UNIVERSITY OF NAIROBI

SCHOOL OF COMPUTING AND INFORMATICS

ASSESSMENT OF ICT PROJECT FAILURE FACTORS IN GOVERNMENT AGENCIES

A case study of Kenyan Government Agencies.

BY

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P54/12720/2018

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Submitted in partial fulfillment of the requirements of the Master of Science in Information Technology Management

DECLARATION

This project, as presented in this report, is my original work and has not been presented for any award in any other university.

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This project report has been submitted in partial fulfillment of the degree of Master of Science in Information Technology Management at the University of Nairobi with my approval as the

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ACKNOWLEDGEMENT

I wish to express my sincere gratitude to my supervisor, Prof. Daniel Orwa for his undying guidance, invaluable insights, and support throughout the research process. I would additionally pass my heartfelt gratitude to Sir. Christopher Moturi and Eng. Lawrence Muchemi for going far and beyond in helping me craft a sound research paper through their intuitive insights throughout the research process.

I would also like to extend my heartfelt gratitude to my parents, siblings, lecturers, classmates, and friends, thank you for all your support and prayers.

Above all, I thank the Almighty God for guiding me throughout my academic life and letting me reach this far.

ABSTRACT

Information technology has become a critical differentiator in businesses enabling them to gain a competitive edge over their competitors. This has hence pressured many organizations to pursue change and adaptation to the technological environment. This has led to the emergence of e-governance which means that it is possible to provide efficient government administration and enabling easy access to government services through information and Communication Technology (ICT). ICT Projects in the private sector do well compared to those in the public sector and worse in government agencies. In the last two decades, however, most governments across the world have come to understand ICT's ability to enhance their service and increase their efficiency. However, in developing countries, government ICT projects are well known for slipping much behind the timeline and without success produce the intended benefits. The research was aimed at determining the ICT project failure factors in government agencies by assessing the effect of the project, people, and technology-related issues. The research used quantitative and qualitative methods as the research method. The research used questionnaires as the primary source of information together with informal interviews that were led by the questionnaires. The research revealed that vision and strategy, project management, and change management contributed significantly to the failure of an ICT project in government agencies. The research recommends the presence of a clear vision and strategy in ICT projects, formulation of project management policies to govern project management teams across all government agencies, and creation and strict adherence to change management process that will guide implementation and adoption of ICT projects across all government agencies

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CHAPTER ONE: INTRODUCTION

1.1 Background

Information Technology is becoming a critical differentiator in businesses by enabling them to have a competitive edge over their competitors (Ebad, 2018). This has hence pressured many organizations to pursue change and adaptation to the technological environment. Most notable pressures include globalization, competitive agility and customer focus, and experience. As a result, organizations have started to re-engineer their processes to attain the new value-adding processes to take full advantage of ICT in their industry.

Technology advancement has brought about the advent of e-government. This means that it is possible to provide efficient government administration and enabling easy access to government services through ICT.

ICT project resolutions can be categorized into three namely project success, Project challenged and project impaired/failed. Project Success refers to a project that has been completed on time, on budget, on target, on goal, delivers value and satisfaction. This can be simply put that the project was completed in an acceptable average period, remained within budget and genera ted customer and consumer satisfaction irrespective of the original scope (The Standish Group International, 2015). Project Challenged refers to projects that were completed with cost overruns, exceeded the estimated time, and lacking some features that were originally specified. Project impaired/Failed refers to the projects that were discontinued or dumped at some point and thus are total losses.

ICT project failure affects all industries in developed and developing countries and cannot be categorized as domain-specific.

According to Standish Group through the 2015 Standish CHAOS Report, it showed that 29% of ICT related projects were a success, 52 percent were challenged and 19 percent failed, this was based on over 25,000 software projects surveyed.

In 2004, the US, HewlettPackard ended up losing USD 160 million from defects in development systems (CIO Staff, 2007). Likewise, in 2005 the US government's Federal Investigation Bureau (FBI) was forced to abandon its USD 170 million virtual case file (VCF) management system (Afzal, 2014). In 2014, Toyota, the Japanese car manufacturer, reported a recall of its Prius vehicles to repair a software malfunction that could cause its cars to stall (Hirsch, 2014). The

National Health Service in the UK abandoned an ICT system that cost the taxpayers more than £10 billion since there were little stakeholder involvement, poor project documentation, and failure to meet the user needs (Vaheed, Tahir, & Burdanuddin, 2015).

Therefore the problem is popular worldwide, spreading from developed to growing to frontier markets. The issue is not unique to any domain; faults have been identified in numerous fields like education air transportation, postal services, government, and the military.

Government information communication technology (ICT) initiatives have become known to run well behind the timeline and struggle to produce the benefits anticipated. According to (Wright & Capps, 2010), Most major IS initiatives can surpass their original budgets and deadlines by more than 50% and this happens even more often in government than in the private sector.

Much has been written about the extent and causes of IT project failure. Such as the famous Standish Group report. Most research works have been mostly conducted in the public and private sectors of developed countries (Ashraf , Mohsin , & Khattak , 2010). Very little research has been done to carry out such a study in developing countries. Thus, the focus of this study will focus on government agencies in developing countries a case study of Kenya. Related research done on this area focused on factors influencing the effective conduct of ICT projects in the Kenyan Government (Gichoya, 2005). However, little research is available on the reasons/factors that make ICT projects fail in Kenyan government agencies.

1.2 Problem Statement

ICT Projects in the private sector do well compared to those in the public sector and worse in government agencies. In the last two decades, however, most governments worldwide have become aware of ICT's ability to enhance their service and increase their performance.

According to a report on Electronic governance as a transformation technology of public management, it states that ICTs have the potential to transform government structures and to improve the quality of government programs and services (Alguliev & Yusifov, 2008). Prior studies as depicted in a study on e-government success factors mentioned by many nation-states and local governments are struggling to make better decisions about ICT investments as part of their transformation agendas (Gil-Garcia & Pardo, 2005).

In Kenya, the National Information and Communication Technology (ICT) Policy under E-Governance/services Objectives aim at getting to use e-Government as a mechanism to improve internal efficacy and delivering quality public service (National Information & Communications, 2019). This shows that the Kenyan government is concerned with delivering quality services to the citizens and is willing to invest in the ICT sector as showcased by the ICT flagship project widely known as e-citizen. However, ICT projects are well known for lagging well behind the timeline and failing to offer the benefits anticipated. There have been a lot of studies on the extent and causes of IT project failure and recognized risk factors in both the private and public sectors of developed countries. Very little research has been done on a similar study in developing countries and especially on the performance of ICT projects on government agencies of these developing countries.

1.3 Research Objectives

The general objective was to determine the influencing factors for ICT project failures in government agencies and come up with a revised model.

