GDP) and exports. Kenya like other developing countries have identified incubation of ICT business as a key policy agenda and entrenched it in the national planning agenda. The country has seen a rise in the interest in incubating ICT business as a way of creating wealth and employment over the recent past. According to the National ICT Master Plan (GoK, 2014), the achievement of an information society and a knowledge economy is one of the main priorities of the Government towards the attainment of the development goals and objectives for wealth and employment creation as espoused in the national development blueprint, Kenya Vision 2030.

Information and Communication Technology (ICT) is one of the fastest growing sectors in the country. Through this policy, the government plans to develop ICT Incubation
hubs at county level with the plan of extending the same to constituency levels for the purpose of empowering youth with the necessary training and work experience to develop market-ready ICT services and products. Though the ICT business incubators are seen as viable social and economic development tools, their success has not been determined through a systematic and scientific study in Kenya. A report by National Beaureu…, (NBIA, 1992) showed that nearly two thirds of the North America’s incubators surveyed were not financially self-sustaining. Further, several incubators have failed or were closed by their sponsors. Research examining the incubation process and how it influences the performance of businesses incubated is scarce, despite concerted calls for further research (Hackett, 2004).

1.1.1 ICT Business Incubation in Kenya

The history of business incubators in Kenya can be traced back to 1967 when the Industrial and Commercial Development Corporation (ICDC) established the Kenya Industrial Estate (KIE) as its subsidiary. Modeled along the concept of industrial estates, the first task of the Kenya Industrial Estate was to provide sheltered real estate services countrywide, along with the provision of financial and business development services, as a strategy geared towards local adaptation and industrialisation (Ikiara, 1988). Later, other types of business incubator sprang up. These include, firstly, virtual incubators like Willpower Business Solutions Centre. Secondly, incubators without walls such as some Non-Governmental Organizations (NGOs) and church-based institutions. Thirdly, incubators with walls include the International Finance Corporations Small and Medium Enterprises (SMEs) Solution Centre, the Kenya Kountry Business Incubator (Kekobi) and the Kenya Industrial Research and Development Institute (KIRDI) (Bwisa, 2005).

Several universities, colleges, and technical training institutes have technology and business incubator initiatives at different stages of development. These include University of Nairobi; Maseno University; Kenyatta University; Jomo Kenyatta University of Agriculture and Technology; Strathmore University; and the Kenya Polytechnic University College. There are also government of Kenya (GoK) business incubation initiatives that include the Kenya Industrial Research and Development Institute (KIRDI); the Kenya Industrial Estates (KIE); and the Export Processing Zone
Authority (EPZA). Then there are several private business incubation initiatives that include the Kenya Kountry Business Incubator (KeKoBI; International Finance Corporation’s SSC Business Incubator; and NaiLab; Mlab, HumalPO, among others. The Business Incubation Association of Kenya (BIAK) is a business incubator membership organization with focus on facilitating capacity building and networking for its members.

1.2 Problem Statement

Information Technology (IT) has become the major facilitator of global business activities. IT catalyses fundamental changes in the structure, operations, and management of organizations by facilitating and enhancing a variety of functions and capacities. Such capacities include; performance of high-speed high-volume calculations and interactions; generation of fast, accurate and inexpensive communication between organizations and actors; storage of easily accessible amounts of information and increasing the efficiency of the working force.

According to Fredberg et al (2008), open innovation has merged into a system model where enterprises commercialize their internal and external ideas and technologies and use both their external and internal resources. Basically, these authors pointed out three significant roles of the ICTs. The first role is to help organizations to understand the sources of ideas. The second role of ICTs is to help capturing ideas from the sources i.e., the documentation role. The third role of ICTs is to enable the distribution of ideas. Dana et al. (2002) introduced the term Internetisation to describe and capture “the process of adoption and diffusion of e-business systems and Internet technologies by innovative entrepreneurs.

In Kenya ICT business incubation has been in existence since the year 2007 with over 12 ICT incubators currently in different locations in the country. Despite the increased publicity and activity of these ICT incubators their impact has not been felt in the economy. The policy makers in Kenya are faced with immense pressure to create jobs and wealth for the youth and the government strongly believes that ICT incubators would provide a solution to this problem. As a response to this challenge the government has identified and prioritised incubation of ICT startup businesses as one of
the solutions to help address the social and economic challenges facing the country as outlined by the 2\textsuperscript{nd} Medium Term Development strategy 2013-2017 of the National Development Blue print The Kenya Vision 2030 and the national ICT master plan.

However, from literature review there is no evidence of a systematic research on the factors of ICT business incubation process that influence the performance of firms in Kenya. It is therefore with this paucity of studies that this study seeks to address the successful determinants of information and communication technology (ICT) business incubation in Kenya.

1.3 Objectives

The general objective of the study was to analyze the determinants of success of Information and Communication Technology (ICT) business start-ups incubation in Kenya.

1.3.1 Specific Objectives

This study was guided by the following specific objectives

i. To establish whether selection criteria determines the successful incubation of ICT start-up firms in Kenya

ii. To find out whether financing determines the successful incubation of ICT start-up firms in Kenya

iii. To evaluate whether monitoring and evaluation determines the successful incubation of ICT start-up firms in Kenya

iv. To investigate whether training determines the successful incubation of ICT start-up firms in Kenya

1.4 Research Hypotheses

The study addressed the following pertinent hypotheses which are guided by the study specific objectives.

i. $H_{A1}$ - There is positive relationship between selection criteria and successful incubation of ICT start-up firms in Kenya
ii. \( H_{A2} \) - There is positive relationship between financing and successful incubation of ICT start-up firms in Kenya

iii. \( H_{A3} \) - There is positive relationship between monitoring and evaluation and successful incubation of ICT start-up firms in Kenya

iv. \( H_{A4} \) - There is positive relationship between training and successful incubation of ICT start-up firms in Kenya

1.5 Significance of the Study

The importance of the study comes from having the understanding of the need of adopting business incubators as an important tool in achieving development in Kenya, reducing poverty, and promoting creativity and entrepreneurship. Thus, this could happen through: supporting the national economy and achieving development, supporting small businesses and increasing the chances of success and sustainability, and entrepreneurs to transform ideas into profitable companies, strengthening the bonds of the public and academic sector with the private sector, highlighting the role of academic and research institutions in the development of a knowledge-based economy, and the development of links and relations of the different industrial sectors in universities.

To the policy and decision makers, the research can help decision makers at formal and informal institutions to adopt the best model of business incubation suitable for the country based on other successful models and frameworks implemented in other countries and give them a full image about Kenyan entrepreneurs. The study shall help international donors and supporters of the Kenyan economy to utilize and direct their funds toward sustainable economic development through encouraging new business and creating new jobs. In addition, it shall help decision makers at academic institutions to implement major changes in academic plans to reflect entrepreneurial skills among their graduates as well as other complementary skills required for establishing new business startups.

To fresh graduates and entrepreneurs: The research shall contain rich information about business incubators especially those implemented by universities, their roles, success factors, and impact on entrepreneurs and innovators. It shall also help future researchers
in the same topic in the country by clarifying areas of interest which will need further investigation and deeper analysis. The study can help fresh graduates and give them the opportunity to new directions of doing business and clarify the importance of specialized training on fostering entrepreneurship.

1.6 Assumptions and Limitation of the Research

The respondents in the sample will be a reasonable representation of the entire population. It is further assumed that the responses will be unbiased. The selection of the sample will be done through the use of unbiased and balanced sampling technique. This study will be conducted in the year 2014 and the context of the study will be within the republic of Kenya. This research is limited to a specific type of incubators, i.e. ICT incubators, and the implications from this study may not be generalized to other types of business incubators.

The following constitute key limitations of this study: (i) Hypotheses testing do not explain the reasons as to why the difference exist, simply indicate whether the difference is due to fluctuation of sampling or because of other reasons but tests do not tell us to which are the reasons causing the difference. (ii) Results of significance tests are based on probability and as such cannot be expressed with full certainty. (iii) When test show a difference is statistically significant then it simply suggests that the difference is probably due to chance. (iv) Statistical inferences based on the significance tests cannot be said to be entirely correct evidence concerning the truth of the hypothesis.

1.7 Definition of Key Terms

Entrepreneurship- Entrepreneurship is the process of utilization of intellectual capital which involves creating something new with value by devoting the necessary time and effort, assuming the accompanying financial, psychic, and social risks, and receiving the resulting rewards of monetary and personal satisfaction and independence, (Robert & Michael, 2009).
Entrepreneurial skills- These are skills that enable an entrepreneur to turn their business idea into feasible business opportunities, to start and to grow a business enterprise. It includes creativity, innovation, risk taking, and the ability to take successful entrepreneurial role models and identification of market opportunities (Darroch & Clover 2005).

Innovation- Lumpkin & Dess (1996) defined innovation dimension as “the tendency of a firm to engage in and support new ideas, novelty, experimentation and creative processes that may result in new products, services or technological processes.

Monitor- A continuous assessment, both of the functioning of the program activities in the context of implementation schedules, and of the use of program inputs by targeted populations in the context of design expectations. It is an internal project (or program) activity, an essential part of good management practice, and therefore, an integral part of day-to-day management.

Evaluation- is an assessment, as systematic and objective as possible, of an ongoing or completed project, program or policy, its design, implementation and results. The aim is to determine the relevance and fulfillment of objectives, developmental efficiency, effectiveness, impact and sustainability. It involves measurement and observation (evaluation research), and comparison with some criterion or other standard (e.g. project or program objectives and indicators).

Monitoring and Evaluation System: The set of planning, information gathering, synthesis, reflection and reporting processes, along with the necessary supporting conditions and capacities required for the M&E outputs to make a valuable contribution to project decision-making and learning.

Business Incubation- defines business incubation as a unique and highly flexible combination of business development processes, infrastructure and people designed to nurture new and small businesses by helping them to survive and grow through the difficult and vulnerable early stages of development (Harman and Read, 2003).
CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter discusses theoretical literature relevant to the study. Literature related to the study is also reviewed with the aim of identifying literature gaps. The literature review will also guide the relevance of the study findings.

2.2 Theoretical Framework

This study was anchored on the broad theoretical perspective of three theories; human capital theory and Schumpeterian Theory on Innovations and Entrepreneurship and psychological theories

2.2.1 Human Capital Theory

Human Capital theory was proposed by Schultz (1961) and developed extensively by Becker (1964). Schultz (1961) in an article entitled “Investment in Human Capital” introduces his theory of Human Capital. Schultz argues that both knowledge and skill are a form of capital, and that this capital is a product of deliberate enterprise growth. The concept of human capital implies an investment in people through education and training. Schultz compares the acquisition of knowledge and skills to acquiring the means of production. The difference in earnings between people relates to the differences in access to education and health. Schultz argues that investment in education and training leads to an increase in human productivity, which in turn leads to a positive rate of return and hence of growth of businesses.

