AN INVESTIGATION INTO THE ROLE OF IMPROVISATION IN INFORMATION TECHNOLOGY PROJECT MANAGEMENT IN SMALL & MEDIUM ENTERPRISES IN KENYA

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DECLARATION

This research project is my original work and has not been presented for examination to any other university. Neither the project nor part of it should be reproduced without prior authority of the author.

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D61/71349/2008

This research project has been submitted for examination with my approval as the University Supervisor

Signature ...................................... Date ......................................

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LECTURER, SCHOOL OF BUSINESS
DEDICATION

This project is dedicated to my mother who gave me a second-chance and taught me how to be obedient, hardworking, and to Always Trust in God.
ACKNOWLEDGMENTS

I would like to express my heartfelt gratitude for the encouragement and support of numerous individuals whose contribution directly or indirectly made the completion of this research project possible.

To my research supervisor, Dr. Nixon Muganda of the University of Nairobi for pointing me in the right direction through the course of my project and was especially patient and conscientious in providing me with invaluable guidance and support. Thank you for the constant encouragement and support.

To my parents who have been extremely supportive during the pursuit of my graduate studies and who in many ways have challenged me to be better. Mum and dad, this one is for you. To my sisters Bridget and Angela whose support and encouragement is greatly appreciated.

Last but not least to my fiancée Judy, whose love and support kept me off the brink of madness. Thank you.
ABSTRACT

Project Management standards and practices such as the Project Management Body of Knowledge from PMI and PRINCE2 a standard for information systems project management provide guidance and tools for the effective management and control of IT projects. These standards are of increasing importance to organizations around the world in today's global economy since IT is seen as a source of competitive advantage for firms. Knowledge about these standards and use of best practice and possibilities for their use in IT projects is therefore important. However, SME's have not embraced these standards/practices in their IT project management and largely follow improvised processes and other unplanned behaviours. The major aim of this paper is to understand the role of improvisation and how it unfolds within the context of IT project management in SMEs in Kenya. Improvisation herein is understood to encompass the related concepts and constructs of intuition, innovation, creativity, experimentation, reflexivity, subjectivity, modification, workarounds and best practice within the SME domain. Moreover, this work offers an overview of the principal unanswered questions related to improvisation in IT project management in SMEs in Kenya and identifies possible future directions for both theoretical and methodological improvements. Benefits to entrepreneurs, researchers, academicians, and industry are numerous including learning of best practice, enhanced IT project management practice in SME, and improved IT service quality, but there are challenges too, in particular, how to effectively transfer the knowledge and practice to SMEs who want the competitive business advantage provided by IT but lack the capacity to implement IT projects.
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CHAPTER 1 INTRODUCTION

1.0 Background

Improvisation, derived from the Latin word “improviso” is defined as “situated performance where thinking and action occur simultaneously and on the spur-of-the-moment” (Ciborra, 1999). Information and communications technology (ICT) has a key role to play in driving innovation and competitiveness for small businesses. A project is a temporary endeavour undertaken to create a unique product, service, or result. Projects are distinct from operations due to their unique nature. Operations are repetitive, projects are one off endeavours. As with any new venture there is uncertainty/risk which has to be managed.

Structured analysis and design methodologies such as Software Development Life Cycle assume that plans and decisions can be analysed and executed objectively, and deny the intrinsic improvised nature of decision-making and action (Garfinkel, 1974 in Currie & Galliers, 1999). In my interpretation, the concept of improvisation – the ability to perform or provide something on the spur of the moment – stresses the personal creativity, flexibility and expertise that are necessary for the improviser. Both expertise and creativity are needed to be able to react swiftly and in a suitable manner, a manner that fits in with all the relevant aspects of a certain situation (Verjans, 2005). The improvisation argument presented by Ciborra reveals the “messiness of everyday practices” and affirmed the existence of bricolage ( French word that means to use whatever resources and repertoire one has to perform whatever task one faces) and doing with available resources. IT projects are capital intensive. The IT department is a cost centre without a revenue stream to offset its cost structure. Hence, it is totally reliant on the revenue-producing units within the company to pay its way. I.T. spending, has been comparable to anywhere from
40% to 75% of corporate economic value-added in recent years (CIO magazine Nov 2007). The roles of a manager is identified as Planning, Organizing and staffing, Directing and leading, Controlling. These roles imply a structured approach to Project Management as opposed to the open-free style evident in SMEs. Mintzberg (1994) in (Elbanna, 2006) describes the “fallacy” of the prescriptive planning approach. He theorises that this provides an idealised view of how strategies are supposed to be made, in contrast to the reality of how they are actually made.

Ciborra proposes that low-cost and low-risk projects enjoy a relaxed managerial approach that encompassed “releasement”, “nurturing”, and “cultivation”, versus a formalised strategic planning regime. He stated, “if nobody seems to have a clue where all this will lead to, nobody seems to be panicking about it either” (Ciborra, 2000). SMEs generally enjoy this relaxed managerial approach where there are no formalised governance systems and structures. For the implementation of the information systems, SME owners have to decide among different options: developing on-site solutions, buying off the shelf packages or outsourcing the systems. Each one of these options implied other types of decisions, modalities and lines of action. For example, if the decision were to buy off the shelf solutions, then questions about the requirements and adaptations to the packages have to be answered as well as particular ways of implementing the system. Many a time the users improvise an appropriate answer to an uncertain context; e.g. the decision to outsource is an act of improvisation (Siva, 2001).

Improvisation is more important now as companies face changing business processes which are a result of the latest round of IT innovations: the increased use of Web services, the adoption of handheld devices, and the integration of multiple electronic sales and service channels such as
Web sites, call centres, ATMs, and mobile phones. Improvisation is seen when IT/Business executives make decisions about IT management such as the choice of technology standards, the technical expertise the organization will need, the standard methodology for implementing new systems. In SME's these decisions are made by one individual (the owner/proprietor) and often by default, these choices determine the impact of IT on a company's business strategy. Much has been written concerning improvisation, strategy formulation and implementation (Perry, 1991). These studies acknowledge actions that provide for reflexivity, in the sense that activities could be done in more than one way and each way finely fitting the situation (Scribner, 1984).

1.1 Small Medium Enterprise (SME) Sector

Small and medium-sized firms are the drivers of the Kenyan economy. They employ about 7.5 million Kenyans or 80 per cent of the country's total employment outside the small-scale agriculture. But little has been understood about their operations, ownership, source of capital and the key challenges that they face as they propel growth of the Kenyan economy (Business Daily, Oct 4 2009). The SME sector is the sector in which most of the world’s poor people are working (Stern, 2002). The sector contributes significantly to employment creation. Accordingly, many government policies are geared toward supporting SME sector growth through a variety of programs such as the 2010/11 budget which contained effective policies for helping small and medium enterprises (SME) to boost overall national development.

Small and Medium Enterprises (SMEs) are widely defined in terms of their characteristics, which include the size of capital investment, the number of employees, the turnover, the management style, the location and the market share (Kasekende and Opondo, 2003).
Table 1 Characteristic of SMEs

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Informal Operator/survivalist</td>
<td>No employees, Does not keep records, Does not pay taxes, Is not registered with any authority, Engages in business activities to pay for daily and weekly expenses</td>
</tr>
<tr>
<td>Informal micro or small business</td>
<td>Less than 10 employees, May not keep records, May not pay taxes, May not be registered with any authority, Has physical address and contact details</td>
</tr>
<tr>
<td>Formal micro or small business</td>
<td>Between 10 and 49 employees, Keeps records, Pays taxes, Is registered with all required authorities, Has physical address and contact details</td>
</tr>
</tbody>
</table>


According to the Ministry of Industrialization, one of the challenges facing SMEs in Kenya is the lack of managerial training and experience where the typical small business owner develops and uses their own approach to management, through a process of trial and error instead of using formal business management methods. As a result, their management style is likely to be more intuitive than analytical, more concerned with day-to-day operations than long-term issues, and more opportunistic than strategic in its concept (Hill, 1987). Inadequate education and skills is another key concern where the majority of those who run SMEs are ordinary lot whose educational background is lacking hence they may not be well equipped to carry out managerial routines for their enterprises (King and McGrath, 2002).

Finance is another constraint and the lack of credit and financial muscle to operate for SME is a challenge. SMEs don’t have access to credit hence always operating on a tight budget where
focus is on short-term returns. A key concern for the business thus becomes how to find additional capital to expand (Kasekende and Opondo, 2003). Additionally, a clear government policy to guide SME development is not in operation thus SME fail to grow beyond the traditional “family business” into either regional and/or global reach. As a developing country, Kenya still lags behind with respect to key infrastructure commitments such as roads, electricity, water, communication, etc. Good infrastructure is a pillar of a sound business and without it the business is weakened in its operations. This condition gives rise to a new challenge which is the uptake of new information technology in SME. Poor infrastructure means SME don’t have exposure to the new technologies which if implemented may offer a substantial cost reduction to the business and offer a competitive advantage for the SME.

From this we can derive the key constraints in IT Project Management in SME's which lead to improvisation in the course of development and implementation of a IS as (i) lack of high-level entrepreneur/proprietor and management support within SME to develop and/or implement the IS; (ii) poor communication between the SME management and between government and SME industry; (iii) lack of resources (human, financial and technological) within SME to develop, implement and sustain the IS; (iv) lack of experienced or knowledgeable staff within SME, as it relates to the IS. When evaluating the decision-making process in SME environment, there is much more intuition, instinct, subjectivity, and background experience that feeds into this process. Resources are limited and there is one leader in form of the entrepreneur/founder. All decisions are made by the one person and many a time the choice is determined by the existing environment, budget and capacity and not planned action as in the schedule.
1.2 Statement of Problem

The focus of this study is that improvisation that contributes to individual and organization effectiveness in managing IT projects in SME in Kenya. The improvisation activities which translate to a reduction in IT project management costs thus increased returns and operational effectiveness for the SME. Moussa & Schware (1992) in a study of information systems in Africa found that for 29% of systems, the intent or purpose of the information system was unclear, and for 27%, the systems were not relevant to the organisational objectives. These problems relate to the lack of a clear understanding of the needs of the relevant stakeholders. A problem recognised as being one of the top three reasons for information system failure (Schmidt et al., 2001; Axtell et al., 1997 in Fisher, 2003). IT has become a common feature in modern business as it has the potential to enhance performance, at the operational and strategic level (Arshust, 2008). In the SME sector, IT is seen as a tactical imperative and not a strategic imperative with respect to the business environment. This means IT project management does not enjoy the top-level strategic thinking and planning of the business.

1.3 Research Questions

The nature of this research extends an analytical understanding of collective improvisation in IT Project Management activities and proposes the following research questions that contextualise the issue;

1. What role does improvisation play in IT projects in Kenya SME?

2. What are the determinants of improvisation success?

3. What are the determinants of improvisation challenges?

4. What are the critical success factors for the projects which succeed?
1.4 Objectives of Study

The objectives of this study were:

1. To establish the proportion of IT projects in Kenya SME that use Improvisation and determine those which fail and/or succeed.

2. To identify the critical success factors for IT projects that use improvisation and to develop a model for IT Project Management in using improvisation.

1.5 Importance of Study

The aim of the study is to contribute towards an understanding of the nature of the role of improvisation in IT project management in SME's.

1.5.1 Researchers and Academicians

The study will be of great importance to researchers and academicians who seek to understand why micro and small enterprises use improvisation in IT Project Management apart from the standard PM approach.

1.5.2 Small and Medium Enterprises

The study will assist micro and small enterprises by giving a model of smart improvisation in IT projects that will probably giving them a better chance of survival, growth and success in the global competitive corporate setting.