The specific objectives include:

1. To assess the effect of project related issues on ICT project failure in government agencies.
2. To assess the effect of people related issues on ICT project failure in government agencies.
3. To assess the effect of technology issues on ICT project failure in government agencies.
4. To identify failure factors for ICT projects in Kenyan government agencies.

1.4 Significance

Failure of ICT projects is a topic of interest to many stakeholders evidenced by the many survey reports published on ICT Projects performance. Some of the famous reports include the Standish Group (1995), the OASIG Survey (1995), and the KPMG Canada Survey (1997).

The Project Management Institute (PMI) will stand to benefit from the outcomes of this research as it will give the perspective of influencing factors of ICT Project failure in the Kenyan Government agencies. This study will be adding to the body of knowledge that already exists and highlighting the areas that need further research.

Developing countries' governments will also benefit from this study as they get comprehensive information on the influencing factors contributing to the failure of ICT projects in government agencies. They would then formulate ways of mitigating the factors that result from the study.

Kenyan government agencies will be direct beneficiaries of this study as they will be able to relate directly with the findings of the study and formulate ways of curtailing these factors that influence ICT project failure.

1.5 Limitation of the Study

The research data was collected during the COVID-19 pandemic period, it was extremely difficult to get in-person interviews with respondents and adopted an online strategy where online questionnaires were sent to the recipients and in-person interviews done over google meets.

CHAPTER TWO: LITERATURE REVIEW

2.1 Empirical Review

An exploratory review of failed ICT projects in emerging markets aimed to use a sufficient selection of Saudi Arabian organizations to examine current patterns and influential factors of emerging market project failure. The study employed corporate surveys as the data collection method on local and international companies in SA topped by a qualitative study of the responses of the participants. The key factors uncovered from the research leading to project failure include lack of proper planning, misunderstanding user requirements, lack of end-user training, resistance to change, government regulations, and poor business process re-engineering (Shouki, 2018). This study's population included both local and multinational organizations, hence the finding from the research cannot be assumed to apply to government agencies especially of developing countries. Thus the research we will be undertaking will focus solely on government agencies of developing countries a case study of Kenya.

The Cameroonian government as of 2016 was making the fourth attempt after three failed attempts in implementing a human resource and payroll information system to control state employees a major challenge that it is facing. A study conducted to understand why the action the Cameroonian government has taken has so far not produced a suitable response by examining the use of ICT in the public service for handling staff and payroll. The study employed a case study of two state departments and observation, interviews, and archival analysis as the data collection techniques. Lack of normalization of management methods and organization procedures so that they can be in harmony with the information system, and resistance to change by IT personnel who were seen to be replicating the legacy system (Etoundi, Tobie, & Onana, 2017). This focuses on a specific system in Cameroonian government states, hence it limits the scope of the study to just the reason behind why that specific system failed. Hence, the findings from the research cannot be applied to all government ICT projects. The research we will undertake will be broader by not limiting our study to a specific system but all ICTs failures in several Kenyan government agencies.

A study to investigate the failure reasons of Pakistan's government sector IT project was conducted by reviewing 20 journal and conference papers. The study identified technology, management, politics, and finance as the factors leading to the failure of IT projects in government sector

organizations in Pakistan. Some of the notable failure factors include use of outdated legacy infrastructure, lack of experts to run and maintain latest ICT infrastructures, motivated and skilled project manager, lacks laws and regulations to help support ICT implementation and lack of timely allocation of project budget (Abbas, Faiz, Fatima, & Avdic, 2017). This research focused on secondary data mostly by analyzing previous literature on ICT project failures, thus the findings cannot be relied upon fully since the researcher cannot attest to the validity and reliability of the literature. Therefore, the research we will undertake will be for a similar developing country but the mode of research will be a case study of multiple Kenyan government agencies.

A case study research aimed to assess ICT project implementation success factors and challenges for improvement of ICT project implementation was conducted in the City Government of Addis Ababa by employing qualitative research method by using semi-structured interviews, document reviews, and participatory observation. The study identified the following factors as the challenges to successful ICT project implementation, government bureaucracy such as purchase process, decision making, custom clearance, and device shipment process, human-related such as resistance, attitude, low trust, commitment and, Organizational related problems such as organizational structure instability, low top management commitment, and continuous follow-up monitoring and controlling the project (Kebede, 2017). This study's main focus was on factors surrounding the implementation process of ICT projects thus did not give much focus on the entire ICT project life cycle. Therefore, the research findings are limited to the scope of the research, hence the need to undertake this research that will focus on the entire ICT project lifecycle of projects in multiple Kenyan government agencies.

A study on e-government implementation challenges in Malaysia and South Korea aimed to examine empirically the implementation of Malaysia's e-government and determining the hallmark challenges facing the Malaysian government that hinder e-government development. The study identified the following issues and challenges in e-governments implementation in Malaysia, technical infrastructure factors such as lack of quality technical infrastructure, slow speed and unstable connectivity, Legislative structure factors such as outdated regulations, restrictive laws and regulations and redundant acts, financial constraints factors such as insufficient funds, government's role factor such as vague policy and strategy, human infrastructure issues such as slow to adopt change, change resistance, lack of skills and expertise, lack of motivation and change

management training, and conditions of organizations issues such as lack of coordination and integration and federal-state power issues slowing down the pace of implementation (Ramli, 2017). This research employed a comparative research design method which mainly tends to focus on the similarities and differences of the two countries in how they implement an ICT project. Therefore, there is a possibility that the research would have missed certain factors due to the research design method employed. Thus, the research we will undertake will be employing a case study as the research design method which will give more focus to specific Kenyan government agencies ICT projects.

A study on governance failure with regards to government 3.0 aimed to uncover the root causes of why countries with similar infrastructure and eService availability are having somewhat different rates of online engagement with the public sector, and particularly how current stage models address governance cooperation. This study is very interesting as it paints a picture of two countries with similar or almost identical ICTs, but one is considered a failure and the other is seen to be successful. The reasons behind occurrence can be also be viewed as factors leading to ICT failure. This study identified the following reasons that made ICT fail on one of the countries, lack of understanding of core government service concepts, lack of focus on project outcomes and actual use of the system and poor documentation of operational procedures such that front-office service provision and back-office integration was seen to be mixed up (Nielsen, 2017). This study shows that a country can have the right ICT but without the right expertise and structuring processes to align with the ICT, the ICT projects will always fail. The study we are to undertake will be taking a case study approach to investigate the causes of ICT failure in Kenyan government agencies.