This theory emphasizes the value addition that people contribute to an organization. It regards people as assets and stresses that investments by organizations in people will generate worthwhile returns. The theory is associated with the resource based view of strategy developed by Barney 1991, the theory proposes that sustainable competitive advantage is attained when the firm as a human resource pool that cannot be imitated or substituted by its rival. For the employer investments in training and developing people is a means of attracting and retaining people. These returns are expected to be improvements in performance, productivity, flexibility and the capacity to innovate that
should results from enlarging the skills base and increasing levels of knowledge and competence. Schuler (2000) suggests that the general message in persuasive skills, knowledge and competences are key factors in determining whether organizations and firms will prosper. According to Hessels and Terjesen (2008), entrepreneurial human capital refers to an individual’s knowledge, skills and experiences related to entrepreneurial activity. Entrepreneurial human capital is important to entrepreneurial development.

Previous empirical research have emphasized that human capital is one of the key factor in explaining enterprise growth. Brüderl et al. (1992) argues that greater entrepreneurial human capital enhances the productivity of the founder, which results in higher profits and, therefore, lower probability of early exit. Moreover highly educated entrepreneurs may also leverage their knowledge and the social contacts generated through the education system to acquire resources required to create their venture (Shane, 2003). In addition to education, specific human capital attributes of entrepreneurs, such as capabilities that they can directly apply to the job in the firm, may be of special relevance in explaining enterprise growth (Colombo & Grilli, 2005). The specific human capital can be attained through precise trainings and previous experience. More focused business training can provide entrepreneur with a specific knowledge, compared to a formal education. This kind of specific human capital also includes knowledge of how to manage a firm, that is, entrepreneur-specific human capital (Collombo & Grilli, 2005). In particular, entrepreneurs with great industry-specific and entrepreneur-specific human capital are in an ideal position to seize neglected business opportunities and to take effective strategic decisions that are crucial for the success of the new firm (Collombo & Grilli, 2005).

2.2.2 Schumpeterian Theory on Innovations

Schumpeter’s (1934) theory of innovative profits emphasized the role of entrepreneurship and the seeking out of opportunities for novel value and generating activities which would expand (and transform) the circular flow of income through risk taking, pro activity by the enterprise leadership and innovation which aims at fostering identification of opportunities through intellectual capital of entrepreneur to maximize the potential profit and growth.
Schumpeterian growth theory goes beyond economist theory by distinguishing explicitly between physical and intellectual capital, and between saving, which makes physical capital grow, and innovation, which makes intellectual capital grow. It supposes that technological progress comes from innovations carried out by firms motivated by the pursuit of profit, and that it involves what Schumpeter called “creative destruction”. That is, each innovation is aimed at creating some new process or product that gives its creator a competitive advantage over its business rivals; it does so by rendering obsolete some previous innovation; and it is in turn destined to be rendered obsolete by future innovations (Schumpeter, 1934).

Endogenous growth theory challenges this neoclassical view by proposing channels through which the rate of technological progress, and hence the long-run rate of economic growth, can be influenced by economic factors. It starts from the observation that technological progress takes place through innovations, in the form of new products, processes and markets, many of which are the result of economic activities. For example, because firms learn from experience how to produce more efficiently, a higher pace of economic activity can raise the pace of process innovation by giving firms more production experience. Also, because many innovations result from R&D expenditures undertaken by profit-seeking firms, economic policies with respect to trade, competition, education, taxes and intellectual property can influence the rate of innovation by affecting the private costs and benefits of doing R&D (Dinopoulos & Thompson, 1998).

Schumpeter, as cited by Swedberg (2000), pointed out economic behavior is somewhat automatic in nature and more likely to be standardized, while entrepreneurship consists of doing new things in a new manner, innovation being an essential value. As economics focused on the external influences over organizations, he believed that change could occur from the inside, and then go through a form of business cycle to really generate economic change. He set up a new production function where the entrepreneur is seen as making new combinations of already existing materials and forces, in terms of innovation; such as the introduction of a new good, introduction of a new method of production, opening of a new market, conquest of a new source of production input, and a new organization of an industry (Casson, 2002). For
Schumpeter, the entrepreneur is motivated by the desire for power and independence, the will to succeed, and the satisfaction of getting things done (Swedberg, 2000). He conceptualized ‘creative destruction’ as a process of transformation that accompanies innovation where there is an incessant destruction of old ways of doing things substituted by creative new ways, which lead to constant innovation (Aghion & Howitt, 1992).

The entrepreneur’s crucial significance to the dynamics of the capitalist system flows from the fact that it is the entrepreneur’s innovations that disrupt the economy and move it forward from one equilibrium to the other. Rather than adapting to external pressures, the entrepreneur destroys the static equilibrium from within the system by inventing new products, processes or behaviors that contrast the routine systems and activities (Andersen, 2004; McDaniel, 2005; Drejer, 2004).

2.2.3 Entrepreneurship Theories

According to Kuratko and Hodgetts (2008), entrepreneurship theories are verifiable and logically coherent formulations of relationships, or underlying principles that either explains entrepreneurship, predict entrepreneurial activities, or provide normative guidance. An entrepreneurial theory of the firm can encompass all the major issues in current debate on the nature of the firm. The synthesizing skills of the entrepreneur are closely linked to the core competencies of the firm (Cabrita & Bontis, 2008). The appropriation of rents from entrepreneurial innovation raises important transaction cost issues, and the way these issues are resolved determines where the boundaries of the firm are drawn (Ashour & Bontis, 2004). The synthesis of information can be affected in different ways, and different types of synthesis lead to different forms of corporate evolution: organic growth, merger and acquisition, diversification, joint ventures, and so on.

2.2.4 Psychological Theories

One of the early psychological studies of entrepreneurship is that of David McClelland (McClelland, 1961). His objective is to identify and to analyze the psychological factors which produce entrepreneurial personalities. In particular, he focuses on the
motivational variables affecting the supply of entrepreneurship: namely, the psychological drives underlying the individual's “need for achievement” (or n-Ach). Individuals with a high n-Ach are depicted as preferring to be responsible for solving problems and for setting goals to be reached by their own efforts as well as having a strong desire to receive feedback on their task accomplishment. McClelland hypothesizes that entrepreneurs will have high n Ach because they seem to possess the same characteristics. Thus, according to McClelland (1961), the supply of entrepreneurship depends on individuals' psychic needs for achievement rather than on the desire for money (but monetary rewards may still constitute a symbol of achievement for entrepreneurs).

Psychological theories such as those developed by McClelland pay attention to personal traits, motives and incentives of individuals and conclude that entrepreneurs have a strong need for achievement (McClelland & Winter, 1971). A similar focus is found in locus of control theories that conclude that an entrepreneur will probably have strong internal locus of control (Low & MacMillan 1988, Amit et. al. 1993). This means that an entrepreneur believes in his or her capabilities to commence and complete things and events through his or her own actions.

Brockhaus (1982) suggests that internal locus of control, even if it fails to distinguish entrepreneurs, may serve to distinguish the successful entrepreneur from the unsuccessful one. How do we measure success of entrepreneur? Success is a relative concept that can also be measured differently in different contexts. If success is measured in relation to the fulfillment of the goals and objectives of a particular entrepreneur, self-employed could also be classified as successful if their businesses generate continuously a satisfactory (in relation to their goals) level of living. On the other hand, high-growth ventures may be considered unsuccessful if they are not able to offer high enough ROI to their investors.

From his survey of empirical psychological studies of the entrepreneur (Ashour & Bontis, 2004) concludes that an individual's locus of control is a major factor determining his or her level of entrepreneurial alertness. In particular, internal LOC gives rise to heightened alertness which is necessary for incidental learning (i.e. the recognition of profit opportunities once they are encountered). Spontaneous learning in
turn ultimately results in entrepreneurial behavior. The above psychological theories of David McClelland may be applicable today in the Kenyan context where entrepreneur in pursuit of need to achieve will apply the intellectual capital for the growth of their enterprises. The above instigated the second research question.

2.3 General and Empirical Literature Review

This section presents previous studies done that relates to the current research. Empirical results are presented according to the variables under investigation in this study.

2.3.1 Selection Criteria and Business Incubation

Incubation is a unique and highly flexible combination of business development processes, infrastructure and people, designed to nurture and grow new and small businesses by supporting them through early stages of development and change. Finally, if we consider the NBIA (National Business Incubation Association), business incubation is 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. These incubator graduates have the potential to create jobs, revitalize neighborhoods, commercialize new technologies, and strengthen local and national economies.

Several scholars pointed out that tenant screening is an important component in the incubation process (see e.g. Hackett and Dilts, 2004; Kuratko and LaFollette, 1987; Lumpkin and Ireland, 1988; Merrifield, 1987). Kuratko and LaFollette (1987) concluded that variability in the tenant screening and selection process may lead to the selection of tenants that are too strong or too weak to be hatched in an incubator, which in turn may lead to tenant or even incubator failure.

Merrifield (1987) and Lumpkin and Ireland (1988) investigated the screening process more in detail and postulate important screening factors. Merrifield (1987) described
the tenant selection process in a three-step decision tree. In the first phase, the incubator evaluates the potential tenant on six criteria: sales profit potential, political and social constraints, growth potential, competitor analysis, risk distribution and industry restructure. In the second phase the fit between the potential tenant and the host is evaluated, again on six criteria: capital availability, manufacturing competence, marketing and distribution, technical support, component and materials availability and finally management. The combination of the business attractiveness and fit factors determines the probability of commercial success and thus the potential added value the tenant has to offer to the incubator. Merrifield (1987) admits that no analytical scheme can guarantee 100% success, but careful tenant selection can definitely increase the probability of tenant—and thus incubator—success.

Based on a survey of US incubator managers Lumpkin and Ireland (1988) identified three groups of screening criteria. A first group is labelled “experience of the management team” and contains management, marketing, technical and financial skills, experience and growth rate projection of the management team. The second group, “financial strength”, includes profitability, liquidity, price earnings, debt and asset utilisation, personal investment of the management team and current size of firm. The written business plan, references from others, persistence, marketability of product/service, creativity, uniqueness of product/service and age of the management team are grouped under the denominator of “market and personal factors”. They also observed that, in the late eighties, a vast majority of the American incubators submitted their potential tenants to severe screening practices. Cluster analysis identified four types of incubators, each with a specific screening pattern.