1.5.3 Government of Kenya

The government of Kenya can use this research paper to design policies that are meant to
enhance ICT uptake in SMEs. It is useless to provide easy access to credit for SME without proper policies to implement and manage the technology which is meant to contribute significantly to the growth and development of Kenya.

1.5.4 Economy of Kenya

Micro and Small enterprise play a significant role in socio-economic development process of Kenya by contributing significantly to overall growth in terms of Gross Domestic Product, creating employment and exports. They are the backbone of any economy.
CHAPTER 2 LITERATURE REVIEW

2.0 Introduction
This chapter presents a review of the literature on the basis of the research questions: the proportion of IT projects in SME that makes use of improvisation, the determinants of improvisation success &/or challenges and the critical success factors for the projects which succeed.

2.1 Project Management (PM)
PM is the application of knowledge, skills, tools and techniques to project activities to meet project requirements. PM is accomplished through the application and integration of the project management processes of initiating, planning, executing, monitoring and controlling, and closing. The project manager is the person responsible for accomplishing the project objectives (PMBOK Guide, 2004).

Information and communications technology (ICT) has a key role to play in driving innovation and competitiveness for small businesses and the IT sector itself. Information technology can help reduce costs, enable more efficient development processes and bring products to market more quickly than in the past (Esselar et al, 2008). From a practical point of view, this can mean simple things, like electronic payments systems, e-learning, e-government, communication & collaboration. IT Projects are short-term efforts to create a unique product, service or environment, such as removing old servers, developing a custom e-commerce site, implementing a new Local Area Network (LAN) or an internet connection. All projects are constrained by three factors: time, cost and scope. For a project to be successful, these three constraints must be in
equilibrium. If any constraint is out of balance, the project is heading for disaster (PMBOK Guide, 2004). IT projects move through five phases in the project management lifecycle - initiating, planning, executing, monitoring and controlling, and closing. Each phase contains processes that move the project from idea to implementation.

2.1.1 Traditional Structured Methodologies

The introduction of new information technology has traditionally been conceptualized as planned in advance and implemented in a discrete, discontinuous episode (Yates, 2007). Nevertheless, many researchers and practitioners have also recognized that change rarely proceeds exactly as planned - an outcome generally seen as negative (Orlikowski, 1996). However, in a later paper (Orlikowski, 1997) suggests a new way of managing technological change, one that reflects the dynamic and variable nature of contemporary organizations and technologies and which accommodates iterative, experimentation, use and learning over time. He labels such a model of managing change 'improvisational' and suggests that it may enable organizations to take advantage of the evolving capabilities, emerging practices and unanticipated outcomes that accompany the use of new technologies in contemporary organizations.

Hanseth, (2002) presents a theory suggesting that most well established approaches to IS development and software engineering are implicitly built upon "theories" of IS which, may be, was appropriate when the IS field was established, but which are not so with regards to the kind of IS solutions we are building today and that is widely believed to be in focus in the years to come. Such theories require that we change some of our most fundamental concepts - in many cases we should give up the notion of (information) system and replace it with (information)
infrastructure - the new undersea fibre network gives Kenya access to high-speed internet (information infrastructure). For SMEs, this opens the door to global markets and for sharing & collaboration with peers. This promotes the generation & exchange of knowledge which is a key ingredient for development & financial freedom (Mchombu et al, 2004).

Suchman, (1987) refers to the two different approaches to open sea navigation -- the European and the Trukese:

“The European navigator begins with a plan -- a course -- which he has charted according to certain universal principles, and he carries out his voyage by relating his every move to that plan. His effort throughout his voyage is directed to remaining "on course." If unexpected events occur, he must first alter the plan, and then respond accordingly. The Trukese navigator begins with an objective rather than a plan. He sets off toward the objective and responds to conditions as they arise in an ad hoc fashion. He utilizes information provided by the wind, the waves, the tide and current, the fauna, the stars, the clouds, the sound of the water on the side of the boat, and he steers accordingly. His effort is directed to doing whatever is necessary to reach the objective” (Berreman 1966, p.347). Like in Suchman, (1997) we see a discrepancy between how people think about IT projects management and how it's done - 'design-actuality gap' (Heeks, 2002). Additionally, suggest that this discrepancy contributes to the challenges and/or successes that SMEs face in the implementation of IT projects.

2.1.2 SME Positionality

The SME environment is highly dynamic and lacks the governance systems and structures to be found in big companies. As defined by Maher and Tetreault, (1994) positionality is a term used
to describe how people are defined, that is "not in terms of fixed identities, but by their location within shifting networks of relationships, which can be analyzed and changed" (1994, p.164). Furthermore, we conceptualize positionality as the relational place or value one has that influences and is influenced by varying contexts (e.g., social, political, historical, educational, and economical to name a few) (Louise and Barton, 2002).

Calabrese Barton, (1998) discusses using positionality as a lens through which to view interactions between teachers and parents. We use this analogy to view interactions between IT projects in SMEs and the IT project managers and/or business owner. The IT project manager need to be aware not only of the values and beliefs they bring to interactions and how they position business owner, but also of the values, beliefs, and actions that business owner use to position themselves. Studies of IT infrastructure adaptation show that infrastructural technologies are shaped in situated contexts (Ciborra et al., 2000) and that local workarounds and “situated improvisations” are not anomalies or design shortcomings but constitutive elements of working technologies (e.g. Braa & Hanseth, 1998; Jarulaitis & Monteiro, 2009).

2.1.3 Systems Theory

From systems theory we can look at an organization as a system with its components being customers, suppliers, employees, network, information systems, etc. In SME, a new IS has to be integrated into the existing work-flow of the business. For the system to be successful in the business, it must be embedded into the fabric of organisational culture, process and workflow.
2.1.4 Subjectivity

This integration presents numerous risks and brings to light the complexity of the information system and its social and organizational context from which it cannot be separated (Hanseth 2007). Such implementation projects are filled with various external events, decisions within the project and side effects of these, which have unintended interactions that trigger further decisions and side effects, which trigger further decisions and side effects – chain reaction.

Improvisation - reflexivity & subjectivity plays a critical role in these cases where experience, vision and intuition of the project manager are used. To integrate the idea of subjectivity and reflexivity precisely is to constitute a body of knowledge that is self-aware of its bias and limitations (Guillaume, 2002). Within the context of this research, Subjectivity refers to the life experiences that the IT project manager has had as well as the social, cultural, and political factors that influence an individual and how those experiences and factors contribute to biases and assumptions. Ratner (2002) argues that in subjectivism, all viewpoints are simply another way of approaching a thing but none of them delivers any information about the thing itself. For instance, as an entrepreneur my view that the server should be a 'HP' and your view as the systems developer that it should be ‘Dell’ have equal truth value - namely, none at all. Whether one favours one or the other is simply a matter of how interesting they appear as brands of computers.

2.1.5 Standards and Flexibility

Standardised systems such as ICTs tend to become accumulatively change resistant as they grow and diffuse (Egyedi 2002; Hanseth et al. 1996). Flexibility in the development & implementation
of information systems to allow for their growth and change is important. The primary use-case for IT in SME's is email & internet. Additionally, some may require accounts, human resources, e-commerce, etc. systems and these IT solutions must have the capacity to support communication, collaboration and information exchange between any units (people, organizations, information systems) globally (Hanseth, 2002).

Two forms of flexibility can be identified: use and change flexibility (Hanseth et al. 1996). A standards total flexibility is the sum of these two. Use flexibility refers to the ability to use a standard in a number of different environments, or for a number of different purposes. SDLC for example is a standard for systems development. However, the same cannot be used &/or adapted for systems development in a resource constrained environment like SME and as such is rarely used. Change flexibility (and scalability) is achieved through the classical principle of modularization. This principle is crucial in software engineering and systems implementation.

The available range of software/systems available for example accounting offer much more than simply cash management and receipting which is the basis of many SME requirements. Conversely, these systems do not give the business owner the flexibility to start small and build as the business grows - modularity. Flexible standards must be simple and easy to change and at the same time support a wide range of work practices. (Hanseth et al, 2007). SMEs are found in wide range of industries though the business environment is largely similar. Thus, there is need for simple, easy-to-use and flexible standards that are adaptable to each environment. An ERP for instance can be conceptualized as a package of standards. It builds on existing technical standards such as the operating systems, databases, and network standards (Hanseth et al, 2006).
2.1.6 Quality

According to the Software Engineering Institute the US economy loses up to US$ 60B dollars annually because of poor software quality (NIST report, 2002). Most errors (60%) in the software come from wrong requirements. In SMEs, the entrepreneur generally make decisions based on referrals &/or the experience of other people. For example, if QuickBooks accounting system worked well for business A then business B would expect the same to be true to them. However this is not the case because of different requirements for the different businesses. Additionally, poor acquisition practices are another major cause for poor software quality which in turn results in IT project failure. This complexity can be defined here as the dramatic increase in the number and heterogeneity of included components, relations, and their dynamic and unexpected interactions in IT solutions. Unfortunately, software engineering principles and design methodologies have not scaled up creating a demand for new approaches to better cope with this increased complexity (Hanseth and Lyytinen, 2010). SMEs need the information system (IS) to manage the business but they lack the technical knowledge/capital to either purchase a proprietary system or develop one in-house. The viable option is to go the open-source route but again open-source doesn't mean it’s free - costs of customization, implementation, patching, upgrade, etc. Lack of a model to guide SME's on best practice for software acquisition implementation contributes to increase in IT project failures in SMEs (Agustin et al, 2004).

2.2 Improvisation

Improvisation, derived from the Latin word ‘improviso’ is defined as ‘situated performance where thinking and action occur simultaneously and on the spur-of-the-moment’ (Ciborra 1999). According to Ciborra (1999), collective improvisation refers to the combined improvisational
effort of several individuals or organizations. It is purposeful human behaviour which seems to be ruled at the same time by chance, intuition, competence, and outright design. It challenges the received theories of information systems and provides an opportunity to reflect in a new light upon key IS concepts such as the structure of the individual and organizational decision-making; the nature of business process in markets; the data vs. information distinction; and last but not least the scope for new generations of technology to support or enable business processes of an improvised nature. For example, in Kenya SME e-payments using M-Pesa - an improvised business process which is fully supported by new technology (mobile telephone).

2.2.1 Improvisation approach in IT projects

Improvisation studies by Ciborra et al (1996; 1997, 2000) are based on empirical studies of open ended and highly tailored technologies such as groupware, intranets and the Internet. These studies focused on the use and ongoing accommodation of such customisable technologies that are so general at the user front (Orlikowski, 1996). Amany (2006) presents the improvisation argument in the implementation of a rigid highly structured technology. She investigates whether the implementation of such technology represented by Enterprise Resource Planning (ERP) accommodates improvisation argument, contrasting Ciborra's research on malleable open-ended technology. It focuses on investigating the improvisation phenomenon in the rigid and highly structured technology of ERP systems and during its perceived highly structured implementation.

According to Peterson (1998:38), “The objective of systems development is the creation of a useful and sustainable information system.” This brings to light the question of knowledge and experience of both the SME business owner and the IT project manager. Shackleton (1996) posits that it was observed from a mixed class of young & mature undergraduate students that the
mature students were able to make use of their 'world knowledge' to suggest a greater range of possible project options than the younger students. This implies experience has a role to play in Project Management - something for policy makers in education sector to ponder about. Additionally, in many situations, predefining the requirements for the information system to be implemented and accurately predicting the design, development and implementation of the system is not possible. Hence, the structured models of system development that often inform the creation of new systems are less than ideal (Orlikowski and Hofman, 1997) and the question is what is the role of improvisation in these situations?