A study on e-government implementation in South African municipalities aimed to understand the challenges of e-Government implementation in South Africa. The research employed semi-structured interviews and a workshop with 40 attendees resulting in qualitative primary data. The study identified the following barriers to successful e-government implementation. Government-related issues such as lack of a sustainability plan, access to resources such as lack of sharing of resources in different government departments, leadership such as lack of executive management support and inherent complexity in stakeholder management, lack of ICT skills and lack of funding (Mawela, Ochara, & Twinomurinzi, 2017). This study's main focus was on factors surrounding the implementation process of ICT projects thus did not give much focus on the entire ICT project

life cycle. Therefore, the research findings are limited to the scope of the research, hence the need to undertake this research that will focus on the entire ICT project lifecycle of projects in multiple Kenyan government agencies.

From the literature reviewed, it is evident that most of the studies focus majorly on developed countries and a smaller percentage of developing countries. Most of these studies had a narrow scope i.e. some only focused on a single government system, others used a different kind of research methodology i.e. empirical review where they just reviewed existing published works. It is important to research a developing country, especially in the public sector more so in the government agency encompassing different government agencies and using a case study approach. This will help bring into light interesting findings. Kenya was chosen to be the subject of the research since its a lower-middle-income economy (The World Bank, 2019) and was ranked second leading innovation hub in sub-Saharan Africa by the World Intellectual Property Organization in its latest Global Innovation Index (GII) 2019 report (Global Innovation Index, 2019). Kenya has also made a track record for recording high levels of innovation, outperforming on levels of innovation relative to its GDP for nine consecutive years. Kenya has also been ranked best in Africa and 52nd globally in the recently released Government Artificial Intelligence Readiness Index 2019 (Government Artificial Intelligence Readiness Index, 2019). These advancements in technology make Kenya a good candidate for assessing the factors influencing ICT failure in government agencies.

2.2 Theoretical Review

2.2.1 Yeo IS Project Success/failure Factors Model

Yeo (2002) created a broad framework that represents a vast range of possible success/failure factors. In his triple-system model, he represented 3 systems: A primary system which is content-driven referred to us organizational system (S1), a supporting system which is content-driven and serving S1 referred to us formalized information system and lastly a strategic project planning and delivery system (Sp), operating the organization context of S1 in a bid to deliver a successful S2. Sp is usually process-driven.

In his paper, Yeo describes these three structures as spheres of influence (SOI) and subsequently appoints 10 major influencing issues (IOIs) that fall under SOIs based on their importance. Such problems in turn are turned into lists of failure factors found by the researcher from an in-depth

analysis of literature. The issues of influence under Sp include: business planning, project planning, and project management and control, IOI under S1 include: Corporate culture, corporate management, users and politics, and IOI under S2 include: information technology, business process, and system design and professional and knowledge resources. The top 5 failure factors under the systems are as shown in the table below: This model outlines major factors leading to ICT project failure which are in line with our research such as vision and strategy attributes, project management attributes, change management attributes, and solution design attribute. It fails to address other factors in this research which are important such as Technology factors especially attribute related to hardware and software and people skills attributes.

Table 2.1 Top 5 failure factors under S1, S2 and Sp (Yeo, 2002)

Rank	**Sp Process-driven issues**	**S1 Context-driven issues**	**S2 Content-driven Issues**
1	Underestimate of timeline	Lack of user involvement and inputs from the onset	Consultant/vendor underestimated the project scope and complexity
2	Weak definition of requirements and scope	Top-down management style	Incomplete specifications when the project start
3	Inadequate project risk analysis	Poor internal communication	Inappropriate choices of software
4	Incorrect assumption regarding risk analysis	Absence of an influential champion and change agent	Changes in design specifications late in the project
5	Ambiguous business needs and unclear vision	Reactive and not pro-active in dealing with problems	Involve a high degree of customization in the application

2.2.2 ITPOSMO Factor Model

This model consists of seven key dimensions, each with a compilation of essential success/failure factors defined for the study of e-government projects in various countries. These dimensions are as follows: The information dimension deals with factors relating to quality and prerequisites of system inputs and outputs, the technology dimension focusses on the factors dealing with availability and compatibility of the infrastructure i.e. software and hardware, processes dimension focusses on alignment and incorporation of current/new processes with the program attain desired

objectives, values, and motivation is the other dimension that focuses on organization culture and guiding values, management systems, and structures are the other dimension which focusses on managerial practice and management style, and flexibility of organizational structures, and finally, Other resources which look at factors such as money and time needed (Heeks & Bhatnagar, 1999). This model shows the factors that lead to ICT project failure or success but fails to cover some factors that are important to this research such as people skills, change management, and project's vision and strategy.

2.2.3 Information Systems Success Model (ISSM)

ISSM seeks to provide a thorough overview of IS success by determining and exemplifying the associations between six of the most important dimensions of success frequently used to assess information systems.

The six attributes are as follows: System quality is the essential traits of an information system as well as its simplicity of use, the versatility of the system, reliability of the system, and simplicity of learning. Data quality is the essential trait of system outputs, such as data relevance, ease of understanding, precision, completeness, and information usability. Service quality is the level of system support that customers receive from the IT department like the responsiveness, consistency, and technical expertise of the staff. System usage is how staff and consumers use an information system's resources, such as the volume of use, duration of use, degree of use, and intent of use. User Satisfaction is the level of customer satisfaction with the management system, like the reports it produces, and the programs it provides support. The net benefit is the level in which the e-government management system leads to the achievement of those who use the system, like improved decision-making, productivity gains and greater efficiency (Delone & McLean, 2003).

The arrows from the diagram below indicate possible relations between the dimensions of success. The model can be described as follows: In terms of knowledge, and quality of service a system can be evaluated; these traits influence the subsequent usage or plan to use and customer satisfaction. Many advantages can be gained by using the program. The overall benefits can affect consumer satisfaction (positively or negatively) as well as the future use of the management system. The relations forming the intent to use are weak and could lead to weak predicting power of the model. Therefore, the separation of intent to use and use is necessary so that the intent of use can have proper antecedents derived from technology acceptance models (TAMs) and unified

theory of acceptance and use of technology (UTAUT) such as perceived usefulness, performance expectancy, effort expectancy and social influence (Siti , Tjakraatmadja, & Aprianingsih, 2015). This model focused more on how to evaluate the success or failure of a system, with major emphasis on the delivered system and end-user satisfaction. It has some attributes that are in line with this research technology factors and change management factors but luck other attributes that are important to this research such as vision and strategy attributes project management attributes and people skills attributes.