A study of Kakati (2003) reveals that entrepreneur quality, resource-based capability and competitive strategy are the critical determinants of a start-up’s viability and achievement. The screening practice of the first cluster (thorough on market and personal factors) seems best to be able to distinguish between successful and unsuccessful starting enterprises. Efficient screening procedures are vital for an incubator and Lumpkin and Ireland (1988) identified dimensions that play a role. The next question then becomes: who is in charge of the screening process? Hackett and Dilts (2004) state some incubator policy prescriptions, based on their literature review.
They conclude that the complexity of the tenant selection process impels an advisory board, both for economic (understanding of the market and new venture formation) and political (e.g. secure subsidies) reasons.

There is no clear cut standard to measure incubator performance (Phan et al., 2005). Allen and McCluskey (1990) extract different measures from their literature review: tenant employment, incubator period, tenant success rate, local retention of graduates and added value of incubator services. In their study they evaluate incubator size and occupancy rate, jobs created and firms graduated. Mian (1996) assesses university technology business incubators in the US by exploring their value-added contributions to technology-based startups. Mian (1997) groups incubator assessment research around four approaches in the management literature: (1) goal approach, (2) system resource approach, (3) stakeholder approach, (4) internal process approach. He introduces four dimensions in his assessment framework on the performance of university technology business incubators: (1) program growth and sustainability, (2) tenant survival and growth, (3) contributions to sponsoring university’s mission and (4) community-related impacts. Also the scope and effectiveness of the facility management policies and the provision of services are assessed.

The European Commission (2002) emphasizes that survival rates are one indicator of the performance of incubators but that the extent to which incubators can contribute to the accelerated development of innovative, high-growth firms and their capacity to create new jobs are of more importance. Löfsten and Lindelöf (2002) examine the added value of science parks to tenant performance by employment growth, sales growth and profitability. Bhabra-Remedios and Cornelius (2003) urge for the incorporation of organisational theory concepts in the evaluation of incubators and propose a framework that incorporates both the actors (incubator sponsors, managers and tenants) and the earliest stages of new firm development from idea to start-up. Abetti (2004) bases his performance evaluation research on the elements that Molnar published and evaluates new venture creation, job creation, cost effectiveness, growth and regional unemployment. Ferguson and Olofsson (2004) analyse science park performance based on survival and growth of the tenants compared to non tenant new
technology-based firms. Survival is measured as continued legal existence of the firm; growth is based on changes in employment and gross sales.

Rothaermel and Thursby (2005) assess the impact of university–incubator firm knowledge flows on tenant performance, measured by revenues, total funds raised, venture capital funding obtained and whether the firm graduated, failed, or remained in the incubator. Once the decision is made on which variable(s) will be used to measure incubator performance, the next step is to decide on the unit of comparison that enables the researcher to validate the outcome of the performance measure. Sherman and Chappell (1998) warn that direct comparisons with non-tenants’ survival rates may not be meaningful as the use of selection criteria in admitting tenants to the incubator results in a selection bias. Also Phan et al. (2005) argue that the rate of firm survival (or failure) has little construct validity because of endogeneity, since incubators are specifically designed to maintain and increase life span. They suggest comparing survival rates among different incubators: the tenant survival rate.

2.3.2 Financing and Business Incubation

Filippetti and Archibugi (2010) analysis of European countries with strong NIS tend to be resilient at times of economic down time and are not adversely affected by economic recession. These firms also have a cyclical behavior in terms of money spent on research and development, they tend to spend less while new EU members continue to spend more on innovation and research. However there are some firms that were consistent on their spending in innovation at times of crisis which is explained by the nature of NIS structural characteristics. Capable human resource was found to be very important in managing during a crisis, as well as having strong financial systems. According to OECD (1996), diffusion of technology is as important as R&D in NIS and resources should be used to ensure that knowledge flows, as shown by research carried out in Japan, as well as enhancing technology adoption capabilities.

Organizations need innovation management to drive the development of the innovation process. For an organization to be successful, it must implement the innovation it adopts successfully (Klein, Conn, & Sorra, 2001). Many organizations fail to achieve performance improvements through innovation due to poor implementation. This can
be avoided through good innovation policies, strategies, processes and most importantly embracing a creative culture in an organization. Klein et al., (2001) further asserts that strong management support for implementation and availability of financial resources are more likely to demonstrate high quality implementation policies and practices and provide a conducive environment for implementation.

The availability of venture capital for start-ups was also identified as one of the success factors. (Harwit 2002). Some successful incubators in the UK also offer government grants and loans, equity and debt financing arrangements, and business tax and risk management, (Barrow 2001). An incubator has to have the ability to help raise capital for its clients be it a low interest lending source, grant funding, angel or venture capital funding (Richards 2002). Without adequate early-stage funding, even technology startups with the best ideas cannot transform them into successful businesses (Tornatzy 1996).

According to Walsh and Ungson (1991) in their study on the effect of knowledge management practices on firm performance defined Structural capital as the supportive infrastructure that enables human capital to function. This includes hardware, software, databases, organizational structure, process manuals, strategies, routines and anything that is valuable to the organization) The structural capital in SMEs is primarily developed and maintained by its employees (Desouza & Awazu, 2006). Nunes et al. (2006) stated that enterprises are faced with a lack of knowledge repositories due to their limited budget. Knowledge is created, shared, transferred and applied through the organization’s members without the intervention of automated mechanisms that are usually found in large organizations. Moreover, employees develop common knowledge in order to organize their work and commonly, they engage in two-way communication since their number is small to facilitate enterprise growth.

2.3.3 Monitoring and Evaluation and Business Incubation

ICT evaluation can be defined as establishing by quantitative, and/or qualitative methods the value of the ICT to the organization (Khalifa et al., 2004). Performance cannot be judged as good or bad without the successful implementation of the project. Evaluating ICT projects can be quite problematic and can sometimes be quite subjective
(Heeks 2002, Currie 1995, Bannister, Remenyi 2004, Irani 2002, DeLone and McLean 2002, Bannister and Remenyi 2000) and there is no single ICT evaluation method that can be applied to all situations (Khalifa et al. 2004). Currie (1995) justifies this position using various case studies drawn from businesses in various developed countries while Heeks (2002) observes that evaluation is subjective and can depend on circumstances including time. Evaluation leads to the determination of success or failure of an ICT project.

This Monitoring and Evaluation (M&E) Plan describes the approach and system developed to assess progress and impact of the overall strategic objectives of the National Strategic Plan (NSP) for Belize 2006-2011. Information from the M&E system will measure the extent to which activities contribute to achievement of the results described in the M&E framework. The M&E framework presents the results that the NSP expects to achieve in the specific priority areas. Study findings by Nash et al (2009) revealed that the common weak link of M&E systems is their failure to provide timely and useful feedback to site-level staff, district managers, program implementers, and other stakeholders in the form of information that enables the continuous improvement of quality, scale, access, equity, and impact. Monitoring ensures interventions are implemented as planned, identifies specific problems as they arise, and allows continuous feedback (Baker, 2000).

There are constant and growing pressures on organizations around the world to be more responsive to demands from internal and external stakeholders for good accountability and transparency, greater development effectiveness and delivery of tangible results (Gorgens and Kusek, 2010). Non-Governmental organizations, civil society, international organizations and donors are all stakeholders interested in better performance. As demands for greater accountability and results have grown, there is an accompanying need for useful and usable results-based monitoring and evaluation systems to support the management of programs and policies (Gorgens and Kusek, 2010).

Building a Results-Based Monitoring and Evaluation System requires continuous commitment, time, effort, and resources and champions but it is doable. Once the system is built, the challenge is to sustain it. There are many political, organizational,
and technical challenges to overcome in building these systems both for developed and developing countries. Building and sustaining such systems is primarily a political process, and less so a technical one. There is no one correct way to build such systems, and many countries and organizations will be at different stages of development with respect to good public management practices in general, and M&E in particular. It is important to recognize that results-based M&E systems are continuous works in progress (Kusek, Jody Zall, and Rist, 2000).

### 2.3.4 Training and Business Incubation

Chadwick (2006) examined how the effects of a firm’s human capital acquisition strategies (make vs. buy) affected organizational performance in both manufacturing and service sectors, and finds evidence that the relation between a particular acquisition strategy and performance is contingent upon the organization’s strategy (differentiation, low cost, quality). This is one of very few studies to consider the effects of physical capital intensity in the human capital – performance relationship, although it is only used as a control variable.

Within HR research, work has been done that examines both determinants of training, and also effects of employer-provided training on firm performance. Hansson (2007) finds a positive association between the provision of training and company analyses of training needs, the existence of a written training policy, and the education level of employees. A negative association was found between training provided and the use of an internal labor market and the degree of unionization. Hansson (2009) notes that market failures may be resulting in an underinvestment in training, and concludes that an often overlooked aspect of human capital management is the leadership skills of management. It’s not enough that employees be trained, but the organization must also develop the capability in its management to “take full advantage” of the improved employee skills (Hansson, 2009).

Giuri, Torrisi, and Zinovyeva (2008) examine the possibility of both 2-way and 3-way complementarities between Information and Communication Technology (ICT) investments, skills, and organizational change in 680 small to medium-sized Italian manufacturing firms over the 1995-2003 time period. This empirical study finds 2-way
complementarity between skills and organizational changes such as decentralization of authority, de-layering, teamwork, and job rotation. However, it does not find evidence of 2-way complementarity between ICT investments and skills of employees, and there is no evidence of 2-way complementarity between ICT investments and the implementation of modern organizational practices. Lastly, this study finds no evidence of 3-way complementarity. In fact, organizational changes have a negative effect on the productivity gains from joint adoption of ICT and human capital. This 3-way finding is likely due to higher coordination costs of attempting multiple changes simultaneously, and highlights a tension between stability and modification of organizational routines (Nelson & Winter, 1982).

Galloway & Brown (2002, P399) argued that entrepreneurship education in universities has achieved start-ups from students to varying degrees. To a large extent this is determined by the type of entrepreneurship education delivered, and to whom. With associated and dedicated student incubators, as well as a prevailing culture and expectation of entrepreneurial realization as a strategic priority, however, these universities are more adequately equipped to facilitate student start-ups than most. Khawar (2006:p4) argued that Entrepreneurship breeds only in an enabling environment that provides access to knowledge and financial capital, appropriate infrastructure, and research capabilities, etc. This enabling environment can be created through concerted efforts by a few key players, including universities, government, and the private sector.