In my interpretation, the concept of improvisation as described by Ciborra – “the ability to perform or provide something on the spur of the moment” – stresses the personal creativity, flexibility and expertise that are necessary for the improviser. Both expertise and creativity are needed to be able to react swiftly and in a suitable and timely manner within the context of that situation. It is common practice that manuals, automated procedures, and instructions should not be followed blindly, but regarded as input, not always reliable, to get the job done (Zimmerman, 1973; Suchman, 1987).

2.2.2 Measurement of Improvisation

Improvisation in IT Project Management is measured using three constructs. Firstly is the concept of IT Infrastructure where in large-scale ICT infrastructure deployments, it has been observed that despite the tight managerial control, careful planning, risk management, and so on, ICT infrastructures tend to have a life of their own and result into improvised usages (Ciborra, 2004).
Secondly there is information system development where SME lack the resources for in-house IS development. A proprietary system is expensive and out of their reach but to increase the competitive advantage SMEs need to invest in Finance, Payroll, CSR, et cetera just like the big firms do albeit on a smaller scale. Lastly is the IS implementation where you consider the distinct competences of (experience, intuition, flexibility, personal reflexivity), each of which is underpinned by a variety of socially defined practices. The study seeks to measure the number of IT projects where these competencies are used and in the same light review the ICT uptake in SME and how ICT can contribute to a vibrant SME sector and economic growth in the context of developing economies.

2.3 Research Gaps in Literature

Many studies show that SMEs are the driving engine of growth, job creation, and competitiveness in domestic and global markets. They also play a pivotal role in innovation and productivity growth [Blackburn and Athayde, 2000]. However, the precise role of SMEs in providing employment and contributing to poverty alleviation remains unclear. Furthermore, existing studies e.g. Lyytinen & Hirschheim, 1987; Lederer & Nath, 1991; Ewusi-Mensah & Przasnyski, 1994; Doherty et al., 2003; Peppard & Ward, 2005) show that IT has become an increasingly ubiquitous and integral part of the modern organization as it has the potential to enhance performance, However, the implementation aspect of IT to SME business is unknown. Part of the problem is that there is a paucity of data around SMEs. Finally, of those SME surveys that have been done, the most conclusive have focused on issues such as access to capital and financial intermediation assuming that a key concern for any business is how to find additional capital to expand (Esselaar et al, 2007).
This study aims to investigate how IT projects within SMEs take into account emerging situations & circumstances and the role of these improvisations in the overall implementation of the IT project. Improvisation is often seen as the deviation from the norm of planning and rational decision making; but increased uncertainty, complexity, and environmental dynamics create new conditions for firms in which the ability to improvise becomes more important (Chelariu et al., 2002). My research posits that improvisation plays a big role in managing IT projects within SMEs and attempts to derive a model for this improvisation. The improvisations are seen at an individual level as responses to locally experienced triggers and leading to improved practices within specific projects. These micro-level improvisations are characterized by impulsiveness, utilize locally available resources and materials, and are not supported by organizational structures and leadership. Usually, the micro-level improvisations are mostly uncoordinated with the overall goals of the specific SME, highly situated, and rarely shared across different SME projects (Heeks, 2005).

2.4 Actor Network Theory (ANT)

In this study, actor-network theory (ANT) is applied to understand the construction of the concept of improvisation in IT Project Management in Kenya SMEs. Latour (1987) argues that science and technology have to be studied in action and that we have to focus on the dynamics of their interaction rather than on the stability of their relationships. Actor network theory is proposed as an analytical tool that provides the theoretical and methodological underpinning for the study of these dynamic relationships (Cordella and Shaikh, 2006).
ANT, developed in the 1980s by Callon, Latour, and Law (Hassard, Law, & Lee, 1999; Callon, 1991, 1999; Latour, 1987), has its roots in French philosophy and semiotics. It is distinguished from other network theories in that an actor-network contains not merely people, but objects and organizations. These are collectively referred to as actors. ANT has been used to describe the establishment of scientific theories and facts and working technologies as the building of dense socio-technical networks, where elements of various kinds (technologies, humans, institutions, etc. – called actants) are translated and enrolled onto the use of a network (e.g. Muganda, 2008). This research will use a minimalist version (Hanseth, 1998) of Actor Network Theory (ANT) to follow actors in IT project management in SMEs to see how they attempt to impose worlds upon one another, and to describe the dynamics and internal structures of actor worlds. ANT literally instructs us “to map out the set of elements (the network) that influence, shape, or determine an action. But each of these elements is in turn part of another actor-network and so forth” (Monteiro, 2000, p. 76).

2.4.1 The Concepts of Actor Network Theory

The following describes the concepts and components of actor-network theory (ANT) used in the study:

Actor/Actant - "They are a product of a more or less stable relationship between various effects that together form an actor-network” (Fountain, 1999). Refer to either human or non-human entities and can be endowed with interests, projects, desires, strategies, reflexes, and afterthoughts, with the ability to enroll other relevant actors.

Actor-networks - These are composed of a series of heterogeneous animate and inanimate elements linked to each other over time (Callon, 1991). They are a description of the way
things are, a set of assumptions about how relations are organized and networked.

ANT also informs this study as it is posited as an approach to structuring and explaining the links between society and technology. It suggests how technology is socially constructed. For example: Why does MS-Windows dominate the PC market? How is Linux becoming popular? Why does the same information system fail in one organisation and succeed in another? How is the e-government adoption process managed in Kenya local authorities? Within an actor network, the interests of various actors are translated and inscribed into technical and social arrangements. Through the processes of translation and inscription, actors’ heterogeneous interests become aligned with each other and embedded into technologies that stabilize the actor network, at least temporarily (Akrich, 1992; Callon, 1991).

2.4.2 Actors identified

The actors identified within the context of this research include:

IT capabilities - the possibility and/or right of the user to perform a set of actions on a computational object or process. An example of such capability would be a text editor.

Applications - consist of suites of IT capabilities. They are developed to meet a set of specified user needs within a select set of communities (Hanseth and Lyytinen, 2010). An example of such would be an accounting system.

Platforms - include, for example, office software platforms (MS Office, Open Office), operating system platforms (Windows, Linux), and application frameworks like ERP or CRM packages. Platform designs draw upon architectural principles that organize IT capabilities into frameworks allowing the software to address a family of generic functional specifications that meet the needs of multiple, heterogeneous and growing user
communities (Hanseth and Lyytinen, 2010). Consider, for example, the growth of the Linux operating system due to the increasingly distributed and open character of their design and user communities (Scacchi, 2009).

Entrepreneur - the SME business owner.

Devices - all hardware and peripherals engaged in the IT project. Example is servers, routers, switches, laptops, desktop PC and others.

Supplier/Vendor - stockists and resellers of IT equipment.

Government - Municipal councils involved in licensing and regulating business conducted within the city or area.

2.5 Framework development

According to Miles and Huberman, (1994) a conceptual framework is defined as a visual or written product, one that “explains, either graphically or in narrative form the main things to be studied – the key factors, concepts, or variables – and the presumed relationships among them” (p.18). Some of the key concepts identified and their influence on the role of improvisation in IT project management is identified are discussed below. Firstly is planned vs. situated action in which Suchman, (1987) suggests that designers ought to develop systems and programs that take into account the emerging circumstances of action. This extends Mintzberg, (1994) description of the ‘fallacy’ of the prescriptive planning approach and Heeks, (2002) ‘mismatch’ between local actuality (where we are now) and system design (where the system wants to get us – ‘design-actuality gap). Secondly is positionality where the environmental context of this study is SMEs (social, political, educational, and economical) and the interaction between the various concepts and relationships among them.
There is also the aspect of Subjectivity, Reflexivity and Flexibility in which improvisation is seen as a way of coping when time pressures, rapid shifting environments and lack of resources makes rational planning, decision processes, and knowledge creation difficult or even impossible (Ciborra, 1999; Cunha et al., 1999). Lastly there is the issue of change management. Orlikowski, (1997) proposes an alternative way for managing technological change in organizations. This approach is motivated by a recognition that traditional models for managing technological change – in which the major steps of these changes are defined in advance and the organization then strives to implement these changes as planned in a specified period of time – are not particularly useful given the more turbulent, flexible, and uncertain organizational situations that many companies face today.

The population in the study is the number of SMEs which have IT projects, the dependent variable (DV) is:

IT projects in SMEs - type of IT projects undertaken

The independent variables (IV) are:

- Improvisation – innovation, creativity, intuition, etc
- Size of SME – operationalized by measuring the number of employees and capital
- Type of business – determines level of improvisation
- Experience – operationalized by years of IT experience of the IT project manager
- Flexibility – of the IT systems/infrastructure in the SME to accommodate improvisation

The moderating variable e (MV) is:

Scope of IT projects - main use-cases of IT in SME's which influence type of project
Figure 1. The relationship between the IV - DV with a Moderator

CHAPTER 3 RESEARCH METHODOLOGY

3.0 Overview

Qualitative research design can be thought of as a rough sketch to be filled in by the researcher as the study proceeds (Frankel & Devers, 2000). This design requires the researcher to understand and consider the unique characteristics of specific research subjects and the settings in which they are located (Devers, 2000).

The research takes an Interpretivist research paradigm and seeks to underscore the importance of human interpretation to the business problem of managing IT projects in SME. This therefore means the existence of multiple subjective realities and interpretations that form the basis of 'improvisation' activities in the execution of IT project management in Kenya SMEs. The present study context is Kenya SMEs and inference from this group is challenging because little has been understood about their operations, ownership, source of capital and the key challenges that they face as they propel growth of the Kenyan economy (Kasekende and Opondo, 2003).

3.1 Research Strategy

The research employs a typical instance case study methodology where data collection about the case will be collected through interview and conversation analysis. Here the chosen SME group is typical of many others and can therefore stand as a representative for the whole class. This means that data analysis will involve using people's words, responses and other sources of evidence that cannot be quantified. The general research plan is flexible and will largely follow the information provided by the research subjects. It will use inductive reasoning where we make observations, analyse the patterns & themes that generate from these observations to formulate
relationships which is then used to develop theory. Essentially, form certain generalizations (in terms of theories, general laws or observations) by examining a set of particular observations that leads us to some conclusion (Muganda, 2010). This reasoning guides the research to be exploratory.

3.2 Population

The population under study is SMEs which have undertaken or are currently undertaking IT projects. The IT projects can be software acquisition, software development, systems implementation, systems development, infrastructure/network development and hardware procurement. The population sample will be taken from Nairobi and Thika only because of limited time and finances available to carry out the research. The two are selected as the population sample area because it hosts a number of micro and small enterprises.

3.3 Sample Design

Nonprobability sampling is the method of choice and in this purposive sampling will be used for this research. This is because purposive sampling strategies are designed to enhance understandings of selected individual s or groups’ experience(s) or for developing theories and concepts (Miles and Huberman, 1994). These strategies will allow me to select “information rich” cases, of SMEs, system developers, system implementers and IT project managers that provide the greatest insight into the research questions. Additionally, due to the tight referral network within the SME community, snowball sampling is anticipated.
3.4 Data Collection

The study will employ a sample size of five SMEs. Data will be collected for the case study through two primary methods, namely through unstructured interviews and narratives. The interview proceedings will be audio recorded and transcribed. Additionally, document analysis will also be used. Narratives can be a useful method in ethnographically inspired research whereby a researcher can develop a descriptive ‘story’ of the case after case immersion (Ellis and Bochner 2000). The face-to-face interviews will last for about one hour and will be guided by an open ended questionnaire. The investigations will be centered around the following themes:

- **Company background** - demographic information about the company, type of industry, duration of time it has been in existence, uses & length of use of IT applications in the business & number of employees.
- **Type of IT projects** - software acquisition, software development, systems implementation, systems development, infrastructure/network development and hardware procurement.
- **Need and functionalities of information systems software** – the scope of requirements.
- **Software acquisition/ implementation process** - how was it done, standards/guidelines followed if any, was supplier vetting done, how the requirements analysis was executed.
- **Issues and challenges faced by the SMEs in acquisition and implementation of information system** - what were the issues that came during this process and how were they tackled.
- **Skills/knowledge demanded for project success** - knowledge and skills of the IT team tasked with the project, experience, history of successful referrals from other sources.
- **Use of external support/expertise** - are IT consultants, freelancers used.
Price, cost and scope considerations - overall IT budgets, specific IT projects budget, proprietary vs. open-source & associated costs.
Overall quality and satisfaction - of IT implemented IT projects, with hindsight would they do things differently.