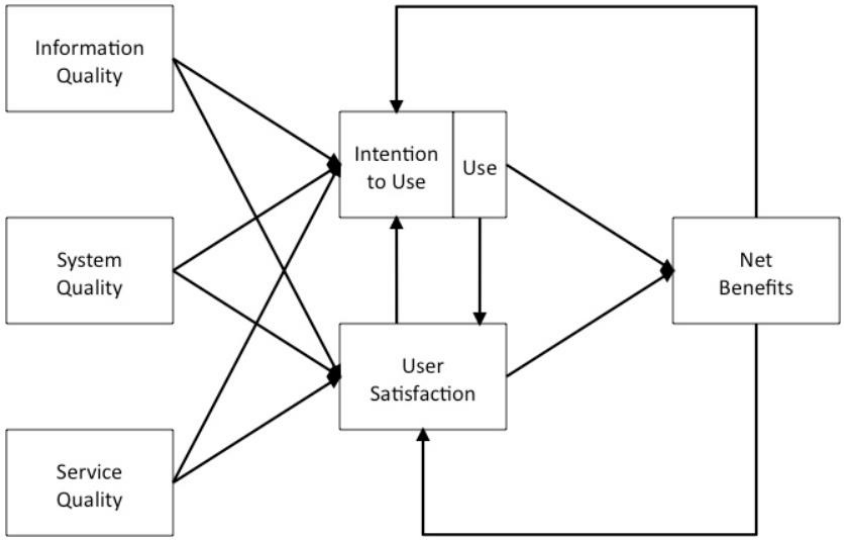


Figure 2.1 ISSM Diagrammatic expression

2.3 Conceptual Framework

The conceptual framework employed in this research was the Factor Model by Heeks, 2004 (Heeks R. , 2004). This model was chosen since it is naturally crafted for e-government implementation in developing countries which aligned perfectly with the research that was undertaken. Such models describe a range of factors of success/failure: external pressure, internal political will, general vision and strategy, project management, change management, policy, architecture, qualifications, and technical infrastructure.

This model was a perfecr fit compared to other models discussed under theoretical review as it covers all objectives of the research. Additionally, this model was also used to study why e-government initiatives fail for Syrian and Bangladesh governments which are developing countries

and with middle to the low-income economy. The factors covered in this model also match failure factors from the literature view of ICT Project failure in government agencies and the public sector.

Figure 2.2 Factor Model (Heeks, 2004)

Table 2.2 Operationalizing the Variables

Variable	Dimension	Measurable Item	Metric
Project Related Issues	Vision and Strategy	Absence of a long-term view	Likert Scale
		Absence of ICT Project guidance	Likert Scale
		Absence of links between ends and means	Likert Scale
		Low top management commitment and support	Likert Scale
		Degree of ICT Policies rigidity	Likert Scale
	Project Management	Lack of teamwork and collaboration in projects teams	Likert Scale
		Poor documentation of User Needs and Requirements	Likert Scale
		Lack of stakeholder involvement	Likert Scale
		Lack of adequate time allocation to the ICT project	Likert Scale
		Lack of ICT project budget	Likert Scale
		Poor ICT project risk analysis	Likert Scale
		Lack of clear stakeholder communication plan	Likert Scale
		Lack of continuous monitoring of ICT project progress	Likert Scale
People Related Issues	Skills	IT awareness and skills are missing amongst developers and users/operators	Likert Scale
		Level of experience among developers and users/operators	Multiple Choice (Less than 1 year, 2-5 years, 6-10 years and More than 10 years)
		Lack of frequent employee training on the implementation of ICT projects	Likert Scale
		Level of personal education among developers and users/operators	Multiple Choice (No formal education, Diploma Level, Certificate Level, Undergraduate Level,

			and postgraduate level)
	Change Management	Poor Risk assessment and management of the change	Qualitative
		Lack of change communication plan	Likert Scale
		Lack of managing change resistance	Likert Scale
		lack of employee training on the change	Likert Scale
		Resistance to change	Likert Scale
Technology Issues	Solution Design	Lack of inputs from key local stakeholders	Likert Scale
		Presence of designs that are over-technical or over-ambitious	Likert Scale
		lack of piloting	Likert Scale
		Misunderstanding the client needs and requirements	Likert Scale
	Hardware	Inadequate computing devices (computers, servers and storage devices)	Likert Scale
		Use of outdated legacy infrastructure	Likert Scale
		Low internet speeds and unstable connectivity	Likert Scale
	Software	The inability of computerized systems to interchange data	Likert Scale
		Unreliability of the ICT solution	Likert Scale
		Lack of availability of the ICT solution	Likert Scale

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This section concentrates on the target population and sampling processes, techniques of information collection, and presentation of information. The research methodology is concerned with describing the techniques used in conducting the research survey (Kombo & Tromp, 2009).

3.2. Research Philosophy

Research philosophy shows how the researcher identifies the relationship between knowledge and its method of development. This study employed positivist philosophy since it utilizes the quantitative method which lies in data collection that can be statistically analyzed to draw conclusions. This philosophy relies on scientific methods to draw relationship on the variables under study.

3.3 Research Method

This has two main methods which include qualitative and quantitative. This study employed a quantitative method as it was used to quantify the problem of study and generation of numerical data that will be used in the analysis. This was the main reason for choosing the quantitative method as the primary research method as it uses measurable data to uncover trends and patterns as it is with our research on factors influencing ICT project failure.

3.4 Research Design

To answer the questions of the research, this research embraced a descriptive design. Descriptive research describes the current state of affairs. A descriptive study is performed to assess the features of interest variables in a scenario and describe them and would be helpful in understanding the factors influencing ICT failure in Kenyan government agencies in this research.

3.5 Target Population

A population is an area under investigation covering all things of interest. This study's target population was staff members of three government agencies who are involved directly or indirectly (ranging from Chief Technology Officer, ICT Manager, Project Managers, IT Engineers, and staff end-users) in the implementation of an ICT project. ICT projects consider fell in the following categories Software, Networking, and Security (biometrics and CCTV).

3.6 Sample size and Sampling Technique

A sample can be defined as a subset of the available population. This subpopulation is chosen closely to be reflective of the entire population with the respective features where each sample member or case is related to as the basis, respondent, or interviewee. The respondents can be broadly divided into two levels; management and operational (technical teams and end-users) staff as it's a homogeneous population. The responses derived from the two levels have less variability and can be easily generalized for the entire population. To diversify the respondents further, they were picked from three different government agencies.

A sample size of 30 and above was deemed acceptable (Oates, 2006). The study adopted a stratified method for random sampling to come up with the required sample as the research population could be divided into two sub-groups (Management level staff and Operational level staff) where random samples were collected to get a proper representation of the population. The goal of Stratified random sampling is intended to obtain the required representation in the population from different subgroups (Kothari, 2004).

Table 3.1 Sample Size

Government agency/Level	**A**	**B**	**C**	**Total**
	Sample Population	Sample Population	Sample Population	Sample Population
Management level	6	6	6	18
Operational Level	27	27	27	81
Total	**33**	**33**	**33**	**99**

3.7 Data Collection Instruments

To identify the factors influencing ICT failure in government agencies, the study used questionnaires as the primary source of information coupled by informal interviews led by the questionnaires. Questionnaires were designed in line with the research objectives. Questionnaires were preferred since they are easily relatable to the respondents, easy to administer and analyze the data since it's in a structured format and is ideal where the respondent may not want their identity known especially in our case where we were focusing on factors influencing ICT failure.