Universities, all over the world, are known for playing an instrumental role in promoting entrepreneurship, creating new economic opportunities through knowledge creation. Another aspect of universities, especially the business schools, is their formal understanding of the entrepreneurial process. Such knowledge can be used to enhance the community’s understanding of the entrepreneurship. Promoting entrepreneurship through universities however, require efforts from multiple stakeholders including universities themselves, the government, private sector and even communities. Research universities are important institutions for educating world-class technologists. But, among many other roles, they also provide an important social setting for students and faculty to exchange ideas, including ideas on commercial entrepreneurial opportunities (David et al, 2006, P769).
Marques et al. (2006) argued that Insofar as knowledge is becoming an increasingly important, indeed, crucial, part of innovation, the university, as an institution that produces and disseminates scientific and technological knowledge, is much more important to industrial innovation. This innovation function used to be largely the exclusive preserve of either industry or the government. It could even, depending on the social system in question, be the fruit of bilateral interaction between these two institutional spheres. Thus industrial policies would concentrate on the relation between the government and firms, either improving the ‘business climate’ by means of lower taxes, or influencing location decisions by means of grants. In a knowledge-based economy, the university becomes a key player in the innovation system, as both supplier of human capital and as the physical space for new enterprises.

2.4 Conceptual Framework

Mugenda and Mugenda (2003) and Smith (2004), define a conceptual framework as a hypothesized model identifying the model under study and the relationship between the dependent and independent variables. According to Cooper and Schindler (2011), “There is nothing very tricky about the notion of independence and dependence. But there is something tricky about the fact that the relationship of independence and dependence is a figment of the researcher’s imagination until demonstrated convincingly. Researchers hypothesize relationships of independence and dependence. They invent them and then they try by reality testing to see if the relationships actually work out that way”. Cooper and Schindler (2011) defines dependent variable as a “variable that is measured, predicted, or otherwise monitored and is expected to be affected by manipulation of an independent variable”. They also defined Independent variable as a “variable that is manipulated by the researcher, and the manipulation causes an effect on the dependent variable”.

22
Independent Variables

Selection criteria
- Management experience
- Financial capability
- Product characteristics
- Accessibility of target market
- Technical expertise

Financing
- Product development
- Marketing activities
- Promotion
- Human resources
- Space needs
- Networking and research

Monitoring & Evaluation
- Business planning
- Business operations
- Post feasibility analysis
- Quality and standards

Training
- On the job training
- Training programs
- Staff exchange programs
- Induction
- Workshops

Dependent Variable

Successful Incubation of ICT start-up Firms
- Growth in revenue,
- Growth in employees
- Increased profits,
- Increased clientele
- Growth in technology advancement

Intervening Variable

Government policy
- Regulatory and legal framework

Figure 2.1: Conceptual Framework
CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter highlighted the methods and procedures used in carrying out the study. It included the research design, population, the sampling frame and technique used, data collection methods (instruments and procedures), and data analysis and presentation methods.

3.2 Research Design

A research design is the structure of research. Orodho (2003) defines it as the scheme outline or plan that is used to generate answers to research problems. Newing (2011) states that the term ‘research design’ is used both for the overall process described above (research methodology) and also, more specifically, for the research design structure. The latter is to do with how the data collection is structured. According to Lavrakas (2008), a research design is a general plan or strategy for conducting a research study to examine specific testable research questions of interest.

In this study, correlational research design was used. According Kothari (2004) this method attempts to explore relationships to make predictions. It uses one set of subjects with two or more variables for each. In general, a correlational study is a quantitative method of research in which you have two or more quantitative variables from the same group of subjects and you are trying to determine if there is a relationship between the two variables. In this case, the relationship between selection criteria, financing, monitoring and evaluation, training and successful incubation of ICT firms in Kenya.

3.3 Population

Burns and Grove (2003) states that population includes all elements that meet certain criteria for inclusion in a study. Target population consists of all members of a real or hypothetical set of people, events or objects from which a researcher wishes to generalize the results of their research while accessible population consists of all the individuals who realistically could be included in the sample (Borg & Gall, 2007).
Newing (2011) describes a population as the set of sampling units or cases that the researcher is interested in. According to Ngechu (2004), a population is a well defined or set of people, services, elements, events, group of things or households that are being investigated. The population of this study consists of graduated startups from the twelve registered ICT business incubators in Kenya. The target population in terms of respondents was the owners, its staff and incubation coaches. 50 ICT businesses were sampled from a list of 107 ICT businesses that have graduated from ICT business incubators or are undergoing the incubation process. Out of 50 sampled ICT businesses, 50 business owners, 230 employees and about 20 coaches were sampled using simple random sampling. The distribution of the target population is laid on Table 3.1.

### Table 3.1: Target Population

<table>
<thead>
<tr>
<th>Population Type</th>
<th>Total Population</th>
<th>Percentage Proportion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employees of graduated ICT businesses</td>
<td>230</td>
<td>77</td>
</tr>
<tr>
<td>Graduated ICT business owners</td>
<td>50</td>
<td>16</td>
</tr>
<tr>
<td>Post graduation coaches</td>
<td>20</td>
<td>7</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>300</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

#### 3.4 Sampling Design

A sample design is the architecture or the strategy used to select study participants or respondents (Kothari, 2004). Sampling refers to the systematic selection of a limited number of elements out of a theoretically specified population of elements. The rationale is to draw conclusions about the entire population. According to Kothari (2004), the ultimate test of a sample design is how well it represents the characteristics of the population it purports to. The reason for sampling in this study is to lower cost, accessibility of study population and the greater speed of data collection. This study used stratified random sampling method. Stratified random sampling was used in each sampled graduated ICT business firm. The strata were that of employees of graduated firms, owners of the sampled firms and post incubation coaches. Within each of the
three strata, simple random sampling was done to identify individual respondents who were issued with a questionnaire to respond to research statements. Stratified random sampling was used because it ensures a greater statistical efficiency, and reduces sampling error. Kothari (2004) supports random sampling as it satisfies the law of statistical regularity ‘if a sample is chosen at random, on average it has the same characteristics and composition as the population’.

The sample of the study for the graduated firms was drawn from the records obtained on the Business Incubation Association of Kenya (BIAK) while the details of the respondents were obtained from the respective graduates of the incubation process.

The sample determined for this study comprises of 169 potential respondents. The sample size of 169 employees was determined using the fisher et al, formula for small population. The formula was laid below.

\[ n = \frac{Z^2 \cdot p \cdot (1-p)}{d^2} \]

\[ n = 384.16 \text{ Sample size} \]

\[ Z = 1.96 \text{ Normal distribution Z value score, (1.96)} \]

\[ p = 0.5 \text{ Proportion of units in the sample size possessing the variables under study, where for this study it was set at 50\% (0.5)} \]

\[ d = 0.05 \text{ Precision level desired for the study (0.05)} \]

\[ N = 300 \text{ employees} \]

The sample size was derived at by the following formula.

\[ n_0 = \frac{n}{(1 + ((n - 1)/ N))} \]

The distribution of the sample was based on the proportionate distribution of the target population and was shown on Table 3.2 below.
Table 3.2: Sample Distribution Matrix

<table>
<thead>
<tr>
<th>Population Type</th>
<th>Total Population</th>
<th>Percentage Proportion</th>
<th>Sample Distribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employees of graduated ICT businesses</td>
<td>230</td>
<td>77</td>
<td>130</td>
</tr>
<tr>
<td>Graduated ICT business owners</td>
<td>50</td>
<td>16</td>
<td>27</td>
</tr>
<tr>
<td>Post graduation coaches</td>
<td>20</td>
<td>7</td>
<td>12</td>
</tr>
<tr>
<td>Total</td>
<td>300</td>
<td>100</td>
<td>169</td>
</tr>
</tbody>
</table>

3.5 Data Collection

This study used primary data which was collected through use of a questionnaire. A questionnaire with likert scale type of questions was used. Likert scale was an interval scale that specifically uses five anchors of strongly disagree, disagree, neutral, agree and strongly agree. The likert measures the level of agreement or disagreement. Likert scales are good in measuring perception, attitude, values and behaviour. The likert scales assist in converting the qualitative responses into quantitative values (Mugenda & Mugenda, 2003, Upagade & Shende, 2012, Zikmund, Babin, Carr & Griffin, 2010). Primary data is described by Louis et al. (2007) as those items that are original to the problem under study.

Initially the researcher used self-introductions and internal informants. The questionnaires were sent to the respondents under a questionnaire forwarding letter accompanied by an introduction letter from the University. The researcher made follow ups to pick the fully completed questionnaires from the respondents.

3.6 Data Processing and Analysis

Burns and Grove (2003) define data analysis as a mechanism for reducing and organizing data to produce findings that require interpretation by the researcher. The researcher used frequencies, averages and percentages in this study. The researcher used Statistical Package for Social Sciences (SPSS) to generate the descriptive statistics and also to generate inferential results. According to Mugenda and Mugenda (2003), the
regression technique was used to analyze the degree of relationship between two variables.

The multiple linear regression model adopted for the study was as follows:

\[ Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon \]

Where: \( Y \) = Successful ICT firms.

\( X_1 \) = Selection criteria,
\( X_2 \) = Financing
\( X_3 \) = Monitoring and Evaluation,
\( X_4 \) = Training

In the model \( \alpha \) is the constant term while the coefficient \( \beta_1 \) to \( \beta_4 \) are used to measure the sensitivity of the dependent variable \( Y \) to unit change in the explanatory variable \( X_1, X_2, X_3, X_4 \). \( \varepsilon \) is the error term which captures the unexplained variations in the model.

Analysis of data using regression model has been used previously by Aduda (2011) in a study which investigated the relationship between executive compensation and firm performance in the Kenyan banking sector. Also Ngugi (2001) used a regression analysis in a study on the empirical analysis of interest rates spread in Kenya while Khawaja and Mulesh (2007) used regression analysis to identify the determinants of interest rates spread in Pakistan.