3.5 Unit of Analysis

The present study unit of analysis is the overall SME organization. The respondents to be interviewed include the SME Entrepreneur/Owner, IT Consultant, IT Project Manager and Software Developer. Looking at the whole organization as a unit will allow me to also study the SME owner/entrepreneur. Studying the owners is important because, as the decision-makers who are concerned with the survival and expansion of their firms, they are often too busy to bother with IT project management or to appreciate the potential benefits of IT to the business. This is particularly useful in uncertainty filled SME environment and improvisation becomes a way of coping when time pressures, rapid shifting environments and lack of resources makes rational planning, decision processes, and knowledge creation difficult or even impossible (Ciborra, 1999; Cunha et al., 1999).

3.6 Data Analysis

The study used content analysis (grounded theory) for data analysis. Content analysis is regarded as a qualitative method for identifying, analyzing and describing the data set in rich detail. It is similar to the observational method but what is studied is not direct behaviour but a representation of that behaviour in speech or texts that are analyzed (Muganda, 2010).
CHAPTER 4 - DATA ANALYSIS, RESULTS AND DISCUSSIONS

4.0 Overview

In what follows is a discussion into the role of improvisation in IT project management in SMEs. The study highlights a change in the methodology used within IT projects in SME, a shift from using the traditional structured project management methodologies to the emergent methodologies that can be conceptualised as 'improvisations'. In particular the paper describes IT projects in SMEs and how they are handled. This is illustrated through an examination of the process of IT project management in the context of SME in Kenya.

4.1 Case Study Firms

The basic characteristics of the five case study firms are given in Table 2. All firms in the sample have undertaken IT projects and one is currently in the process of implementing one which is on e-commerce.

<table>
<thead>
<tr>
<th>Firm</th>
<th>Industry</th>
<th>No. of Employees</th>
<th>Current level of IT applications</th>
<th>Length of use</th>
<th>No of yrs in business</th>
</tr>
</thead>
<tbody>
<tr>
<td>LH</td>
<td>Long distance haulage/Logistics</td>
<td>50</td>
<td>Transport information system to monitor the trucks, load transported, invoicing, customers and order processing+Website+Quickbooks accounting package+Email</td>
<td>2 yrs</td>
<td>5 yrs</td>
</tr>
<tr>
<td>PD</td>
<td>Petroleum dealer</td>
<td>28</td>
<td>QuickBooks accounting package+Email+Payroll</td>
<td>3 yrs</td>
<td>10 yrs</td>
</tr>
<tr>
<td>VS</td>
<td>Vegetable sales/distributor</td>
<td>8</td>
<td>Excel spreadsheet for order processing+E-mail+Mobile phone for M-Pesa</td>
<td>2 yrs</td>
<td>6 yrs</td>
</tr>
<tr>
<td>MT</td>
<td>Mobile money transfer</td>
<td>12</td>
<td>E-mail+Point of Sale,+M-commerce</td>
<td>2 yrs</td>
<td>4 yrs</td>
</tr>
<tr>
<td>FG</td>
<td>Flowers/Giftware</td>
<td>32</td>
<td>Point of Sale+E-commerce+website</td>
<td>1 yr</td>
<td>1 yr</td>
</tr>
</tbody>
</table>

Table 2. Characteristics of Case Study Firms
The key milestones related to acquisition and implementation of information systems in SMEs as learnt from the case study investigations are depicted in figure 2. The quest for increased market share, tax & regulatory compliance, theft from employees and need for professionalism in the business were some of the reasons cited for switching to IT based solutions for the business.

![IS Acquisition and Implementation milestones in SME in Kenya](image)

**Figure 2. IS Acquisition and Implementation milestones in SME in Kenya**

### 4.2 Emerging Improvisation Themes in IT Project Management

The study uses constant comparative analysis perspective (Glaser and Strauss, 1967 in Muganda, 2010) of grounded theory to separate and code the emerging themes from the data collected from the respondents. The aim was to examine the IT project management process in SMEs and to understand how IT projects are conceptualized, planned, implemented, executed and maintained. The following sections present a discussion of the emerging themes and a discussion of the same from an improvisation perspective.

#### 4.2.1 SME Organization Structure

The organization structure in SMEs is of the functional type where the firm is organized along two functional departments usually Accounts and Sales/Marketing with the owner as the Managing Director. He is also in-charge of HR and manages the company's remuneration. In
traditional project management circles, the firm is either of functional or project management type. In functional type, the project is managed by the specific function responsible for it (e.g. Finance Manager for accounting information system); while in project management type the project is managed by a Project Manager. A balance between the two is a Matrix organization (PMBOK Guide, 2004).

<table>
<thead>
<tr>
<th>Theme Code</th>
<th>Text: Excerpts of Transcripts</th>
<th>Description (Text Analysis)</th>
<th>Interpretation</th>
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<tbody>
<tr>
<td>IR01</td>
<td>We don't have the luxury of having many departments &amp; employing many managers. Multitasking is a must in our trade and therefore has to be able to make different judgement calls for the good of the business as-and-when is required. When I was employed, what is doing now was being done by 4 different people. At the end-of-the day, The buck stops with me. (Entrepreneur)</td>
<td>Organization structure and staffing levels influence the way business is done. The owner is the business, and the business is the owner - and their overall experience, intuition, creativity, network, capabilities are important.</td>
<td>Favourable IT decisions made by the owner, increases the chances of a successful IT project and vice-versa.</td>
</tr>
</tbody>
</table>

Table 3. SME Organization Structure

From the data analysis, IT projects in SME are managed by the owner who is solely responsible for its implementation. Decision-making authority for the project rests on this individual and their agendas and not on the IT project (IR01). Subjectivity therefore plays a big role in the type, timing, scope and direction of the decisions which may either impart positively or negatively on the IT project. In fact, improvisation then becomes one of the techniques that one can use, depending – contingent – on the situation. This contingency concept – adapting one’s techniques and methods to the situation at hand – is probably more fruitful than an approach that imposes one particular solution for all possible situations (Verjans, 2003). For instance, LH reports that E-government initiatives have served his business very well. The company accountant now connects directly to KRA and files all the returns (P.A.Y.E, VAT, NSSF, etc). Additionally, for daily cash reconciliation with bank balance, they can query the bank balance from the mobile phone so the process is much simplified.
4.2.2 Information Technology Knowledge/Skill

The appreciation of the need for IT in business and the owner/managers’ IT competency level were the main driving forces behind the IT project. From the study results, it is clear the learning curve was shorter and hence the cost of implementation was lower when the entrepreneur/manager’s IT skills are stronger (IR02).

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<th>Text: Excerpts of Transcripts</th>
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<tbody>
<tr>
<td>IR02</td>
<td>This company is made up of young graduates. Our median age is 33 yrs. I have a BSc Statistics degree and all my 3 managers have degrees too &amp; are experts in their fields. Being young and IT-centric has helped in the automation - implement new technology, understand business need for IT, big competitive advantage &amp; faster turn-around times (1. Entrepreneur &amp; 2. IT Consultant).</td>
<td>IT knowledge, Business domain knowledge, Project management knowledge and technical capabilities play an influencing/moderating role in the uptake of IT in SMEs.</td>
<td>Knowledge is an important asset for development. It is an advantage to know how to do it before you can do it.</td>
</tr>
<tr>
<td>IR02a</td>
<td>My team is composed of young guys. We are all from the “Generation Y” as we are called so are pretty much on-top of stuff in the techie field. Business with IT is different, not like in the days of my father (Entrepreneur).</td>
<td>A business whose employees are computer literate has better chance of implementing IT projects than which doesn’t.</td>
<td>Being computer literate is a big advantage.</td>
</tr>
<tr>
<td>IR02b</td>
<td>A balance sheet, P&amp;L account, cash management &amp; bank reconciliation is my business oxygen. I must know my business financial position at all times. To be in business, you must understand numbers (Entrepreneur).</td>
<td>Application specific knowledge regarding the specific information system to be implemented is critical.</td>
<td>Accounting knowledge is important for the business owner.</td>
</tr>
<tr>
<td>IR02c</td>
<td>I’ve been a banker for 15 years and have solid accounting qualifications and experience but am in the trucking business and doing well unlike the IT guy we contracted to do our QuickBooks. The guy knew nothing about accounts so did it myself (Entrepreneur).</td>
<td>Business domain knowledge is important for business operations but not for managing IT projects. Application specific knowledge is in this case.</td>
<td>Understanding the SME business environment (Domain Knowledge) is critical for the success of the business firm.</td>
</tr>
<tr>
<td>IR02d</td>
<td>This systems implementation project is a simple and straightforward thing. I don’t think it warrants the expense to warrant the application of project management tools, such as Gantt chart (1. Entrepreneur &amp; 2. IT Consultant).</td>
<td>The relationship of this factor to the overall success of the IT project to the business is not visible to the entrepreneur.</td>
<td>Project management tools, techniques and methodology is not used in SME IT project management.</td>
</tr>
</tbody>
</table>

Table 4. IT Knowledge/Skill

The improvisation argument observed was the value of the experience and intuition of the entrepreneur/manager in the IT project implementation. This plays a big role in reducing the
dependency on the external support (e.g. IT consultant/vendor) and makes the IT project implementation process hassle free. “Small and medium-size businesses often need many of the same technology skill sets that larger ones do, but they don't have either the luxury of or the need for a full-time expert in each tech discipline. As a result, SMBs may either depend on generalists to handle tasks they're not qualified for, or they simply don't deal with a particular tech challenge” (Xin, 2009). In firm MT for instance, the mobile commerce implementation was driven by the owner himself who is technically knowledgeable. His experience and intuition was instrumental in pursuing this line of business and for taking advantage of opportunities in this business area. From the content analysis presented earlier in Table 4, the knowledge/skill may take different forms described below:

**Form 1: Computing knowledge**

The entrepreneur/employee's knowledge of information systems and the skills of using computers found to be a major influencing factor for successful implementation of information systems in SMEs. On the contrary the entrepreneur/managers of small firms who are “computer averse” have shown reluctance towards computerisation (IR02a). This factor also has an impact on the effective use of software (e.g. full use of functionality).

**Form 2: Application specific knowledge**

The evidence from case study firm LH indicated that basic accounting knowledge has been very helpful to the successful implementation of the QuickBooks software package. The owner/managers of our sample appeared to have a certain level of accounting knowledge, and they realise that it is helpful for smooth implementation of the accounting software (IR02b).
Form 3: Business domain knowledge

The entrepreneurs/managers interviewed were quite conversant with the operational aspects of the business, and hence the domain knowledge was not found to be a factor that was influencing the IT project implementation in the firms. However, it was noted that the knowledge about the business practices in general is not common for the IT consultants involved with the SME IT projects. For example the IT Consultant may have the IT domain knowledge but not the application system/software knowledge (e.g. QuickBooks for accounts) thus the SME may be short-changed in the software implementation in that proper user training is not done before system hand-over to the client (IR02c).

Form 4: Project management knowledge.