The questionnaires were administered online due to the COVID-19 pandemic that limited physical contact. The questionnaires had open-ended, close-ended, and Agreement Likert questions. Likert scales are opted due to their ease in administration, relatable to the respondents, and easily quantifiable and subjective to the computation of mathematical analysis.

3.8 Pilot Testing

A pilot test is an assessment of particular issues, format, question sequence, and guidelines before the primary study. The questionnaires were taken through a dry run on a selected sample identical to the actual sample of interest. The dry run process of testing the questionnaires similar to the one that was used in the real data collection. Some vague questions were identified and restructured to reflect the same meaning to all participants.

One percent of the sample was taken into consideration due to the price, time, and practicality of the pilot test. To assess the effectiveness and significance of the information collection tool of this study, consideration was being given to one percent of the sample. The questionnaires' reliability was assessed using SPSS software. Pre-testing of the questionnaire was carried out using randomly chosen staff from the three government agencies who were part of the real data collection.

3.8.1 Validity and Reliability of the Research Instruments

Research instruments' reliability was determined through the piloting process to assess whether developed items would give consistent results at different times after they have been administered. The fundamental role of piloting is to ensure that the items included in the questionnaires evaluate the desired research objectives. To evaluate the internal consistency of the study tools, Cronbach's alpha method was implemented to Likert scale objects. This method is favored by its distinctive ability to determine the study instrument's inner consistency and reliability. The alpha reliability coefficient of Cronbach varies from 0 to 1 with values close to one indicate the elevated internal consistency of the Likert scale products.

3.9 Data Analysis and Presentation

Data analysis refers to the use of logic to explain the information collected to determine coherent patterns and to summarize the relevant details revealed in the inquiry. To determine the patterns discovered in the information collection of the factors, the study goals and the assessment of the information collected will be the drivers of data analysis (Zikmund, Babin, Carr, & Mitch, 2013).

Information will be organized, coded, and entered into Statistical Package for Social Sciences (SPSS) for the generation of relationship in tabular, graphical, inferential statistics, and descriptive statistics. Using descriptive statistics, factors influencing ICT failure in government agencies will be determined.

CHAPTER FOUR: RESULTS AND DISCUSSION

4.1 Introduction

This chapter analyzes the data gathered and explains the results from the observations obtained from the respondents sampled. This research aimed to address factors in government agencies affecting the failure of the ICT project.

4.2 Response Rate

99 questionnaires were distributed to the respondents identified in the 3 government agencies, out of these, 18 were administered to management level staff while 81 were distributed to operational level staff. 82 questionnaires were correctly filled out, by 15 management-level and 67 operational-level staff. This represented an overall successful response rate of 82.8%. Rates of return of 50 percent are appropriate for research and release, 60 percent are good, and more than 70 percent are very good (Babbie, 2004). This was an acceptable rate given that the questionnaires had to be administered online due to the Covid-19 pandemic that discouraged close contact and maintenance of social distance. The response rate was as follows:

Table 4.1 Response Rate

	Target Sample Size	**Response Rate**	**%Response Rate**
Management Level	18	15	83.3%
Operational Level	81	67	82.7%
Total	**99**	**82**	**82.8%**

4.3 Reliability Analysis

Reliability analysis for this study was done using Cronbach's Alpha. This test measures the internal consistency and reliability of any research tool used in a study. For the study to be effective, alpha values have to be >0.6. Cronbach's alpha for this study was 0.868 thus this study is highly effective. The table below shows the results.

Table 4.2 Reliability Analysis

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.864	.868	30

4.4 General Information

4.4.1 Work Experience

The respondents were requested to pick their working experience which had been categorized into 4 categories. This was crucial as it would give different insights about the research based on the different levels of experience. The majority of the respondents (73.2%) had 2-5 years of working experience. This is due to the fact that most technical people are recent graduates and modern technology is needed for government agencies to be efficient. The results suggest that a plurality of participants had sufficient working experience to effectively and sufficiently provide the information sought by the study. The replies to this question are outlined in table 4.3.

Table 4.3 Work Experience in Years

Which of the following best describes your work experience in this organization

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 1 year	18	22.0	22.0	22.0
	2-5 years	60	73.2	73.2	95.1
	6-10 years	4	4.9	4.9	100.0
	Total	82	100.0	100.0	

4.4.2 Level of Education

The study aimed to determine the highest educational credentials the respondents had earned. Education level was significant because it helped the researcher assess the respondents' academic prowess and specialization. In general, 93.9% of the respondents had undergraduate and post-graduate qualifications and 6.1% had diploma and certificate qualifications. The findings imply

that the participants were adequately educated to comprehend and answer the questions accordingly. The replies to this question are outlined in table 4.4.

Table 4.4 Level of Education

Level of Education

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Certificate Level	1	1.2	1.2	1.2
	Diploma Level	4	4.9	4.9	6.1
	Undergraduate Level	61	74.4	74.4	80.5
	Post-Graduate Level	16	19.5	19.5	100.0
	Total	82	100.0	100.0	

4.4.3 Job Level

The study further sought to establish the position level of the respondents who were broadly categorized into management and operational level. This was to help in identifying various insights into the two categories of respondents. The responses to this question are depicted in table 4.5.

Table 4.5 Job Level

Position in the Organization

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Management	15	18.3	18.3	18.3
	Operational	67	81.7	81.7	100.0
	Total	82	100.0	100.0	

4.4.4 Area of Specialization

The study further sought to establish the respondent's departments which was broadly divided into 10 divisions depending on the responses received. This categorization was important so that it makes it easy to analyze the results and paint a picture of the areas of specialization of the respondents. Client facing and technical teams accounted for the largest percentage of respondents (75.7%). The findings imply that the day today teams that interact with ICT projects responded to the questionnaire giving the responses more significance.

The responses to this question are depicted in table 4.6.

Table 4.6 Area of Specialization

Division/Department

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Business Development	3	3.7	3.7	3.7
	Comm & Marketing	21	25.6	25.6	29.3
	Compliance	2	2.4	2.4	31.7
	Customer Experience	8	9.8	9.8	41.5
	Financial Services	4	4.9	4.9	46.3
	Human Resource	4	4.9	4.9	51.2
	ICT	29	35.4	35.4	86.6
	Legal	1	1.2	1.2	87.8
	Operations	9	11.0	11.0	98.8
	Procurement	1	1.2	1.2	100
	Total	82	100.0	100.0	

4.5 Project Related Issues

The first objective of the study was to assess the effect of project related issues on ICT project failures in government agencies. This objective had two dimensions which include Vision and strategy issues, and project management issues.