According to Kothari (2004) “Correlation analysis studies the joint variation of two or more variables for determining the amount of correlation between two or more variables. A study of functional relationships existing between two or more variables and is termed as regression analysis. Multiple Regression Analysis is adopted when the researcher has one dependent variable which is presumed to be a function of two or more independent variables. The study used inferential analysis because it is the most appropriate analysis when conducting various tests of significance for testing hypotheses in order to determine with what validity data can be said to indicate some conclusion or conclusions. Inferential statistics are mainly concerned with two types of problems i) estimation of population parameters ii) testing hypotheses. The nature of our study and data set indicates a multivariate population and as such we need to answer the following questions.
i) Does there exist a association or correlation between the two or more variables and to what degree?

ii) Is there any cause and effect relationship between variables, in case of bivariate population on one side and two or more variables on the other side

The first question is answered by correlation technique (Use of Karl Pearson coefficient of correlation, \(-1 \geq r \leq +1\)) and the second one by regression technique where we compute the Coefficient of multiple correlation R, that indicate the difference of the combined effect of two or more variables from the effect of one independent variable and obtain the regression coefficients for each independent variable.

t-test is used for judging the significance of correlation coefficient. Relevant test statistic is calculated from the sample data and compared with its probable values of t for different levels of significance for concerning degrees of freedom for accepting or rejecting the null hypothesis.

F-test is based on F-distribution and is calculated and compared with its probable value for accepting or rejecting the null hypothesis.

Using SPSS, the regression model was tested on how well it fits the data. The significance of each independent variable was also tested. Fischer distribution test called F-test was applied. It refers to the ratio between the model mean square divided by the error mean square. F-test was used to test the significance of the overall model at a 5 percent confidence level. The p-value for the F-statistic was applied in determining the robustness of the model. The conclusion was based on the basis of p value where if the null hypothesis of the beta was rejected then the overall model was significant and if null hypothesis was accepted the overall model was insignificant. In other words if the p-value was less than 0.05 then it was concluded that the model was significant and had good predictors of the dependent variable and that the results are not based on chance. If the p-value was greater than 0.05 then the model was not significant and cannot be used to explain the variations in the dependent variable.

Similarly the t-test statistic was used to test the significance of each individual predictor or independent variable and hypothesis. The p-value for each t-test was used to make
conclusions on whether to fail to accept or fail to reject the null hypotheses. The benchmark for this study for failure to reject or failure to accept the null hypothesis was a level of significance of 5 percent. If the p-value was less than five percent the null hypothesis failed to be accepted and the alternate hypothesis failed to be rejected. Also if the p-value was greater than 5 percent the null hypothesis failed to be rejected and the alternate hypothesis failed to be accepted.
CHAPTER FOUR
DATA ANALYSIS

4.1 Introduction

This chapter presents the results of the study. The descriptive statistics were presented first followed by the model results. The interpretation and discussion of the results are also presented.

Table 4.1 presents the response rate of the respondents. The number of questionnaires that were administered was 169, out of these a total of 114 questionnaires were properly filled and returned while 55 were not returned. This represents an overall successful response rate of 67%. According to Babbie (2004) a response rate above 50% is acceptable. Mugenda and Mugenda (2008) also agree that a response rate of 50 percent can be relied on in descriptive research. Therefore a response rate of 67% is very good. Statistical Package for Social Sciences (SPSS) was used to analyze the data which has been presented by use of tables and pie charts.

Table 4.1: Response rate

<table>
<thead>
<tr>
<th>Response</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Returned</td>
<td>114</td>
<td>67</td>
</tr>
<tr>
<td>Unreturned</td>
<td>55</td>
<td>33</td>
</tr>
<tr>
<td>Total</td>
<td>169</td>
<td>100</td>
</tr>
</tbody>
</table>

4.2 Demographic Information

This section presents the descriptive results. The results are presented in frequency tables.

4.2.1 Gender of the Respondents

The study sought to establish the gender distribution of the respondents. Figure 4.1 shows that a majority (65%) of the respondents was male and 35% were female. The findings imply that the ICT industry is a male dominated field.
4.2.2 Department of the Respondents

The respondents were asked to indicate the departments they worked for in the company. Table 4.2 indicates that 33.3% of the respondents were from operations and IT, 31.6% from risk and compliance, 20.2% from accounts and finance, 8.8% from human resources and 6.1% from administration departments. The results imply that the respondents were well spread in all departments hence the responses were not biased to one organizational department.

<table>
<thead>
<tr>
<th>Department</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administration</td>
<td>7</td>
<td>6.1</td>
</tr>
<tr>
<td>Accounts and finance</td>
<td>23</td>
<td>20.2</td>
</tr>
<tr>
<td>Risk and Compliance</td>
<td>36</td>
<td>31.6</td>
</tr>
<tr>
<td>Human Resources</td>
<td>10</td>
<td>8.8</td>
</tr>
<tr>
<td>Operations and IT</td>
<td>38</td>
<td>33.3</td>
</tr>
<tr>
<td>Total</td>
<td>114</td>
<td>100</td>
</tr>
</tbody>
</table>

4.2.3 Position Held

The study sought to establish the position of respondents in the organization. Figure 4.2 indicates that 49% of the respondents were at middle management, 35% indicated supervisory level and 16% indicated top management. The findings imply that all the respondents were in management positions hence they had knowledge about business incubation hence accurate responses for the study.
4.2.4 Level of Education

The study sought to find out the highest level of education for the respondents. Figure 4.3 indicates 48.2% of the respondents had reached university level, while 27.2% had attained college education and 24.6% had reached the post graduate level. The findings imply that the respondents had high level of education in this sector and perhaps this observed level of education may have had a bearing on the quality of responses.
4.2.5 Length of Employment

The respondents were asked to indicate the years of service they have been in the industry. Results on Figure 4.4 indicate that 64% of the respondents had been in service for a period of between 6-10 years and 36% indicated between 2 to 5 years. The findings imply that the employees had been in the industry for more than three years therefore able to understand the business incubation process in the organization. It can also be assumed that most of them had a remarkable experience which perhaps leads into the realization of successful incubation of ICT firms.

![Figure 4.4: Length of Employment](image)

4.3 Descriptive Results

4.3.1 Successful Incubation

The study sought to assess the performance of ICT start-ups firms. Results on Table 4.3 reveal that 57.9% of the respondents agreed that the start-up ICT firms have experienced growth in sales turnover, 73.7 % agreed that the ICT firms have seen growth in number of employees and 78.9% agreed that the ICT firms have experienced growth in space requirements. In addition, 52.6% agreed that the ICT firms have experienced growth in technology advancement, 67.6% agreed that the ICT firms have made progress towards becoming a sustainable businesses and 52.7% agreed that the ICT firms have experienced improved levels of funding from equity. The mean score of responses for this section was 3.44 which indicate that majority of the respondents agreed with the statements regarding successful incubation of ICT firms in Kenya.
These results imply that the respondents could see the improvements of the firms and were happy since the companies shared the company’s growth thus knew the direction the company was heading to.

The study findings agree with those in (Al-Mubaraki 2008, Almubaraki and Busler, 2009) who asserted that business incubation provides entrepreneurs with expertise, networks and tools that they need to make their ventures successful. The support they provide in the initial phase of business is essential since the first five years are very critical for their survival (Monk, 2000). The findings further agree with those in NBIA (1996) who argued that incubation programs diversify economies, commercialize technologies, create jobs and build wealth. According to National Business Incubation Association (NBIA), business incubators help entrepreneurs translate their ideas into sustainable and functioning businesses by Guiding them through the starting and growing a thriving business.

**Table 4.3: Successful Incubation of ICT Firms**

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly agree</th>
<th>Liker Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>The start-up ICT firms have experienced growth in sales turnover</td>
<td>16.7%</td>
<td>19.3%</td>
<td>6.1%</td>
<td>37.7%</td>
<td>20.2%</td>
<td>3.25</td>
</tr>
<tr>
<td>The ICT firms have seen growth in number of employees.</td>
<td>12.3%</td>
<td>7.0%</td>
<td>7.0%</td>
<td>45.6%</td>
<td>28.1%</td>
<td>3.7</td>
</tr>
<tr>
<td>The ICT firms have experienced growth in space requirements</td>
<td>9.6%</td>
<td>7.9%</td>
<td>3.5%</td>
<td>57.0%</td>
<td>21.9%</td>
<td>3.74</td>
</tr>
<tr>
<td>The ICT firms have experienced growth in technology advancement.</td>
<td>15.8%</td>
<td>24.6%</td>
<td>7.0%</td>
<td>38.6%</td>
<td>14.0%</td>
<td>3.11</td>
</tr>
<tr>
<td>The ICT firms have made progress towards becoming a sustainable businesses,</td>
<td>7.9%</td>
<td>18.4%</td>
<td>6.1%</td>
<td>43.9%</td>
<td>23.7%</td>
<td>3.57</td>
</tr>
<tr>
<td>The ICT firms have experienced improved levels of funding from equity.</td>
<td>15.8%</td>
<td>21.9%</td>
<td>9.6%</td>
<td>28.1%</td>
<td>24.6%</td>
<td>3.24</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td><strong>13.0%</strong></td>
<td><strong>16.5%</strong></td>
<td><strong>6.6%</strong></td>
<td><strong>41.8%</strong></td>
<td><strong>22.1%</strong></td>
<td><strong>3.44</strong></td>
</tr>
</tbody>
</table>
4.3.2 Selection Criteria and Business Incubation

The first objective of the study was to establish whether selection criteria determine the successful incubation of ICT start-up firms in Kenya. Table 4.4 indicates that 50.8% of the respondents agreed that the selection of potential ICT business incubatee was based on prior experience of the management team, 57.9% agreed that the selection for potential business incubatee was based on accessibility of target market and 51.8% agreed that the selection for potential business incubatee was based on incubates potential in creating new markets.

Sixty six point six percent of the respondents agreed that the selection for potential business incubatee was based on prior technical expertise, 77.1% agreed that the selection for potential business incubatee was based on product characteristics and 61.4% agreed that the selection for potential business incubatee was based on potential to attract investment participation from venture capitalists. In addition, 80.7% of the respondents agreed that the selection for potential business incubatee was based on prior entrepreneurial experience, 81.6% agreed that the selection for potential business incubatee was based on financial capability of incubate and 85.1% agreed that the selection of the potential business incubatee was based on long-term strategic orientation to market growth. The mean score for responses in this section was 3.62 which indicate that majority of the respondents agreed that selection criteria was a key determinant of successful incubation of ICT start-up firms.