None of the five firms had used or are using any kind of formal project management tools. “Software has been used for some years by project managers to assist with the creation of Gantt and PERT charts using CPM (critical path method) techniques. Such software is however, only now beginning to gain in popularity. We suggest that the reason for project management software's slow acceptance has been that because of its complexity and cost, it has really only been suitable for use by professional project managers who spend their working time managing projects” (Tatnall & Shackleton, 1993, p. 401). Such a project management tool is important because it allows the entrepreneur/manager to examine project work done against scheduling and resource details and allow for fewer surprises as potential problems are detected early, early risk identification and mitigation, easy implementation and reduced costs, enforcement of industry best practices, manage business costs and meet deadlines every time (IR02d).
4.2.3 Systems Development & Implementation

Traditionally most information systems implementation in business has been either procured off-the-shelf developed in-house or customized for the specific business. Within the SME however, information systems implementation is according to the owner/IT consultants’ conceptualization.

It was observed that once the need is identified, an IT consultant is enrolled who then delivers the information system to satisfy the need identified. The system is never developed in-house because SME's lack the capacity and resources for this. The preferred method is purchasing off-the-shelf (e.g. QuickBooks for accounting) or customizing systems for the business (e.g. a Point of Sale system developed by a local software developer).

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<tbody>
<tr>
<td>IR03</td>
<td>The businesses that we deal with are &quot;light&quot;. They need &quot;light&quot; IT solutions with &quot;light&quot; implementation plans. It's pretty hard for a &lt;50 person business to do a POS system that was made with Tuskys in mind. Additionally, Kenyans have a bad habit of getting rich at your fellow Kenyans expense. We need legislation to ban these cheap used imports. Kenya is now a dumping ground for used electronics which are hurting us instead of helping us to grow (IT Consultant).</td>
<td>SMEs have same needs for IT as do big firms. The difference is in scope of the solution. Local developers should also develop software adaptable to small businesses needs. Government needs also to protect SMEs from exploitation.</td>
<td>Legislation and Government intervention is needed to protect SMEs. There is also market for small-scale software solution so our local software developers can take up the challenge.</td>
</tr>
</tbody>
</table>

Table 5. Systems Development & Implementation

However this only goes for specialised application software. The system doesn't operate in a vacuum it requires hardware & software to be able to run, In SMEs, one IT project is compartmentalised into two separate projects - first acquire the hardware and software then acquire the information system. Most times the IT consultant involved in the former is not an expert/authorized computer hardware & software reseller thus not dealing with genuine products.

For example, SMEs acquiring cheap second-hand computers imported from UK and running pirated copies of Microsoft Windows XP and Microsoft Office. The Used-computers dealer is an
example of a new actor as explained by Hanseth (2007) when he posited that technological changes within telecommunications and ICT have brought many new actors into this field in contrast to the old times when IT standardisation used to be taken care of by a limited number of equipment manufacturers. The disadvantage of the used machines is that the lack of warranty and frequent breakdowns. The frequent downtimes experienced therefore contribute to the failure of the information systems because of a faulty underlying infrastructure. The SME will thus spend more time and incur huge cost maintaining the obsolete hardware (IR03).

Flexibility and Adaptability of the systems was another important factor highlighted by the SME owners. A modular system that would allow them to start small with only the required functionality then build and add more features as the business grows and a use-case is identified (IR03). The fundamental principle for making technological systems flexible is modularization, allowing some components to be kept stable while others are changed without implications for the rest of the system (Hanseth, 2007). This problem was the main factor attributed to using Microsoft Excel as the accounting package of choice because the use-case when setting up shop was purely Cash management, Sales management, Bank & Cash reconciliation and Invoicing.

4.2.4 Cost

Project management literature highlights the relevance of the triple constraint (cost, time and scope). The case study data provides evidence to the effect that the cost of the software has a detrimental effect on the acquisition and installation of application software in the SME environment. While a big use-case is observed for the service provided by these software/information systems (Accounting, Payroll, E-commerce), the cost element is a huge
detriment to its acquisition (IR04). As identified in the literature review, financial capital is a big challenge to SMEs and there is always a more pressing need for the limited resources than for automation even though the benefits of automation are clearly understood.

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<tr>
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<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>IR04</td>
<td>The cost of doing business in Kenya is very high. We have high CAPEX and OPEX costs, yet we are small. The one-size fits all approach for IT isn't right. Someone should come and provide hosting services for standard business functions such as HR, Accounts, E-commerce, etc which you can pay as you go. +1 for Safaricom starting hosting services with Quintica. We wait to see if it's affordable (Entrepreneur).</td>
<td>SMEs can avoid the capital expenditure associated with procuring the facilities, hardware, software and skills needed to maintain the service through paying for the services you need at the time you need them.</td>
<td>Business Process outsourcing and hosting solutions is likely to affect the uptake of information systems and automation in SMEs.</td>
</tr>
</tbody>
</table>

Table 6. Cost

IT investment in SMEs differs from IT investment in large firms because a smaller number of people have decision-making responsibility, standard procedures are not instituted, long-term planning is limited, and there is more reliance on external IT experts in SMEs (Premkumar, 2003). FG for instance uses the social networking sites of Facebook and Twitter for advertising and marketing of their products. According to the MD, this has increased their sales because they are receiving orders from customers in UK sending to their loved ones in Kenya. The payments are done using M-Pesa thus the initial financial capital for this improvised business model is almost zero.

4.2.5 External Support

<table>
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<th>Text: Excerpts of Transcripts</th>
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<tbody>
<tr>
<td>IR05</td>
<td>As a family business we've outsourced all our IT services to my nephew who is doing a IT course. He is our consultant in all IT matters. He's the one responsible for the IT needs of the company (Entrepreneur).</td>
<td>Education, Experience and Capacity have a bearing on how IT projects are implemented.</td>
<td>GIGO - Garbage in, Garbage out. Software piracy may be seen here as an &quot;improvisation&quot; based on the &quot;IT consultant&quot;</td>
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Table 7. External Support
In SMEs, the external consultants play a major role in the implementation of information systems and other IT related activities. Since the in-house expertise (particularly related to IT) is scarce in SMEs, they invariably hire 'external consultants'. This is put into quotes because sometimes the qualification and experience of these consultants is questionable (IR05). There is no due diligence done as is the case when big companies are vetting suppliers/consultants. Within the SME context, referrals and the owner’s subjectivity is the deciding factor. Rahn (1987, p. 79-80) gives the essential qualities and skills of IT Project Managers as “Willingness to take risks, willingness to commit time, ability to handle stress well, deposition to people management, right emotional disposition, communication skills, and ability to handle politics”

### 4.2.6 IT Project Planning and Integration

The general trend observed was for the business owners and system developers/IT consultants to communicate directly. This presents a problem since the goal of the owner is to get what they want very quickly, and the goal of the developer is to give the business owner what they want as quickly as possible. The result is a vacuum, where they are not necessarily taking the needs of all users of the system into account (IR06).

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<td>IR06</td>
<td>As the owner it is important that I take charge of the IT project otherwise it will lack ownership. Also, my company has a vision, mission and goals. However, it's more important to oversee the day-to-day running of the business than to over-invest in making strategic plans. These plans may fail you know and having or not having a plan will not help when things start going downhill. Quick and creative decision-making is the key. You got to stay on top of things in our world (Entrepreneur).</td>
<td>In SMEs, the importance of planning is understood but focus is more on action. The &quot;quick and creative decision-making&quot; implies planning &amp; action occur at the same time. This is the type of project management methodology used in SME.</td>
<td>Traditional methods not adaptable in SME environment. Thinking &amp; action occur at the same time and is the modus operandi. Additionally, limited resources &amp; time pressures make planning difficult in SME thus the Improvisations (Ciborra, 1999)</td>
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Table 8. IT Project Planning and Integration
Additionally, there is neither formal project plan nor a detailed definition of the requirements, and many times, the real reason for the information system may not make good business sense. Orris et al (1993), describes empirical results from a comparative study on formalized planning that showed that SMEs with formal planning make more effective decisions. From our sample, the IT projects were implemented with no formal plan (IR06). FG is a new entrant in the field employing e-commerce is their business model using mobile money transfer services (M-Pesa, Zap). This is an example of an improvised business model based on the SME business environment. The firm doesn't have a strategic IT plans for the business thus it would be hard to precisely define the results expected from this initiative and over what time-frame.

### 4.2.7 Quality and IT Project Risk Management

A fair share of risk of failure in information system implementation in SME is attributable to the inadequate IT practices and capabilities of the SME owner and IT Consultant. Other risk factors are located in the stages between proposition and implementation of the information system. From the discussions with the respondents it is evident that the seeds of possible failure are planted much earlier in the project (IR07).

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<td>IR07</td>
<td>Risk is my biggest concern. I've had to do a software twice because the first time it wasn't doing what we had expected yet I'd personally sat with the IT consultant and told him what we wanted (Entrepreneur). Changing user requirements is a big problem for us since these guys are not really sure about what they want in the first place so the needs keep changing yet they won't accept to pay more (Software Developer).</td>
<td>Juran defines quality as fitness for use. A system that does not meet the user requirements is thus of poor quality. Scope creep which is caused by incomplete user requirements is the biggest risk in software IT projects.</td>
<td>Quality of IT system is critical to its utility for the SME. However, changing user requirements is a challenge that needs to be addressed before quality can be achieved.</td>
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Table 9. Quality and IT Risk Management
Moussa and Schware (1992) in a study of information systems in Africa found that for 29% of systems, the intent or purpose of the information system was unclear, and for 27%, the systems were not relevant to the organisational objectives. These problems relate to the lack of a clear understanding of the needs of the relevant stakeholders. For example, firm PD installed a customized Transportation system to manage its fleet of trucks. However, no requirements definition was done prior to the installation of the system and once the system went live, the standard complaint was that the system isn't doing what is expected (IR07). For all the firms interviewed, no risk management plan was available for all the IT projects investigated and there was no form of documentation about the challenges &/or experiences from past IT projects in the SMEs.

4.2.8 IT Governance

In the observed companies the concept of IT Governance is very elusive if present at all. Also, SMEs tend to be slow adopters of IT and face the challenges of adopting IT as can be evidenced from the manual start in operations before automation (>2yrs). Additionally, none had any form of IT Policy, Acceptable Usage Policy, or a long-term strategic IT plan document (IR08).

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<td>IR08</td>
<td>I worked for a big bank before retiring in 2002 and when I left there still was nothing like a IT Strategic Plan. This is a new thing even for the big players so it's not a priority for us small businesses. As it is, we are able to plan as we move along everyday more so because the bulk of our business is still with the ordinary mwananchi for whom IT is still relatively unknown (Entrepreneur)</td>
<td>The concept of IT Governance and a long term strategic IT planning is still new to business and SMEs are more concerned with meeting short-term business goals than planning for long-term.</td>
<td>Business drives IT and not the other way around. In as much as IT Governance is still a new concept, the alignment of IT goals with business objectives and ownership of IT projects from the top is key to the overall success of IT Projects.</td>
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Table 10. IT Governance
All companies in the case-study reported at least one failed IT project in their history. Today, managing an infrastructure to deliver effective IT capability means dealing with problems such as: alignment of IS and organisational objectives, strategic IT plan development, data availability to users, end user service management, interoperability of systems and applications, flexibility and security, IS-user partnership, disaster recovery planning, educating senior management in IT, and network security (Ciborra, 1998).

### 4.2.9 Mobile Phone Technology

An article in the African Investor magazine (May-June 2010, Vol. 8:3), describes the mobile phone phenomena as extraordinary. No new technology has ever spread around the world as fast as the mobile phone and there are more than 448 million mobile phones in Africa. This technology seems to have a better use-case in SMEs than in big companies (IR09). Additionally, the mobile phone technology presents business offerings which are more suited for SMEs than their fellow businesses e.g. Money transfer service thus facilitating e-commerce service for the SME.