4.5.1 Vision and Strategy Issues

The table below shows how the respondents responded to the various items assessing the effect of vision and strategy issues on ICT project failure in government agencies. 87. 8%, 85.3%, and 84.1% of the respondents agreed that the absence of a long term view, lack of ICT project guidance, and low commitment from top management lead to ICT project failure in government agencies respectively. This implies that there is poor leadership, management, and strategy formulation skills in government agencies which contribute heavily to the failure or success of an ICT project. 75.6% of the respondents agreed that rigid ICT policy hinders seamless ICT project implementation which leads to ICT project failure. This implies that most government agencies do not realize that ICT is dynamic and would require ICT policies to keep changing from time to time so that they can take advantage of new technologies. Respondents were also asked to give ways in which vision and strategy issues contribute to ICT project failure in government agencies. It was

noted that lack of top management support and commitment, red tape in decision making, failure of communication of the ICT strategy were some of the reasons that the respondents identified that contribute to ICT project failure in government agencies. These findings are in line with the Heeks Factor Model that identified Management factors such as poor project management, and lack of vision and strategy as some of the major factors that would lead to failure of an E-government ICT project (Heeks R. , 2004).

Table 4.7 Vision and Strategy Issues effect on ICT Project Failure in Government Agencies

Vision and Strategy Issues	**Strongly Disagree**	**Disagree**	**Not Decided**	**Agree**	**Strongly Agree**	**Likert Mean**	**Likert Median**
Absence of a long term view (strategy/vision) contributes to ICT project failure in government agencies	1.2%	4.9%	6.1%	34.1%	53.7%	4.34	5.00
Absence of ICT project guidance contributes to ICT project failure in government agencies	1.2%	3.7%	9.8%	51.2%	34.1%	4.13	4.00
Low top management commitment and support contributes to ICT project failure in government agencies	0.0%	1.2%	14.6%	45.1%	39.0%	4.22	4.00
The rigidity of ICT policies contributes to ICT project failure in government agencies	2.4%	8.5%	13.4%	35.4%	40.2%	4.02	4.00

4.5.2 Project Management Issues

The table below shows how the respondents responded to the various items assessing the effect of project management issues on ICT project failure in government agencies. 90.3%, 81.7%, 79.3%,

and 79.3% of the respondents agreed that poor documentation of user needs and requirements, lack of stakeholder involvement, lack of a clear stakeholders' communication plan, and lack of teamwork and collaboration among project teams would lead to ICT project failure respectively. This implies that project teams in government agencies do not work collaboratively which means that they work in silos which can lead to different interpretations of the project objectives and different project targets which ultimately influences greatly on ICT project failure. 85.4%, 84.1%, and 79.3% of the respondents agreed that poor project risk analysis, lack of continuous monitoring, and lack of an ICT budget lead to ICT project failure in government agencies respectively. This implies that most government agencies lack proper ICT project planning measures, and project control and monitoring metrics which contribute greatly to the failure of the ICT projects. Respondents were also asked to give ways in which project management issues contribute to ICT project failure in government agencies. Poor ICT project leadership, politics in project implementation, lack of project team collaboration and cooperation, and lack of stakeholder participation were some of the reasons the respondents identified that contribute to project failure.

A study assessing factors affecting the success of ICT project implementation in public sectors outlined government bureaucracy in decision making as a major factor that drives the rigidity of ICT policies (Kebede, 2017). Lack of stakeholder involvement made the National Health Service in the UK to abandon an ICT system that cost the taxpayers £10 billion (Vaheed, Tahir, & Burdanuddin, 2015). An exploratory study of ICT project failure in emerging markets outlined a lack of proper planning and misunderstanding user requirements as the major factors leading to ICT projects in emerging markets (Shouki, 2018).

Table 4.8 Project Management Issues effect on ICT Project Failure in Government Agencies

Project Management Issues	**Strongly Disagree**	**Disagree**	**Not Decided**	**Agree**	**Strongly Agree**	**Likert Mean**	**Likert Median**
Lack of teamwork and collaboration in project teams contributes to ICT project failure in government agencies	2.4%	3.7%	14.6%	36.6%	42.7%	4.13	4.00

Poor documentation of user needs and requirements contributes to ICT project failure in government agencies	0.0%	2.4%	7.3%	35.4%	54.9%	4.43	5.00
Lack of stakeholders involvement contributes to ICT project failure in government agencies	0.0%	4.9%	13.4%	37.8%	43.9%	4.21	4.00
Lack of an ICT budget contributes to ICT project failure in government agencies	7.3%	7.3%	15.9%	29.3%	40.2%	3.88	4.00
Poor ICT project risk analysis contributes to ICT project failure in government agencies	0.0%	3.7%	12.2%	37.8%	46.3%	4.27	4.00
Lack of a clear stakeholder communication plan contributes to ICT project failure in government agencies	0.0%	4.9%	15.9%	47.6%	31.7%	4.06	4.00
Lack of continuous monitoring on ICT project progress contributes to ICT project failure in government agencies	1.2%	0.0%	13.4%	35.4%	50.0%	4.33	4.50

4.6 People Related Issues

The second objective of the study was to assess the effect of people related issues on ICT project failures in government agencies. This objective had two dimensions which include skills issues and change management issues.

4.6.1 Skills Issues

The table below shows how the respondents responded to the various items assessing the effect of skills issues on ICT project failure in government agencies. 80.4% of the respondents agreed that the lack of frequent employee training would lead to ICT project failure. This implies that there is a poor handover of ICT projects which is a result of poor ICT project planning in most government agencies. 64.6% and 56.1% of the respondents agreed that lack of IT knowledge and skills among developers and end-users, and low experience among developers and end-users would lead to ICT project failure respectively. These percentages are low compared to the agreement level of the other dimensions implying that despite low IT knowledge and experience causing ICT projects to fail, it not a major factor that would lead to ICT projects failure on its own. 42.7% of the respondents agreed that low personal education among developers and end-users would lead to ICT project failure while 33.0% disagreed and 24.4% were undecided. This implies that low personal education plays a very low role in the failure of ICT projects in government agencies. Respondents were also asked to give ways in which skills issues contribute to ICT project failure in government agencies. Lack of knowledge in the ICT field, the poor hiring process leading to unqualified staff, lack of employee training on how to implement new projects and overstretched project managers taking more projects than they can handle were some of the reasons that the response gave to why ICT projects fail in government agencies.

In a comparative study done in Malaysia and South Korea on e-government implementation challenges posited that lack of skills and expertise contributed greatly to e-government implementation in Malaysia (Ramli, 2017). Lack of experts to run and maintain the latest ICT infrastructures was a major factor in a study investigating the reasons for the failure of government IT projects in Pakistan (Abbas, Faiz, Fatima, & Avdic, 2017).