The findings corroborate with those in Kakati (2003) who revealed that entrepreneur quality, resource-based capability and competitive strategy are the critical determinants of a start-up’s viability and achievement. The screening practice of the first cluster (thorough on market and personal factors) seems best to be able to distinguish between successful and unsuccessful starting enterprises. The findings further agree with those in Lumpkin and Ireland (1988) who asserted that efficient screening procedures are vital for an incubator and identified dimensions that play a role. Further Hackett and Dilts (2004) concluded that the complexity of the tenant selection process impels an advisory board, both for economic (understanding of the market and new venture formation) and political (e.g. secure subsidies) reasons.
Table 4.4: Selection Criteria and Business Incubation

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly agree</th>
<th>Likert Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>The selection for potential business incubatee is based on prior experience of the management team</td>
<td>13.2%</td>
<td>26.3%</td>
<td>9.6%</td>
<td>28.9%</td>
<td>21.9%</td>
<td>3.2</td>
</tr>
<tr>
<td>The selection for potential business incubatee is based on accessibility of target market</td>
<td>9.6%</td>
<td>20.2%</td>
<td>12.3%</td>
<td>33.3%</td>
<td>24.6%</td>
<td>3.43</td>
</tr>
<tr>
<td>The selection for potential business incubatee is based on incubates potential in creating new markets</td>
<td>8.8%</td>
<td>31.6%</td>
<td>7.9%</td>
<td>27.2%</td>
<td>24.6%</td>
<td>3.27</td>
</tr>
<tr>
<td>The selection for potential business incubatee is based on prior technical expertise</td>
<td>7.9%</td>
<td>17.5%</td>
<td>7.9%</td>
<td>36.8%</td>
<td>29.8%</td>
<td>3.63</td>
</tr>
<tr>
<td>The selection for potential business incubatee is based on product characteristics</td>
<td>6.1%</td>
<td>11.4%</td>
<td>5.3%</td>
<td>59.6%</td>
<td>17.5%</td>
<td>3.71</td>
</tr>
<tr>
<td>The selection for potential business incubatee is based on potential to attract investment participation from venture capitalists</td>
<td>12.3%</td>
<td>19.3%</td>
<td>7.0%</td>
<td>48.2%</td>
<td>13.2%</td>
<td>3.31</td>
</tr>
<tr>
<td>The selection for potential business incubatee is based on prior entrepreneurial experience</td>
<td>0.0%</td>
<td>7.0%</td>
<td>12.3%</td>
<td>53.5%</td>
<td>27.2%</td>
<td>4.01</td>
</tr>
<tr>
<td>The selection for potential business incubatee is based on financial capability of incubatee</td>
<td>1.8%</td>
<td>7.0%</td>
<td>9.6%</td>
<td>58.8%</td>
<td>22.8%</td>
<td>3.94</td>
</tr>
<tr>
<td>The selection for potential business incubatee is based on long-term strategic orientation to market growth</td>
<td>0.9%</td>
<td>12.3%</td>
<td>1.8%</td>
<td>50.0%</td>
<td>35.1%</td>
<td>4.06</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td><strong>6.7%</strong></td>
<td><strong>17.0%</strong></td>
<td><strong>8.2%</strong></td>
<td><strong>44.0%</strong></td>
<td><strong>24.1%</strong></td>
<td><strong>3.62</strong></td>
</tr>
</tbody>
</table>
4.3.3 Financing and Business Incubation

The second objective of the study was to find out whether financing determines the successful incubation of ICT start-up firms in Kenya. Results revealed that 87.8% of the respondents agreed that their company had adequate funds for product development, 82.4% agreed that their company had adequate funds for marketing activities and promotion and 82.5% agreed that their company had adequate funds available for human resources. Furthermore, 85.9% of the respondents agreed that their company had adequate funds for networking, research, workshops and knowledge mobilization, 83.4% agreed that their company had adequate funds for innovative approaches, 86.6% agreed that their company was offered flexible lease agreements to meet our changing space needs and 75.5% agreed that their company had adequate funds for infrastructure needs. The mean score for responses in this section was 4.0 which indicate that majority of the respondents agreed that financing was a key determinant of successful incubation of ICT start-up firms.

The findings agree with those in Klein et al., (2001) who asserted that strong management support for implementation and availability of financial resources are more likely to demonstrate high quality implementation policies and practices and provide a conducive environment for implementation. The findings further agree with those in Nunes et al. (2006) who stated that enterprises are faced with a lack of knowledge repositories due to their limited budget. Knowledge is created, shared, transferred and applied through the organization’s members without the intervention of automated mechanisms that are usually found in large organizations. Moreover, employees develop common knowledge in order to organize their work and commonly, they engage in two-way communication since their number is small to facilitate enterprise growth.
Table 4.5: Financing and Business Incubation

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly agree</th>
<th>Likert Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Our company has adequate funds for product development</td>
<td>0.0%</td>
<td>9.6%</td>
<td>2.6%</td>
<td>58.8%</td>
<td>28.9%</td>
<td>4.07</td>
</tr>
<tr>
<td>Our company has adequate funds for marketing activities and promotion</td>
<td>0.0%</td>
<td>16.7%</td>
<td>0.9%</td>
<td>52.6%</td>
<td>29.8%</td>
<td>3.96</td>
</tr>
<tr>
<td>Our company has adequate funds available for human resources</td>
<td>0.0%</td>
<td>11.4%</td>
<td>6.1%</td>
<td>46.5%</td>
<td>36.0%</td>
<td>4.07</td>
</tr>
<tr>
<td>Our company has adequate funds for networking, research, workshops and</td>
<td>0.0%</td>
<td>11.4%</td>
<td>2.6%</td>
<td>52.6%</td>
<td>33.3%</td>
<td>4.08</td>
</tr>
<tr>
<td>knowledge mobilization</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Our company has adequate funds for innovative approaches</td>
<td>1.8%</td>
<td>10.5%</td>
<td>4.4%</td>
<td>50.9%</td>
<td>32.5%</td>
<td>4.02</td>
</tr>
<tr>
<td>Our company is offered flexible lease agreements to meet our changing</td>
<td>3.5%</td>
<td>3.5%</td>
<td>6.1%</td>
<td>64.0%</td>
<td>22.8%</td>
<td>3.99</td>
</tr>
<tr>
<td>space needs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Our company has adequate funds for infrastructure needs</td>
<td>7.0%</td>
<td>6.1%</td>
<td>11.4%</td>
<td>51.8%</td>
<td>23.7%</td>
<td>3.79</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td><strong>1.8%</strong></td>
<td><strong>9.9%</strong></td>
<td><strong>4.9%</strong></td>
<td><strong>53.9%</strong></td>
<td><strong>29.6%</strong></td>
<td><strong>4.00</strong></td>
</tr>
</tbody>
</table>

### 4.3.4 Monitoring and Evaluation and Business Incubation

The third objective of the study was to evaluate whether monitoring and evaluation determines the successful incubation of ICT start-up firms in Kenya. Table 4.6 illustrates that 68.4% of the respondents agreed that their company received business planning assistance from the incubator, 79.8% agreed that their company received administrative assistance and services from the incubator and 85.9% agreed that their company received operations-related advice from the incubator.

In addition, 81.6% of the respondents agreed that their company received business feasibility analysis assistance from the incubator, 93.8% agreed that interactions with incubator manager reduced the likelihood of company making expensive business
mistakes and 77.2% agreed that the incubator manager actively seeks ways to continuously improve the level of customer service satisfaction inside the incubator. Furthermore, 60.6% of the respondents agreed that their incubator ensured the quality of its services by regularly reviewing them, 76.3% agreed that their company spends appropriate amount of time interacting with other incubates, 66.7% agreed that their company receives production-related advice from the incubator and 71.9% agreed that the other incubatees teach alternate or new strategies for achieving business success. The mean score for responses in this section was 3.92 which indicate that majority of the respondents agreed that monitoring and evaluation was a key determinant of successful incubation of ICT start-up firms.

The findings are consistent with those of Nash et al (2009) who revealed that the common weak link of M&E systems is their failure to provide timely and useful feedback to site-level staff, district managers, program implementers, and other stakeholders in the form of information that enables the continuous improvement of quality, scale, access, equity, and impact. Monitoring ensures interventions are implemented as planned, identifies specific problems as they arise, and allows continuous feedback (Baker, 2000).

The findings also agree with those in Gorgens and Kusek (2010) who argued that there are constant and growing pressures on organizations around the world to be more responsive to demands from internal and external stakeholders for good accountability and transparency, there is an accompanying need for useful and usable results-based monitoring and evaluation systems to support the management of programs and policies.
Table 4.6: Monitoring and Evaluation

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly agree</th>
<th>Likert Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Our company receives business planning assistance from the incubator</td>
<td>4.4%</td>
<td>6.1%</td>
<td>21.1%</td>
<td>54.4%</td>
<td>14.0%</td>
<td>3.68</td>
</tr>
<tr>
<td>Our company receives administrative assistance and services from the incubator</td>
<td>3.5%</td>
<td>5.3%</td>
<td>11.4%</td>
<td>62.3%</td>
<td>17.5%</td>
<td>3.85</td>
</tr>
<tr>
<td>Our company receives operations-related advice from the incubator</td>
<td>1.8%</td>
<td>5.3%</td>
<td>7.0%</td>
<td>67.5%</td>
<td>18.4%</td>
<td>3.96</td>
</tr>
<tr>
<td>Our company receives business feasibility analysis assistance from the incubator</td>
<td>5.3%</td>
<td>2.6%</td>
<td>10.5%</td>
<td>55.3%</td>
<td>26.3%</td>
<td>3.95</td>
</tr>
<tr>
<td>Interactions with incubator manager reduce the likelihood of company making expensive business mistakes</td>
<td>0.0%</td>
<td>4.4%</td>
<td>1.8%</td>
<td>71.9%</td>
<td>21.9%</td>
<td>4.11</td>
</tr>
<tr>
<td>The incubator manager actively seeks ways to continuously improve the level of customer service satisfaction inside the incubator</td>
<td>5.3%</td>
<td>10.5%</td>
<td>7.0%</td>
<td>40.4%</td>
<td>36.8%</td>
<td>3.93</td>
</tr>
<tr>
<td>Our incubator ensures the quality of its services by regularly reviewing them</td>
<td>6.1%</td>
<td>3.5%</td>
<td>29.8%</td>
<td>32.5%</td>
<td>28.1%</td>
<td>3.73</td>
</tr>
<tr>
<td>Our company spends appropriate amount of time interacting with other incubatees</td>
<td>4.4%</td>
<td>7.0%</td>
<td>12.3%</td>
<td>25.4%</td>
<td>50.9%</td>
<td>4.11</td>
</tr>
<tr>
<td>Our company receives production-related advice from the incubator</td>
<td>5.3%</td>
<td>10.5%</td>
<td>17.5%</td>
<td>24.6%</td>
<td>42.1%</td>
<td>3.88</td>
</tr>
<tr>
<td>The other incubatees teach alternate or new strategies for achieving business success</td>
<td>4.4%</td>
<td>18.4%</td>
<td>5.3%</td>
<td>17.5%</td>
<td>54.4%</td>
<td>3.99</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td><strong>4.1%</strong></td>
<td><strong>7.4%</strong></td>
<td><strong>12.4%</strong></td>
<td><strong>45.2%</strong></td>
<td><strong>31.0%</strong></td>
<td><strong>3.92</strong></td>
</tr>
</tbody>
</table>
4.3.5 Training and Business Incubation

The fourth and last objective of the study was to investigate whether training determines the successful incubation of ICT start-up firms in Kenya. Table 4.7 shows that 87.7% of the respondents agreed that every new employee receives induction training, 68.4% agreed that learning about the duties of the job is included in the induction training and 78% agreed that on the job training is important and effective in improving employee performance. Seventy seven point two percent of the respondents agreed that training programs have helped inculcating the sense of team work, 61.6% agreed that through training programs, morale in the organization has improved and 78.9% agreed that staff exchange programs with other regional revenue improves work knowledge and productivity. Finally, 78.1% of the respondents agreed that the organization offers short training in form of seminars and 83.3% agreed that the organization offers short training in form of workshops. The mean score for responses in this section was 3.94 which indicate that majority of the respondents agreed that training was a key determinant of successful incubation of ICT start-up firms.