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<tr>
<td>IR09</td>
<td>You know this thing called a mobile phone may be small but it's my biggest IT asset that has provided me with a ROI. I use it to do my banking, money transfer, SMS my customers &amp;/or suppliers, talk to my employees ...all at an affordable cost. (Entrepreneur). The range of business options with respect to IT project implementations available to SMEs is limited but luckily things are beginning to change. Recently we saw a deal between Quintica &amp; Safaricom where Safaricom's data clients such as SMEs will benefit from a huge menu of hosted and managed services from Quintica (IT Consultant).</td>
<td>New technology offered by mobile phones is causing a paradigm shift in the traditional ways we do business. IT is now extending beyond the PC, laptop &amp; servers to mobile phones. The service offerings from mobile phone providers will also drive the extent of use of this technology in business.</td>
<td>Maximized output &amp; performance at Minimum costs is the primary objective with respect to IT projects in SMEs. The range of affordable mobile phone service offerings is providing for improvised business models resulting from improvised IT options such as M-Pesa instead of Credit Card.</td>
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Table 11. Mobile Phone Technology
Other service offerings suited for SMEs provided by mobile phone firms include bulk SMS, social networking, E-mail capacity such as Ovi-Mail, etc. All these are able to be executed from a cheap mobile phone which costs <10,000/= which is a huge cost-saving when compared to investing in formal more long-term IT projects. This is particularly useful to SMEs because of 1) cost implementation, 2) business focus on short-term rather the long-term and 3) ease of use. The recent price-wars in the Kenya mobile phone scene, the range of service offerings targeted at SMEs from providers - e.g. unlimited internet for company use, facebook & other social networking for advertising, money-transfer as e-commerce channel, bulk SMS for sending notifications to customers about promotions or offers, VAS services such as centrex - put all company phones on one channel and talk to each other at monthly flat rate, cheap calling rates to other countries e.g. calling USA is now 3/= so good avenue for customer relationship management, etc. All these are options available to the SME business owner and improvisation becomes a necessary tool to adapt the business to taking full advantage in implementing such IT solutions in the business. All forms in our sample use the mobile phone and range of service offerings extensively in conducting the day-to-day business.

"There is a rapid growth of e-commerce service providers in Kenya, owing to the introduction of the ICT Bill, the go-live of the high speed undersea cables as well as the rapid and widespread adoption of mobile money. In the last six months, several e-commerce service providers have set-up shop. But because credit cards are not very popular in these markets, the mobile phone is fast becoming the preferred channel for making payments" (Kemibaro, 2010). The beauty of this cheap, simple gadget is that it has empowered local people to engage in financial transactions otherwise the bane of commercial banks and this opportunity sparks economic hope for our
people and growth of m-commerce in business. According to the McKinsey Global Institute (June, 2010) report on E-commerce titled "Lions on the move: The progress and potential of African economies", it projects that at least four groups of industries on the African continent could together generate as much as $2.6 trillion in annual revenue by 2020. The biggest business opportunity of the four lies in consumer goods and services, followed by natural resources, agriculture, and infrastructure. SMEs are big players in the consumer goods & services and agriculture industries and their low cost structures and improvised business models could serve as a source of competitive advantage.

4.3 Implications of the Interpretations to IT Project Management

The findings discussed above highlight fundamental information about the role of improvisation in IT project management in SME in Kenya.

4.3.1 Project management framework

The implementation of IT projects such as acquiring and implementing accounting software systems has become widespread among small and medium sized enterprises (SME). Invariably the SMEs face numerous difficulties, especially at the initial stages of IT project implementation. The existing structured project management frameworks are not adaptable for use in the SME environment thus the observed improvisations to the project management methodologies (IR03, IR06, IR04, IR05, IR07, IR09).

4.3.2 IT Projects - SME environment

The SME business environment is very different from the normal business environment. By
definition, the SME is small in size and has limited resources which are needed for business growth. Additionally, SMEs operate in highly dynamic and fluid environments which lack the governance systems and structures to be found in big companies. Technology being socially constructed means that its success and take-up will not be determined solely by the availability of the technology. The social perception of the technology, the prevalence of messages such as “everybody’s using it”, and the presence of users who support the network will determine its success. This is the nature of IT project management within the SME context as evidenced by the observed actor-network below (Figure 3). The business organization structure, knowledge of the implementing teams, budget and external support have been identified as leveraging factors in the management of IT projects in SME in Kenya (IR01, IR02, IR03, IR04, IR05).

4.3.3 IT Projects – Order winners

Top management support was highlighted in literature review as a key success factor for managing IT projects. Within the SME context, the business owner is responsible for decision making and for most of the operations in the SMEs. Therefore, the order winners for making the IT projects in SMEs successful are the “interest”, “effort” and the “involvement” of the top management. Hmieleski and Corbett (2008) investigated the relationship between improvisational behaviour of firm founders with both the performance of their businesses and their individual level of work satisfaction. They did not find direct effect of improvisation on performance, but in this research a specific moderating role has been played by entrepreneur's belief in one's own ability to perform a task hence contributing positively to performance. In addition, there is a need for SME to have a strategic IT plan to guide the business decision making with respect to IT investment and adapting new technologies (IR01, IR02, IR08, IR09).
4.4 Information Technology Project Management Network

Actor network theory (ANT) sees technological, human and social elements as linked together into networks, based on the assumption that technologies are always defined to work in an environment that includes non-technological elements (Ciborra, 1998). A description of the network in IT project management in SME is presented in Table 12 and an outline of the network is presented in Figures 4. For simplicity, the outline shows only the names of the actants, and the existence of uni- or bi-directional relationships. An analysis of the actants and networks of IT projects in SMEs reveals interesting observations that will most likely shed light on variations in the construction of the concept of improvisation in IT project management in SMEs.

<table>
<thead>
<tr>
<th>Theme Code</th>
<th>Observed Actants</th>
<th>Text: Excerpts of Transcripts</th>
<th>Description (Text Analysis)</th>
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<tbody>
<tr>
<td>NT01</td>
<td>Entrepreneurs, Suppliers, SME, Referrals, IT Consultant</td>
<td>The only way for my business to get good service delivery is by using the tried and tested people/companies. As the saying goes “Better the devil you know, than the angel you don’t”</td>
<td>The tried and tested people/companies here is attributed to referrals – it’s not easy for new entrants to get contracts from SME.</td>
</tr>
<tr>
<td>NT02</td>
<td>Entrepreneurs, Suppliers, SME, Referrals, IT Consultant</td>
<td>IT is not my core business. It is simply an added advantage. I stick to my core and outsource the rest to the experts (Entrepreneur).</td>
<td>Outsourcing of IT is seen as a strategic business initiative. The SME is the buyer and the IT Consultant is the seller.</td>
</tr>
<tr>
<td>NT03</td>
<td>Entrepreneur, Suppliers, Referrals, IT consultant, Employee</td>
<td>We run a small shop so communication is fast and easy. We do it regularly and the open-door policy works well for us all (1. Entrepreneur, 2. Employees, 3. IT Consultant)</td>
<td>There is a positive information flow among all actors in the network. The small size of the business is an advantage as it allows for effective communication amongst different teams.</td>
</tr>
<tr>
<td>NT04</td>
<td>SME, Entrepreneur, IT Consultant, Suppliers, Municipal Council, Government,</td>
<td>From business registration, licensing, PAYE, NSSF, NHIF, Insurance, Electricity, Fuel etc – these are fixed expenses we have to pay government without fail but get nothing in return (Entrepreneur).</td>
<td>There is a high cost of doing business for SME and there is need for government support to SME.</td>
</tr>
<tr>
<td>NT05</td>
<td>Entrepreneur, Employees, Computer equipment (computers, laptops, printers, mobile phone)</td>
<td>Nowadays we have everything in electronic format. The business actually lives in these equipment and they are the life of the business (Entrepreneur).</td>
<td>Strong identification of the person with the technology/telecommunication gadget.</td>
</tr>
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Table 12. Observed actor-networks in IT project management in SME
The corresponding network diagram is presented below:

![Figure 3. SME IT Project Management Network](image)

4.4.1 **Actor Identity - Referrals**

The analysis revealed that the network of IT project management in SMEs includes an earlier unknown actant called "referrals". Decision-making in SME is based on the successful experience of other SMEs who have done the same project. If the result of the originators was failure, then the overall system is identified as bad and SMEs won't touch it. These referrals play an important role in the IT projects as suppliers of information, of know-how and of the right contacts a.k.a network (NT01). In addition, they act as leaders by virtue of being the first SME to implement the specific IT solution. The improvisation argument raised here is that the subjective experience of these referrals becomes the blue-print for the next SME to implement the same project. This means that in addition to the good stuff, all the mistakes, errors & risks of the IT
project are carried forward to the next project and the next. The improvised process of the originators now becomes the "project management methodology" for this specific type of IT project in SME.

4.4.2 Actant Roles - IT Consultant as Mediator

In IT project management, the IT Consultant owner plays the role of mediators. Mediators are described by Latour as a special category of actants which role in the network is to modify or transform (Latour, 2005). The analysis showed that the IT Consultant in the SME IT projects is mediators who interact with many of the other actants, and should thus be studied closely. This role gives them greater influence in the decision-making process of the IT project (NT02). Additionally, this may imply that the future trend of IT project management in SMEs will be driven by the IT Consultant who is seen as the expert in IT matters though is outside the SME business domain. The Audit accountancy firms play a major role in all aspects of the accounting software acquisition and implementation processes. In fact, the audit accountant may be the key driving force behind the decision to acquire accounting software. However, such audit accountants may be familiar with only one accounting package and therefore biased towards a single package. They are usually not IT experts and they may not always provide the right advice, particularly in terms of selection of software, infrastructure requirements, networking, licensing, regulatory compliance, Intellectual Property Rights, etc. However, people with high previous related experience are considered as a source of advantage for the organization (Dokko, Wilk & Rothbard, 2008). This means the SME should leverage on the expertise of the person with business domain knowledge in combination with a technical IT expert to ensure sound implementations of software projects in the business.
4.4.3 Information Flow - The Entrepreneur/Business Owner

The analysis detected a positive information flow between the entrepreneurs and other actants. A flow of messages expressing a sense of accomplishment, of competence and of success (to suppliers, other entrepreneurs, IT consultant and employee) was observed (NT03). As a leader, a positive information flow to his employee's contributes to the overall success of the team. Additionally, a positive flow of information amongst all parties also contributes to building teamwork and team-spirit which allows the team to develop strong feelings of allegiance. This productive outcome is synergistic and the accomplishment often exceeds the original goals of the task (Lewis & Smith, 1994). Overall, the business grows and is able to adapt and overcome the challenges that arise being that they do not have any formal risk management plan. Employee education and development is vital to the success of every company. To remain competitive at the global level, companies today must prepare themselves and their employees to function successfully in a knowledge-based economy. Information technology is an important tool in meeting that challenge (Hashim, 2007).

4.4.4 The Role of Government

The flow of information involving the government was observed as one-way - always from the government/municipal councils to the other actants in the network and never bi-directional. This is attributed to licensing, taxes and compliance to government regulations that the SME have to adhere to (NT04). Facilitation in terms of favourable legislation, easy access to information and capital, government assistance in business operations, government backing for other issues was evidently missing. In the last ten years, governments in developing countries have introduced a number of policies aiming to promote entrepreneurship through SME development. The main
impetuses for this ‘intervention’ are the specific constraints encountered by SMEs (Welter, 2005).