Table 4.9 Skills Issues effect on ICT Project Failure in Government Agencies

Skills Issues	Strongly Disagree	Disagree	Not Decided	Agree	Strongly Agree	Likert Mean	Likert Median
Lack of IT knowledge and skills among developers and users/operators contributes to ICT project failure in government agencies	7.3%	11.0%	17.1%	20.7%	43.9%	3.83	4.00
Low level of experience among developers and users/operators contributes to ICT project failure in government agencies	4.9%	14.6%	24.4%	31.7%	24.4%	3.56	4.00
Lack of frequent employee training on implementation of ICT projects contributes to ICT project failure in government agencies	2.4%	3.1%	14.6%	40.2%	40.2%	4.02	4.00
Low level of personal education among developers and users/operators contributes to ICT project failure in government agencies	9.8%	23.2%	24.4%	25.6%	17.1%	3.17	3.00

4.6.2 Change Management Issues

The table below shows how the respondents responded to the various items assessing the effect of change management issues on ICT project failure in government agencies. 86.6%, 82.9%, 80.5%, 78.1%, and 75.6% agreed that Resistance change, lack of managing change resistance, lack of employee training on new changes, and lack of change communication plan contribute to the

failure of ICT projects in government agencies. This implies that most government agencies lack proper change management processes, especially how to roll out a change, transition people to the new change, and monitoring the change. It also implies that most government agencies have very rigid structures and cultures making them had to adopt a new change. Respondents were also asked to give ways in which change management issues contribute to ICT project failure in government agencies. The respondents gave the following reasons; Government agencies' culture of favoring old structures, the reluctance of government agencies to adopt new technologies, senior management resistance to change, lack of employee training on the new change, and lack of seamless project rollout.

Resistance to change played a major role in the failure of the Cameroonian government to implement a human resource and payroll information system to control state employees (Etoundi, Tobie, & Onana, 2017). Change resistance and lack of motivation and change management training were some of the major factors under human infrastructure that lead to challenges affecting e-governments implementation in Malaysia (Ramli, 2017).

Table 4.10 Change Management Issues effect on ICT Project Failure in Government Agencies

Change Management	**Strongly Disagree**	**Disagree**	**Not Decided**	**Agree**	**Strongly Agree**	**Likert Mean**	**Likert Median**
Poor Risk assessment and management of the change contributes to ICT project failure in government agencies	1.2%	0.0%	18.3%	50.0%	30.5%	4.09	4.00
Lack of change communication plan contributes to ICT project failure in government agencies	0.0%	3.7%	20.7%	50.0%	25.6%	3.98	4.00
Lack of managing change resistance contributes to ICT project failure in government agencies	0.0%	3.7%	13.4%	56.1%	26.8%	4.06	4.00

lack of employee training on the change contributes to ICT project failure in government agencies	0.0%	3.7%	18.3%	48.8%	29.3%	4.04	4.00
Resistance to change contributes to ICT project failure in government agencies	0.0%	7.3%	6.1%	39.0%	47.6%	4.27	4.00

4.7 Technology Related Issues

The third objective of the study was to assess the effect of technology-related issues on ICT project failures in government agencies. This objective had three dimensions which include solution design issues, Hardware issues and software issues, and project management issues.

4.7.1 Solution Design Issues

The table below shows how the respondents responded to the various items assessing the effect of solution design issues on ICT project failure in government agencies. 84.1% and 76.8% of the respondents agreed that misunderstanding of the client's needs and requirements, and lack of input from key local stakeholders would contribute to ICT project failure in government agencies. This implies that stakeholder involvement is key to understanding stakeholder requirements which would increase stakeholder satisfaction and ultimately not lead to project failure. 69.5 percent of the respondents agreed that lack of piloting of ICT projects would lead to ICT project failure in government agencies. This implies that if government agencies don't test out the ICT project with the end-users or by simulating the real environment where the project will be rolled out, then there is a high chance that the ICT project will fail. 50% of the respondents agreed that over-technical designs contribute to ICT project failure among government agencies. However, 26.9% of the respondents disagreed while 23.2% were undecided. This implies that most government ICT projects do not put much thought on the ICT project design and as such, they are a little impact on the contribution to the failure of ICT projects. Respondents were also asked to give ways in which solution design issues contribute to ICT project failure in government agencies. The respondents gave the following reasons; poor user interface of information systems and lack of stakeholder involvement. Lack of understanding of core government service concepts and poor documentation

of operational procedures were major ICT failure factors highlighted in a study on governance failure in light of government 3.0 (Nielsen, 2017).

Table 4.11 Solution Design Issues on effect on ICT Project Failure in Government Agencies

Solution Design Issues	Strongly Disagree	Disagree	Not Decided	Agree	Strongly Agree	Likert Mean	Likert Median
Lack of inputs from key local stakeholders contributes to ICT project failure in government agencies	3.7%	7.3%	12.2%	40.2%	36.6%	3.99	4.00
Presence of designs that are over-technical or over-ambitious contributes to ICT project failure in government agencies	11.0%	15.9%	23.2%	36.6%	13.4%	3.26	4.00
Lack of piloting the ICT project contributes to ICT project failure in government agencies	2.4%	7.3%	20.7%	41.5%	28.0%	3.85	4.00
Misunderstanding the client needs and requirements contributes to ICT project failure in government agencies	3.7%	2.4%	9.8%	37.8%	46.3%	4.21	4.00

4.7.2 Hardware Issues

The table below shows how the respondents responded to the various items assessing the effect of hardware issues on ICT project failure in government agencies. 79.2%, 74.3%, and 65.8% of the respondents agreed that the use of outdated legacy infrastructure, inadequate computing devices, and low internet speed and unstable connectivity contribute to the failure of ICT projects in government agencies. This implies that computing devices and internet connectivity are vital to

any success of an ICT project and lack of which would lead to ICT project failure. It also implies that legacy infrastructure contributes greatly to ICT project failure. Respondents were also asked to give ways in which hardware issues contribute to ICT project failure in government agencies. The respondents gave the following reasons; legacy ICT infrastructure that is not compatible with new technologies and third-party systems. Technical infrastructure factors such as lack of quality technical infrastructure, slow speed, and unstable connectivity were major challenges affecting e-governments implementation in Malaysia (Ramli, 2017).