The findings agree with those in Hansson (2007) who found a positive association between the provision of training and company analyses of training needs, the existence of a written training policy, and the education level of employees. Hansson (2009) noted that market failures may be resulting in an underinvestment in training, and concludes that an often overlooked aspect of human capital management is the leadership skills of management. It’s not enough that employees be trained, but the organization must also develop the capability in its management to take full advantage of the improved employee skills.
Table 4.7: Training and Business Incubation

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly agree</th>
<th>Likert Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Every new employee receives induction training</td>
<td>3.5%</td>
<td>4.4%</td>
<td>4.4%</td>
<td>60.5%</td>
<td>27.2%</td>
<td>4.04</td>
</tr>
<tr>
<td>Learning about the duties of the job is included in the induction training</td>
<td>5.3%</td>
<td>5.3%</td>
<td>21.1%</td>
<td>20.2%</td>
<td>48.2%</td>
<td>4.01</td>
</tr>
<tr>
<td>On the job training is important and effective in improving employee performance</td>
<td>5.3%</td>
<td>8.8%</td>
<td>7.9%</td>
<td>29.8%</td>
<td>48.2%</td>
<td>4.07</td>
</tr>
<tr>
<td>Training programs have helped inculcating the sense of team work</td>
<td>4.4%</td>
<td>7.0%</td>
<td>11.4%</td>
<td>58.8%</td>
<td>18.4%</td>
<td>3.8</td>
</tr>
<tr>
<td>Through training programs, morale in the organization has improved.</td>
<td>1.8%</td>
<td>10.5%</td>
<td>6.1%</td>
<td>58.8%</td>
<td>22.8%</td>
<td>3.9</td>
</tr>
<tr>
<td>Staff exchange programs with other regional revenue improves work knowledge and productivity</td>
<td>6.1%</td>
<td>11.4%</td>
<td>3.5%</td>
<td>61.4%</td>
<td>17.5%</td>
<td>3.73</td>
</tr>
<tr>
<td>The organization offers short training in form of seminars,</td>
<td>5.3%</td>
<td>9.6%</td>
<td>7.0%</td>
<td>43.0%</td>
<td>35.1%</td>
<td>3.93</td>
</tr>
<tr>
<td>The organization offers short training in form of workshops</td>
<td>3.5%</td>
<td>3.5%</td>
<td>9.6%</td>
<td>50.0%</td>
<td>33.3%</td>
<td>4.06</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td>4.4%</td>
<td>7.6%</td>
<td>8.9%</td>
<td>47.8%</td>
<td>31.3%</td>
<td>3.94</td>
</tr>
</tbody>
</table>

4.4 Inferential Statistics

4.4.1 Bivariate Correlation

Table 4.8 displays the results of correlation test analysis between the dependent variable (successful incubation) and independent variables and also correlation among the independent variables themselves. Results on Table 4.8 show that successful incubation was positively correlated with all the independent variables. This reveals that any
positive change in selection criteria, financing, monitoring and evaluation and training led to improved business incubation at ICT firms.

Table 4.8: Bivariate Correlations

<table>
<thead>
<tr>
<th>Variable</th>
<th>Successful Incubation</th>
<th>Selection Criteria</th>
<th>Financing</th>
<th>Monitoring &amp; Evaluation</th>
<th>Training</th>
</tr>
</thead>
<tbody>
<tr>
<td>Successful Incubation</td>
<td>Pearson Correlation</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Selection Criteria</td>
<td>Pearson Correlation</td>
<td>0.523</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>0.000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Financing</td>
<td>Pearson Correlation</td>
<td>0.878</td>
<td>0.39</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td></td>
</tr>
<tr>
<td>Monitoring &amp; Evaluation</td>
<td>Pearson Correlation</td>
<td>0.847</td>
<td>0.396</td>
<td>0.879</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>Training</td>
<td>Pearson Correlation</td>
<td>0.888</td>
<td>0.51</td>
<td>0.905</td>
<td>0.812</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
</tr>
</tbody>
</table>

4.4.2 Regression Analysis

In order to establish the statistical significance of the independent variables on the dependent variable (successful incubation) regression analysis was employed. The regression equation took the following form.

\[ Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \epsilon \]

Where: \( Y = \) Successful ICT firms.

- \( X_1 = \) Selection criteria,
- \( X_2 = \) Financing
- \( X_3 = \) Monitoring and Evaluation,
- \( X_4 = \) Training

\( \epsilon = \) error term
In the model $a$ is the constant term while the coefficient $\beta_1$ to $\beta_4$ are used to measure the sensitivity of the dependent variable (Y) to unit change in the explanatory variable ($X_1, X_2, X_3, X_4$). $\epsilon$ is the error term which captures the unexplained variations in the model.

Table 4.9 shows that the coefficient of determination also called the R square is 85%. This means that the combined effect of the predictor variables (selection criteria, financing, monitoring and evaluation and training) explains 85% of the variations in successful incubation of ICT firms. The correlation coefficient of 92.2% indicates that the combined effect of the predictor variables have a strong and positive correlation with successful incubation of ICT firms.

**Table 4.9: Regression Model Fitness**

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>R</td>
<td>0.922</td>
</tr>
<tr>
<td>R Square</td>
<td>0.85</td>
</tr>
<tr>
<td>Std. Error of the Estimate</td>
<td>0.40034</td>
</tr>
</tbody>
</table>

Analysis of variance (ANOVA) on Table 4.10 shows that the combine effect of selection criteria, financing, monitoring and evaluation and training was statistically significant in explaining changes in successful incubation of ICT firms. This is demonstrated by a p value of 0.000 which is less than the acceptance critical value of 0.05. The results indicated that the overall model was significant, that is, the independent variables were good joint explanatory variables/determinants for successful incubation ($F=153.947$, P value =0.000).

**Table 4.10: Analysis of Variance (ANOVA)**

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.(p value)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>98.692</td>
<td>4</td>
<td>24.673</td>
<td>153.947</td>
<td>0.000</td>
</tr>
<tr>
<td>Residual</td>
<td>17.469</td>
<td>109</td>
<td>0.16</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>116.161</td>
<td>113</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 4.11 displays the regression coefficients of the independent variables. The results reveal that selection criteria, financing, monitoring and evaluation and training were statistically significant in explaining changes in successful incubation of ICT firms.

Regression results in Table 4.11 indicated that the relationship between selection criteria and successful incubation was positive and significant (b1= 0.173, p value, 0.006). This implies that an increase in selection criteria effectiveness by 1 unit leads to an improved successful incubation by 0.173 units. Regression results further indicated that the relationship between financing and successful incubation was positive and significant (b1=0.335, p value, 0.031). This implies that an increase in financing resources by 1 unit leads to improved incubation by 0.031 units.

Results further indicated that the relationship between monitoring and evaluation and successful incubation was positive and significant (b1= 0.497, p value, 0.001). This implies that an increase in monitoring and evaluation effectiveness by 1 unit leads to an improved incubation by 0.497 units. Finally the results revealed that training and successful incubation had a positive and significant relationship (b1= 0.668, p value, 0.000). This implies that an increase in training by 1 unit leads to an improved successful incubation by 0.668 units.

**Table 4.11: Regression Coefficients**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Beta</th>
<th>Std. Error</th>
<th>t</th>
<th>Sig.(p Value)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-3.109</td>
<td>0.309</td>
<td>-10.052</td>
<td>0.000</td>
</tr>
<tr>
<td>Selection Criteria</td>
<td>0.173</td>
<td>0.061</td>
<td>2.822</td>
<td>0.006</td>
</tr>
<tr>
<td>Financing</td>
<td>0.335</td>
<td>0.153</td>
<td>2.185</td>
<td>0.031</td>
</tr>
<tr>
<td>Monitoring and Evaluation</td>
<td>0.497</td>
<td>0.143</td>
<td>3.488</td>
<td>0.001</td>
</tr>
<tr>
<td>Training</td>
<td>0.668</td>
<td>0.166</td>
<td>4.038</td>
<td>0.000</td>
</tr>
</tbody>
</table>

From the above analysis, the optimal model for the study is as follows

\[ Y = -3.109 + 0.173X_1 + 0.335X_2 + 0.497X_3 + 0.668X_4 \]
CHAPTER FIVE

SUMMARY AND CONCLUSIONS

5.1 Introduction
This chapter finalises the study by proving the summary of key findings, conclusions and recommendations. The summary, conclusions and recommendations are aligned to the specific objectives of the study.

5.2 Summary
Chapter one discussed the problem statement and the objectives of the study. The study aimed to analyze the determinants of success of information and communication technology (ICT) business start-ups incubation in Kenya.

Chapter two discussed the literature review, that is, the theories backing the study. The empirical evidence of the study was also given.

Chapter three presented the research methodology

The chapter discussed the type of research design, population, and target population, sample, instruments to be used and data analysis.

Chapter four presented the findings.