4.4.5 Technological Actants - SME Owner and the Computer

One of the important strengths of ANT is that it examines technology and society/humans on the same axis and explores the interactions between them. An interesting relationship that was revealed is how the computer is perceived by the SME owner. Feelings of ownership, pride and competence are expressed by the entrepreneur towards their laptops/computer equipment in company (NT05).
CHAPTER 5 - SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

A broad objective of the study was to investigate the role of improvisation in IT project management in SME. It focused on the processes and procedures that go into the acquisition, implementation and maintenance of information systems in SME and how they affect the overall outcome of the IT project.

The objectives of the study were:

1. To establish the proportion of IT projects in Kenya SME that use Improvisation and determine those which fail and/or succeed.
2. To identify the critical success factors for IT projects that use improvisation and to develop a model for IT Project Management in using improvisation.

The approach for this study was to confirm the research framework highlighted in chapter three of the study, as well as to highlight other issues that were not captured in the research framework. Additionally, to propose a model for using improvisation in IT project management in SME in Kenya.

5.1 Discussions

The findings reveal that improvisation is a key ingredient of IT project management in SME in Kenya. From the research findings as presented in chapter four of the study, several conclusions can be drawn as to the role of improvisation in IT project management in SME in Kenya. These are discussed in light of the objectives of the study.
5.1.1 Research Objective One

The analysis for Research Objective 1 focused on identifying the proportion of IT projects in SME in Kenya that have used one form of improvisation or another in their execution. Additionally, determine the projects that were successful and those that failed. From the analysis, all SMEs had experienced some sort of failure in the execution of IT projects. Factors identified as influential in the IT project successes and/or failures are:

**Factor 1: Scope of IT project**

The central theme observed was that big projects in terms of budget, scope and usability continued after stalling for some time while the smaller projects died off. The bigger projects continued because in the words of one entrepreneur "We've invested a lot in this system. We can't let it die". It is for the same big projects that the use of external support in the form of IT Consultants was observed. The collective experience, creativity, intuition and subjectivity of these persons contribute to the improvised workflows used in the projects. Such actions include thinking and doing happening simultaneously instead of having formal plans, use of referrals for suppliers in procurement instead of formal tendering, customization of open-source off-the-shelf software instead of software development, working with a pre-set user requirements list instead of collecting requirements for the specific system in-order to save cost and time, etc. This observation supports the model in Figure 1 where the scope of the IT projects is identified as a moderating variable in the IT project implementation. Although ANT often considers technologies to become immutable, subsequent actors may treat past solutions as new issues and formulate problems that are solved with modifications to or replacements of existing technologies. These modifications to or replacements of existing technologies can be termed as
improvisation. Given the interpretive flexibility of information technologies, such future modifications are relatively open to negotiation depending on the SME agendas, budget, experience of IT consultant, SME environment, etc (Sandberg, 2009).

Factor 2: Planning and Action happening simultaneously

Vera & Rodriguez-Lopez, (2007) posits that individuals and organizations sometimes may also transform improvisation in an effective emergent strategy. It was noted that SMEs are satisfied with the “simple” process of decision making and the associated successful outcome. This success is measured by SME standards and therefore, one may question the applicability of a detailed planning process including comprehensive analysis for user requirements and selection of information system. This therefore suggests an effective and emergent methodology of IT project management in SMEs. Accordingly SMEs should consider improvisation when combined with planning as an effective tool “but that, because of its creative and spontaneous nature, is not necessarily tied to success, the same way planning is not necessarily associated with success” (Vera & Crossan, 2004: 748).

Factor 3: Outsourcing – The IT Consultant/External Support

SME lack the technical expertise needed for IT project management and this is exhibited by their use of some form of external IT support. The role of the IT Consultants within the context of SME is that they 'own' the IT project in the course of its duration and take over most of the operational activities from the business owner. In this sense the consultant acts as a person temporarily hired by the business during this time. These people play a key role in the IT project and are the chief architects of much of the improvisational activities in the IT project. This self-
confidence raises the critical issue when dealing with improvisation where over-reliance on the success of improvised actions bears the risk of being seen as the silver-bullet solution to the management problems facing IT projects in SME (Vera & Crossan, 2005).

5.1.2 Research Objective Two

The results and discussion for Research Objective 2 focus on the critical success factors for IT projects that use improvisation and the development of an improvisation model for IT project management in SME in Kenya (Appendix, 4). According to the PMBOK (2004), there are five broad project management process groups. These are Initiating, Planning, Executing, Monitoring & Controlling and Closing.

*Factor 1: Project Management methodology*

The analysis revealed a distant match between practice at the implementation stage of SME IT projects and the typical project management prescriptions identified in the literature (see, for example, Project Management Process Groups, PMBOK, 2004). Respondents from the five case study group reported a more mixed approach to actual project implementation, with only one referring to conducting monitoring & controlling activities at the execution stage for IT projects, and one referring to a careful evaluation of potential vendors for supplies but not an evaluation of risks for the project itself. All respondents gave the impression that planning and action happen together in SME IT projects and improvised actions are the norm.
Factor 2: Skills as an Asset to Improvisation

According to Vera & Crossan, (2005) there is a common alignment on the assumption that the effectiveness of improvisation depends on the skills (experience, innovation, etc) of the improvisers. The project implementation and management aspects are mostly handled by the consultant, whose role as indicated above is more operational than advisory. Use of project management software/tools is not available and there is a general consensus among the owners and community that this approach works out well for them. The complexity and expertise required surrounding project management practice is seen as adding an extra layer of difficulty to the whole exercise.

Factor 3: Critical Success Factors

Critical success factors for successful improvisation in IT project management indicate that the social and technical dimensions of the IT projects co-exist and work in concert for the overall benefit of the IT project. This observation is in agreement with Sandberg (2009), who posits that ANT defines a socio-technical account in which neither social nor technical positions are privileged over the other. ANT deals with the social-technical divide by denying that purely technical or purely social relations are possible. The critical success factors identified are 1) domain knowledge and experience for the IT Consultant/Project Manager, 2) SME Business owner support & buy-in, 3) Plan as-you-go type of work plan for the IT project, 4) Stakeholder involvement in the IT project execution, 5) Flexibility and Adaptability to the environment changes to manage and mitigate unexpected problems.
5.2 Conclusions of the Study

This research was an initial and investigative study of the role of improvisation in IT project management in SME in Kenya. In as much as firm conclusions may not be made on the basis of this study, a more thorough understanding about the management of IT projects in the SME sector is obtained. The study’s focus on the role of improvisation in the management of IT projects (from inception, acquisition, development, implementations and maintenance/support) in SME in Kenya.

From this research it was discovered that improvisation is a key component of IT project management in SME in Kenya. Specifically, the research exposed three insights that help us to discern the true nature of the IT project management situation in SMEs in Kenya. These insights are discussed below.

5.2.1 Improvisation leading to Innovation

The study exposed the quick uptake on new information technology to build innovative business solutions and models that are effective and efficient and give the SME a competitive edge in the market. Such include the mobile phone for bulk messaging, mobile money transfer services, social networking tools e.g. facebook for marketing, advertising, and customer relationship management. The high uptake in SME is because the new technologies is affordable, easy to use, low initial capital investment and have a mass market reach from the adoption of the same technology by ordinary Kenyans who form the bulk of the SME target market/customer base. The new technology is highlighted here as improvisations in the SME IT projects to provide innovative solutions that add value to the SME business at minimum cost.
5.2.2 Knowledge/Skill Outsourcing as an Improvisation

The study highlights the critical role played by external support in the management of IT projects in SME. The external support performed different roles such as IT Consultant, System Developer, Help-desk and support, Accounting Auditors, Customers and IT Equipment Suppliers. These people were seen to wield great power in the decision-making process regarding the choice of IT projects implemented by the SME. For example, the high uptake of QuickBooks accounting software in SME – influenced by the Auditor, high uptake of mobile money transfer services – influenced by the service providers/customers and improvised IT project management workflows – influenced by the knowledge, experience & skills of the IT Consultant and SME network. Additionally, the business owner’s were seen to favour the use of external support in SME IT projects as opposed to taking it up themselves as a business. This kind of IT outsourcing can be seen as an improvisation strategy used by the SME business owner to keep IT project costs down, maintain control over the IT project and mitigate risk by using the external support as a form of insurance.

5.2.3 Role of Referrals

From the ANT network highlighted in the study, there is an influential role played by the referral actant in IT project management in SME in Kenya. Referrals here constitute the close-knit business network that characterizes the SME environment. It was observed a trickle-down effect where one SME was the early adapter of a new IT service/solution and using the referral network the exact same solution, using the exact same project team was implemented in another, and another, and another SME. Therefore one success story was quickly replicated in other SME with a failure marking the death of that IT project and project team in the SME network.
5.2.4 What is the value of improvisation in IT project management?

The following is an analysis of the advantages to be gained from using improvisation in IT project management in SME in Kenya. Additionally, the discussion explores its contribution to the growth of the SME sector which has been identified from the literature as a key player in Kenya's economy.

**Benefit 1: Faster turnaround time for IT projects**

From the improvised IT project management model, we see Planning & Execution happening simultaneously which implies the convergence of thought/design/execution. This framework reduces the role and time for planning in SME IT project management so systems are implemented much faster. In this perspective the actors do not act following a structured process with clear goals independent from action (Baker et al., 2003). Additionally, it was observed that improvisation operated as a routine breaker and at the same time a capability builder - leads to new way of doing things which is more adaptable and flexible to the constant changing business environment thus contributing to much faster turnaround time for the SME to start generating business value from the IT project.

**Benefit 2: Cost reduction for managing IT projects**

Improvisation is giving rise to frequent re-use of resources (skill, knowledge, personnel, techniques, processes) which contributes to reduce the cost of managing IT projects in SME. By its nature improvisation in IT projects reduces the complexity of the IT project and this contributes to accelerated learning and knowledge for the business owner thus reduced project implementation costs. This increased knowledge adds value to the business because the owner...
can measure in monetary gains the business value of the IT project and therefore manage the cost of the IT projects. For instance costs of project activities such on-site expert IT persons, training and procurement is reduced by improvised activities/business models such as use of cloud-hosted services instead of purchasing high-end servers, external IT help in form of IT consultant/helpdesk, purchase of used computer hardware and mobile phone technology in business to generate new business models e.g. Social media and mobile money transfer.

**Benefit 3: Build vs. Buy vs. Reuse**

In traditional IT project management, IS acquisition options were limited to Buy vs. Build? However from the study, improvisation was seen to offer a third choice to the SME which is Reuse. The reuse option was seen in the procurement process in the purchase of imported used second-hand computers, the installation of one software plus licence in multiple computers (which is illegal) and the snowball effect in information system implementation resulting from the referral network. By their nature, SMEs have limited resources so the increased scope of choices presented by improvisation lends well to the SME business model. As shown by the actor network from the study, referrals play an important part in the choice of IT projects undertaken in SME thus making available the reuse option of the project to other interested SMEs. This allows for accelerated business growth for the specific SME by lessening the project management learning curve and contributes to the overall growth of the SME community by aiding in faster uptake and implementation of the specific IT solution. In this regard, customisable features, the ability to create new applications and the ability to use the technology in different ways are important attributes of adaptive technology (Orlikowski et al., 1997).
Benefit 4: IT enabled SME organization transformation

SME exist in a changing competitive environment were seen as early-adapters of new ways of doing business with respect to information technology (e.g. mobile phone technology). Organizational transformation can be valuable to an organization as it provides increased capacity and capabilities for future business benefits (NOIE, 2003). However, implementation of IT for transforming organization is challenging because it requires appropriate managerial innovation in organizational business process, work practices, job roles and structures (Constantinides et al., 2006; Volkoff et al., 2007 in Kyung, 2008). Improvisation allows for flexibility and adaptability in technology implementations which allows the actors to adapt and improvise the technology as part of ongoing development which contributes to the overall learning and growth of the business. Therefore, improvisation in IT project management can act as an aid to SME organization transformation because it contributes to growth of the actor at a personal level which translates to additional value beyond the standard IT productivity improvement. Moreover, improved work practices such as (new skills acquisition, reallocated resources, new incentives and new job designs) resulting from improvisation have the potential to facilitate IT-enabled organizational transformation.