The general objective of this study was to analyze the determinants of success of information and communication technology (ICT) business start-ups incubation in Kenya. A population of one hundred and sixty nine (169) respondents was drawn from all the employees at graduated ICT business firm. For purposes of collecting primary data, the researcher developed and administered a questionnaire and the results obtained were analyzed using Microsoft Excel and Statistical Package for Social Sciences (SPSS).

Study findings indicated that (65%) of the respondents was male and 35% were female. The findings imply that the ICT industry is a male dominated field. A majority of 36% of the respondents had been in service for a period of between 2 to 5 years and 64%
indicated between 6-10 years. Results also indicated that 35% of the respondents were at supervisory level, 49% indicated middle management and 16% indicated they were at top management. The findings imply that all the respondents were in management positions hence they had knowledge about incubation process hence accurate responses for the study.

The first objective was to establish whether selection criteria determine the successful incubation of ICT start-up firms in Kenya. The results revealed selection criteria were a key determinant of successful incubation of ICT start-up firms. This was demonstrated by the mean score of responses of the respondents and the regression results. Selection criteria were found to be statistically significant in explaining successful incubation of ICT firms.

The second objective was to find out whether financing determines the successful incubation of ICT start-up firms in Kenya. Results showed that financing influenced successful incubation of ICT firms as this was demonstrated by the mean score of the responses and the regression analysis. The correlation between financing and successful incubation was also found to be strong and positive.

The third objective of the study was to evaluate whether monitoring and evaluation determines the successful incubation of ICT start-up firms in Kenya. The study findings showed that monitoring and evaluation was a key ingredient of successful incubation of ICT firms. Monitoring and evaluation was found to be statistically significant.

The fourth and final objective was to investigate whether training determines the successful incubation of ICT start-up firms in Kenya. It was found that training was important to firm’s success and was statistically significant.

5.3 Conclusions

From the study, it was possible to conclude that there was an increasing success trend in ICT firms after incubation. Results also led to conclusion that there was increased growth in number of employees, technology advancement and improved levels of funding from equity.
Selection criteria were found to be statistically significant in explaining successful incubation of ICT firms. It is therefore possible to conclude that business incubators follow a more systematic approach in their selection processes in order to recruit the most innovative ideas, and then provide them with business development services to ensure a high success rate.

Financing was found to be effective in driving successful incubation of ICT firms. It can be concluded that the firms had adequate funds for product development, marketing activities, human resources and adequate funds for networking, research, workshops and knowledge mobilization.

Monitoring and evaluation was found to be a key determinant of successful incubation of ICT start-up firms. The study concludes that there were effective monitoring and evaluation policies in place at the firms which ensured that the incubation process was a success. The firms received business planning assistance, administrative assistance and services, operations-related advice and business feasibility analysis assistance from the incubator to enhance successful incubation.

Training was found to be a key determinant of successful incubation of ICT start-up firms. It was possible to conclude that staff competence was highly emphasized in the firms. Results led to a conclusion that all employees received induction training and all the learning was incorporated on the job training. Results revealed that on the job training was important and effective in improving employee performance; training had improved the employees’ knowledge gap about the firms, which helped them to adjust comfortably to the work environment.

5.4 Recommendations

Based on the results, findings and conclusions the following recommendations have been deciphered. The study recommends that ICT business incubators should follow a more systematic approach in their selection processes in order to recruit the most innovative ideas, and then providing them with business development services to ensure a high success rate. Systematic approach in research consists of enunciating the problem, formulating a hypothesis, collecting the facts or data, analyzing the facts and reaching certain conclusions either in the form of solutions towards the concerned
problem or in certain generalization for some theoretical formulation. On the other hand ICT business incubators should focus on match-making between incubated companies and potential investors in order to ensure the success of the ICT start up businesses.

It is also recommended that firms should invest enough resources to ensure that their objectives and goals are met without constraints. Specifically, they should invest in a robust product development, marketing activities and the human resources.

The study recommends that ICT business incubators should focus more on the success of the incubated and graduated businesses through increasing the investment potential through matchmaking. According to Hacket &Dilts 2004 there are five different mutually exclusive outcome states at the completion of the incubation process used to define graduated business success, These are:- a) The incubate is surviving and growing profitably, b)The incubate is surviving and growing and is on the path towards profitability, c) The incubatee is surviving but is not growing and is not profitable or is only marginally profitable. d) Incubatee operations were terminated while still in the incubator, but losses were minimized. e) Incubatee operations were terminated while still in the incubator, and the losses were large. On the other hand, ICT business incubators should focus on continuous improvement processes of the incubated firms and its operations in order to ensure the customer satisfaction. It is recommended to the management that they should focus more on overcoming the problems and challenges facing graduation projects through effective monitoring and evaluation practices.

The study further recommends that staff competence be emphasized in the firms as it has an effect on the overall achievement of its goals and objectives. Therefore the management is urged to ensure that career growth, training and development on reward and motivation are emphasized. Finally, the study recommends that the management ensures that employees are satisfied on job design and responsibilities, working environment and management style.

5.5 Suggested Areas of Further Research

Arising from the findings and the gaps in the study a replica study is recommended in order to test whether the conclusions of this study will hold true. Another study could
be carried out on market and needs assessment surveys that are suitable for ICT business incubation and the role of ICT business incubators in reducing unemployment in Kenya.

A study of failed graduated ICT business would be important to understand the reasons of failure and the necessary interventions.

This study found no evidence of ICT Business incubation outside Nairobi. A research study is therefore recommended to establish the factors that influence this kind of skewed geographical distribution and make recommendations that can enhance regional balance as enshrined in the constitution, Vision 2030 and National ICT Masterplan.

A study comparing the mortality rate of incubator graduated ICT business with that non incubated would be recommended to establish the effectiveness of the ICT incubators.
REFERENCES


Upagade, V. & Shende, A. (2012). Research Methodology. S. Chand & Company Ltd., New Delhi, India


APPENDICES

Appendix 1: Introduction Letter

Date: ………………..

Dear Respondent,

RESEARCH QUESTIONNAIRE FOR EMPLOYEES

I am a graduate student of Master of Science in Information Systems at University of Nairobi. I am carrying out a study on “determinants of success in information and communication technology (ICT) business start-ups incubation in Kenya”.

It would be of great value if you could share your wealth of knowledge by completing the attached questionnaire. Your answers will be handled with highest anonymity and confidentiality; this will be achieved by no indication of names. Kindly return the completed questionnaire to me.

Regards,

Michael Riunge
Appendix II: Questionnaire

This questionnaire is divided into four short sections that should take only a few moments of your time to complete. Please respond by ticking the appropriate box or filling in your answers in the blank spaces provided. This is an academic exercise and all information collected from respondents will be treated with at strict confidentiality.

Thank you very much for your cooperation

SECTION 1: BASIC INFORMATION

1. Indicate your gender
   a) Female
   b) Male

2. Department your working
   a) Administration
   b) Accounts and finance
   c) Risk and Compliance
   d) Human Resources
   e) Operations and IT

3. Position in your department
   a) Top management
   b) Middle Management
   c) Supervisory
   d) Owner

3. Level of education
   a) College
   b) University
   c) Post graduate

4. How long have been employed in your organization
   a) less than 1 year
   b) 2 to 5 years
c) 6 to 10 years

Section B: Selection Criteria and Business Incubation

This subsection is concerned with investigation of whether selection criteria determine the successful incubation of ICT start-up firms in Kenya. Please mark (x) in the box which best describes your agreement or disagreement.
<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly disagree=1</th>
<th>Disagree=2</th>
<th>Neutral=3</th>
<th>Agree=4</th>
<th>Strongly agree=5</th>
</tr>
</thead>
<tbody>
<tr>
<td>The selection for potential business incubatee is based on prior experience of the management team</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The selection for potential business incubatee is based on accessibility of target market</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The selection for potential business incubatee is based on incubates potential in creating new markets</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The selection for potential business incubatee is based on prior technical expertise</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The selection for potential business incubatee is based on product characteristics</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The selection for potential business incubatee is based on potential to attract investment participation from venture capitalists</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The selection for potential business incubatee is based on prior entrepreneurial experience</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The selection for potential business incubatee is based on financial capability of incubatee</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The selection for potential business incubatee is based on long-term strategic orientation to market growth</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Section C: Financing and Business Incubation**

This subsection is concerned with investigation of whether financing determines the successful incubation of ICT start-up firms in Kenya. Please mark (x) in the box which best describes your agreement or disagreement.
<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Our company has adequate funds for product development</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Our company has adequate funds for marketing activities and promotion</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Our company has adequate funds available for human resources</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Our company has adequate funds for networking, research, workshops and knowledge mobilization</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Our company has adequate funds for innovative approaches</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Our company is offered flexible lease agreements to meet our changing space needs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Our company has adequate funds for infrastructure needs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Section D: Monitoring and Evaluation and Business Incubation**

This subsection is concerned with investigation of whether monitoring and evaluation determines the successful incubation of ICT start-up firms in Kenya. Please mark (x) in the box which best describes your agreement or disagreement.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Our company receives business planning assistance from the incubator</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Our company receives administrative assistance and services from the incubator</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Our company receives operations-related advice from the incubator</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Our company receives business feasibility analysis assistance from the incubator</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interactions with incubator manager reduce the likelihood of company making expensive</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
business mistakes

The incubator manager actively seeks ways to continuously improve the level of customer service satisfaction inside the incubator

Our incubator ensures the quality of its services by regularly reviewing them

Our company spends appropriate amount of time interacting with other incubatees

Our company receives production-related advice from the incubator

The other incubatees teach alternate or new strategies for achieving business success

Section E: Training and Business Incubation

This subsection is concerned with investigation of whether training determines the successful incubation of ICT start-up firms in Kenya. Please mark (x) in the box which best describes your agreement or disagreement.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Every new employee receives induction training</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Learning about the duties of the job is included in the induction training</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>On the job training is important and effective in improving employee performance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Training programs have helped inculcating the sense of team work</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Through training programs, morale in the organization has improved.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Staff exchange programs with other regional revenue improves work knowledge and productivity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Statement</td>
<td>Strongly disagree</td>
<td>Disagree</td>
<td>Neutral</td>
<td>Agree</td>
<td>Strongly agree</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>-------------------</td>
<td>----------</td>
<td>---------</td>
<td>-------</td>
<td>----------------</td>
</tr>
<tr>
<td>The organization offers short training in form of seminars,</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The organization offers short training in form of workshops</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

What other factors determine the success of ICT firms? Explain
........................................................................................................................................................................
........................................................................................................................................................................
........................................................................................................................................................................

Thank you for participation