Benefit 5: Outsourcing

Improvisation provides a good avenue for outsourcing opportunities in IT project management in SME in Kenya. The study identified different actors involved in the IT project management though the initiatives are largely at the individual level (systems development, systems implementation, project management, procurement, etc). It is noted that people with high previous related experience is considered as a source of advantage for the organization.
(Dokko, Wilk & Rothbard, 2008 in Leone, 2010). The inclusion of external help provides for a cheap source of expert labour and these persons represent a source of advantage to the business through bringing in diverse knowledge and skills applied to current work. This outsourcing can be seen as a working business strategy that informs both the SME and the provider of the service.

**Benefit 6: Soft skills from Improvisation**

According to the Centre for Career Opportunities at Purdue University in (Eldredge, 2006), soft skills is defined as “the cluster of personality traits, social graces, facility with language, personal habits, friendliness, and optimism that mark each of us to varying degrees”. From the study the following soft skills as tangible benefits of improvisation to the SME business and owner are identified:

- **a) Risk Taking**
  
  Improvisation establishes a risk-free environment that encourages risk-taking through acceptance and support while providing the practice needed for self-confidence. IT by its nature presents numerous risks and challenges which is possibly mitigated by the self-confidence of the entrepreneur/IT consultant. This self-confidence in IT project management results from the constant practice and reuse of the tried and tested improvisation activities.

- **b) Creativity**
  
  Improvisation encourages creativity through the speed of response (following gut instincts) and the complexity of response (workarounds/shortcuts) in a constantly
changing environment. Additionally, fun is inherent in improvisation so the work is fun for both the entrepreneur and IT consultant resulting in increased performance.

c) **Complex Thinking**

In improvisation, the actors’ goal is to make sense of the chaos. In chaos resides possibilities and the actor learns to see and react to situations from unique viewpoints as the unpredictable improvisations of others unfolds (as evidenced from the actor network).

d) **Problem solving**

Improvisation creates a safety net for actors to practice problem-solving without suffering “permanent” consequences. Many of the improvisation actions employ the actors’ problem-solving powers of observation, examination, inference, justification and analogy.

e) **Self-intelligence**

The subjective and reflexive nature of the respondents suggests persons who know themselves and understand their capabilities. Improvisation act as a mirror in that it enables the actors participating in them to see themselves and notice their thoughts, emotions, behaviours and capabilities.

5.3 **Limitations of the Study and Suggestions for Further Research**

These sections of the research consider the limitations of this study as well as suggestions for future research.
5.3.1 Limitations

The limitations of the study can be summarized as below:

a) The mode of responses

The data collected was from interviews and content analysis method was used for data analysis. Thus with regards to the interview findings, the study relies on entrepreneurs self-reports and recollections of their actions, and carries with it the assumption that these self-reports will provide an accurate picture of respondents’ actual project management practices, including the tacit knowledge they applied in their projects which forms the basis for the emerging themes from the raw data. While these limitations are acknowledged, previous use of the content analysis method (Muganda and Fadhili, 2010) has demonstrated that this method can effectively tease out the tacit knowledge applied by respondents in performance of key tasks.

b) Financial and Time constraints

Limited finances and time constraints were also a factor in this study. This affected the study design such as the sample size selection.

c) Lack of Local Studies

There are no locally known studies of the Role of Improvisation in IT Project Management in SME in Kenya. The study therefore relied mainly on literature from studies done in other countries which operate in different cultural, economic and socio-political contexts to formulate the conceptual framework.
5.3.2 Suggestions for Further Research

The study should be considered as a first step towards a deeper understanding of Improvisation in IT Project Management in SME in Kenya. This work therefore sets up future contributions that will enable academicians; entrepreneurs and government to better understand different issues surrounding IT project management in SME which is increasingly becoming indispensable to small businesses in the new regional East Africa Community.

Since this was a study into the role of Improvisation in IT Project Management in SME in Kenya, a purely empirical study with a large sample size is required to make the results more generalizable. For this qualitative study, the "Improvisations" are working. By its nature, Improvisation is an on-going process of both planning and executing. There is no chronological order between planning and executing. This makes improvisation more flexible and more responsive to rapid changes in environments (Chen & Ma, 2005). How far this practice is beneficial to the SMEs need to be investigated further. Additionally, further research is also needed to explain the reasons that lead people to improvise regularly, even in the absence of time and other resource constraints.
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APPENDICES

Appendix 1: Research Schedule

The research is estimated to take three months for its completion. This time estimate is based on the available time for the project completion with respect to the scheduled activities for the research project.

<table>
<thead>
<tr>
<th>Activities</th>
<th>Planned Dates</th>
<th>Actual Dates</th>
<th>Deliverables</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Start/Finish</td>
<td>Start/Finish</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 Get project title</td>
<td>02/05/10/08/05/10</td>
<td>02/05/10/07/05/10</td>
<td>Research Topic</td>
<td>File</td>
</tr>
<tr>
<td>2 Meet supervisor</td>
<td>08/05/10/08/05/10</td>
<td>08/05/10/08/05/10</td>
<td>Approval to proceed</td>
<td>File</td>
</tr>
<tr>
<td>3 Chap 1-Introduction</td>
<td>09/05/10/21/05/10</td>
<td>12/05/10/24/05/10</td>
<td>Complete Chap 1 draft</td>
<td>To supervisor</td>
</tr>
<tr>
<td>4 Meet supervisor</td>
<td>28/05/10/28/05/10</td>
<td>16/06/10/16/06/10</td>
<td>Review &amp; Approval to proceed</td>
<td>Corrections &amp; File</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 Chapter 2</td>
<td>17/06/10/30/06/10</td>
<td>17/06/10/01/07/10</td>
<td>Chap 1+2 draft</td>
<td>To supervisor</td>
</tr>
<tr>
<td>6 Meet Supervisor</td>
<td>02/07/10/02/07/10</td>
<td>03/07/10/03/07/10</td>
<td>Review &amp; Approval to proceed</td>
<td>Corrections &amp; File</td>
</tr>
<tr>
<td>7 Chapter 3</td>
<td>04/07/10/09/07/10</td>
<td>04/07/10/13/07/10</td>
<td>Chap 1+2+3 draft</td>
<td>File</td>
</tr>
<tr>
<td>8 Complete draft proposal</td>
<td>11/07/10/16/07/10</td>
<td>11/07/10/20/07/10</td>
<td>Draft proposal</td>
<td>To supervisor</td>
</tr>
<tr>
<td>9 Meet Supervisor</td>
<td>23/07/10/23/07/10</td>
<td>31/07/10/31/07/10</td>
<td>Review &amp; Approval to submit</td>
<td>Corrections &amp; File</td>
</tr>
<tr>
<td>10 Revise proposal</td>
<td>01/08/10/06/08/10</td>
<td>01/08/10/10/08/10</td>
<td>Final research proposal</td>
<td>To supervisor</td>
</tr>
<tr>
<td>11 Oral exam</td>
<td>24/08/10/24/08/10</td>
<td>15/09/10/15/09/10</td>
<td>Defend proposal</td>
<td>Proceed</td>
</tr>
<tr>
<td><strong>Project Report</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 Collect data</td>
<td>01/09/10/30/09/10</td>
<td>16/09/10/26/09/10</td>
<td>Research data</td>
<td>File</td>
</tr>
<tr>
<td>2 Analyse data</td>
<td>01/10/10/15/10/10</td>
<td>19/09/10/30/09/10</td>
<td>Results &amp; Findings</td>
<td>File</td>
</tr>
<tr>
<td>3 1st draft - Report</td>
<td>17/10/10/22/10/10</td>
<td>28/09/10/7/10/10</td>
<td>Project report draft</td>
<td>File</td>
</tr>
<tr>
<td>4 Revise draft</td>
<td>25/10/10/31/10/10</td>
<td>18/10/10/21/10/10</td>
<td>Corrections made</td>
<td>File</td>
</tr>
<tr>
<td>5 Submit Report</td>
<td>02/11/10/02/11/10</td>
<td>22/10/10/22/10/10</td>
<td>Project report</td>
<td>To supervisor</td>
</tr>
</tbody>
</table>
# Appendix 2: Interview Guide

To help me gather the information from the case study respondents during the interviews, the following questionnaire will be used to guide the interview and arrange my thoughts.

<table>
<thead>
<tr>
<th>Descriptions:</th>
<th>Demographic information about the SME – Name, Address, Size, Physical location, No of employees – skilled &amp; non-skilled,</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overview:</td>
<td>Description of SME (capital base/funding, business model, industry, objectives, current projects, partner organization if any), Owner information, Years in operation,</td>
</tr>
<tr>
<td>IT Projects:</td>
<td>Type of IT projects undertaken?</td>
</tr>
<tr>
<td></td>
<td>How the IT projects were undertaken?</td>
</tr>
<tr>
<td></td>
<td>Any available documentation (invoices, statements, letters, workplans, budgets, service level agreements, contracts, etc)?</td>
</tr>
<tr>
<td></td>
<td>What has been your experience with the IT project implementation so far – benefits and lessons learned?</td>
</tr>
<tr>
<td></td>
<td>Decision-making in the course of the IT projects?</td>
</tr>
<tr>
<td>Motivations:</td>
<td>How did you hear of the information system/software implemented (Accounting package, E-mail system, Website development, etc)?</td>
</tr>
<tr>
<td></td>
<td>Why did you choose to follow this type of implementation / acquisition? /development</td>
</tr>
<tr>
<td></td>
<td>Which IT Project Management team/firm did you use and why?</td>
</tr>
<tr>
<td>General:</td>
<td>Any other issues you may have come across/comment you’d like to make?</td>
</tr>
<tr>
<td></td>
<td>What is the size of your IT operation – no of computers/servers, operating system in use, how the software in use was obtained, IS security setup?</td>
</tr>
<tr>
<td></td>
<td>Knowledge of applicable legal/Regulatory requirements if any?</td>
</tr>
<tr>
<td></td>
<td>Do any legal or ethical issues arise from your electronic work?</td>
</tr>
<tr>
<td></td>
<td>How is your IT system maintained – service levels, maintenance contracts, hardware warranty, After-sales support?</td>
</tr>
<tr>
<td>Policies:</td>
<td>IT Policy, Business Continuity Policy, Disaster Recovery Policy, Acceptable Usage policy,</td>
</tr>
</tbody>
</table>
### Appendix 3: Emerging Improvisation Themes Index

<table>
<thead>
<tr>
<th>Theme Identifier</th>
<th>Theme Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>IR01</td>
<td>SME Organization Structure</td>
</tr>
<tr>
<td>IR02</td>
<td>IT Knowledge/skill</td>
</tr>
<tr>
<td>IR03</td>
<td>Systems Development &amp; Implementation</td>
</tr>
<tr>
<td>IR04</td>
<td>Cost</td>
</tr>
<tr>
<td>IR05</td>
<td>External Support</td>
</tr>
<tr>
<td>IR06</td>
<td>IT Project Integration and Planning</td>
</tr>
<tr>
<td>IR07</td>
<td>Quality &amp; IT Risk Management</td>
</tr>
<tr>
<td>IR08</td>
<td>IT Governance</td>
</tr>
<tr>
<td>IR09</td>
<td>Mobile Phone Technology</td>
</tr>
</tbody>
</table>