Table 4.12 Hardware Issues effect on ICT Project Failure in Government Agencies

Hardware Issues	**Strongly Disagree**	**Disagree**	**Not Decided**	**Agree**	**Strongly Agree**	**Likert Mean**	**Likert Median**
Inadequate computing devices (computers, servers and storage devices) contributes to ICT project failure in government agencies	2.4%	8.5%	14.6%	40.2%	34.1%	3.95	4.00
Use of outdated legacy infrastructure contributes to ICT project failure in government agencies	1.2%	4.9%	14.6%	39.0%	40.2%	4.12	4.00
Low internet speeds and unstable connectivity contributes to ICT project failure in government agencies	3.7%	8.5%	22.0%	40.2%	25.6%	3.76	4.00

4.7.3 Software Issues

The table below shows how the respondents responded to the various items assessing the effect of software issues on ICT project failure in government agencies. 74.4%, 70.8%, and 69.5% of the respondents agreed that the unreliability of ICT solutions, the inability of computerized systems to share information, and lack of system availability would contribute to ICT project failure in government agencies. This implies that the availability, reliability, and interoperability of ICT

software projects are paramount to their success and failure to meet them would lead to a slow adoption rate by end-users and finally dropped causing total failure of the ICT projects. Respondents were also asked to give ways in which software issues contribute to ICT project failure in government agencies. The respondents gave the following reasons; mutating client requirements during project implementation, the unreliability of an ICT project, and incompatibility of ICT project with third party systems.

Table 4.13 Software Issues effect on ICT Project Failure in Government Agencies

Software Issues	**Strongly Disagree**	**Disagree**	**Not Decided**	**Agree**	**Strongly Agree**	**Likert Mean**	**Likert Median**
Inability of computerized systems to interchange data contributes to ICT project failure in government agencies	0.0%	7.3%	22.0%	41.5%	29.3%	3.93	4.00
Unreliability of the ICT solution contributes to ICT project failure in government agencies	0.0%	7.3%	18.3%	41.5%	32.9%	4.00	4.00
Lack of availability of the ICT solution contributes to ICT project failure in government agencies	3.7%	7.3%	19.5%	37.8%	31.7%	3.87	4.00

4.8 Correlation Analysis

Table 4.14 Correlation Analysis among variables

		Vision& Strategy	ProjectManagement	Skills	ChangeManagement	Solution Design	Hardware	Software	ictprojectfailure
VisionandStrategy	Pearson Correlation	1	.408**	.341**	.496**	.343**	.115	.316**	.314**
	Sig. (2-tailed)		.000	.002	.000	.002	.303	.004	.004
	N	82	82	82	82	82	82	82	82

ProjectManagement	Pearson Correlation	.408**	1	.425**	.539**	.275*	.190	.246*	.646**
	Sig. (2-tailed)	.000		.000	.000	.013	.088	.026	.000
	N	82	82	82	82	82	82	82	82
Skills	Pearson Correlation	.341**	.425**	1	.353**	.333**	.231*	.422**	.863**
	Sig. (2-tailed)	.002	.000		.001	.002	.037	.000	.000
	N	82	82	82	82	82	82	82	82
change management	Pearson Correlation	.496**	.539**	.353**	1	.366**	.339**	.472**	.448**
	Sig. (2-tailed)	.000	.000	.001		.001	.002	.000	.000
	N	82	82	82	82	82	82	82	82
solution design	Pearson Correlation	.343**	.275*	.333**	.366**	1	.231*	.364**	.470**
	Sig. (2-tailed)	.002	.013	.002	.001		.037	.001	.000
	N	82	82	82	82	82	82	82	82
Hardware	Pearson Correlation	.115	.190	.231*	.339**	.231*	1	.327**	.178
	Sig. (2-tailed)	.303	.088	.037	.002	.037		.003	.110
	N	82	82	82	82	82	82	82	82
Software	Pearson Correlation	.316**	.246*	.422**	.472**	.364**	.327**	1	.452**
	Sig. (2-tailed)	.004	.026	.000	.000	.001	.003		.000
	N	82	82	82	82	82	82	82	82
ictprojectfailure	Pearson Correlation	.314**	.646**	.863**	.448**	.470**	.178	.452**	1
	Sig. (2-tailed)	.004	.000	.000	.000	.000	.110	.000	
	N	82	82	82	82	82	82	82	82
**. Correlation is significant at the 0.01 level (2-tailed).									
*. Correlation is significant at the 0.05 level (2-tailed).									

The correlation is critical in order to understand the relationship between Vision and Strategy, Project Management, Skills, Change management, Solution design, Hardware, Software, and ICT project failure factors in Kenyan Government Agencies.

The correlation is also a requirement for completing the regression on study data. The data indicate that there is a sufficient correlation between the variables except for hardware where there is no sufficient correlation with ICT Project failure as the p-value is more than 0.05. The results were significant for all the variables since p-value was lower than 0.05

4.9 Multicollinearity Test

Multicollinearity exists when two or more predictors are correlated into the model and provide redundant response information. Multicollinearity was calculated by inflation variance and resistance factors (IFVs). If VIF value exceeds 4.0, or tolerance value is less than 0.2 then there is a problem with multicollinearity (Hair, Black, Babin, & Anerson, 2010).

Table 4.15 Tolerance and VIF value for independent variables

Model Variables	Collinearity Statistics	
	Tolerance	VIF
Vision and Strategy	.680	1.470
Project Management	.624	1.603
Skills	.684	1.462
Change Management	.509	1.965
Solution Design	.768	1.301
Hardware	.830	1.205
Software	.653	1.531

As the table shows no item has a tolerance value of less than 0.20. Also, no item has a value of more than 4. This is an indication that the collinearity is not present implying that no item contains redundant information. This is a further confirmation that each item distinctly represents different aspects of our conceptual model.

4.10 Regression Analysis

Table 4.16 Regression analysis – Full Model

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.942[a]	.887	.877	.22384

a. Predictors: (Constant), Software, Project Management, Hardware, Solution Design, Vision and Strategy, Skills, Change Management

This analysis aid in understanding the relationship between Vision and Strategy, Project Management, Skills, Change management, Solution design, Hardware, Software, and ICT project failure. The data indicates that the independent variables predict ICT project failure by 94.2%. The R square shows that there is variance in the dependent variable that ICT project failure is due to Vision and Strategy, Project Management, Skills, Change management, Solution design, Hardware, Software. The minimum value for R square should be more than 30%, so this is a decent model and is suitable for further study and can be adopted by other researchers as well.

4.11 Analysis of Variance (ANOVA)

Table 4.17 ANOVA Table

ANOVA[a]						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	29.201	7	4.172	83.255	.000[b]
	Residual	3.708	74	.050		
	Total	32.909	81			

a. Dependent Variable: ictprojectfailure

b. Predictors: (Constant), Software, ProjectManagement, Hardware, SolutionDesign, VisionandStrategy, Skills, Change Management

The ANOVA table explains the variance as a result of ICT project failure with the aid of Vision and Strategy, Project Management, Skills, Change management, Solution design, Hardware, and Software. 29.201 out of 32.909 is explained by the independent variables, while the balance (3.708) is explained by variables outside the study. This further indicates that the independent variables in the model explain the ICT project with greater significance.

4.12 Regression Analysis - Coefficients

Table 4.18 Coefficients Table

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.049	.256		.190	.850
	Vision and Strategy	-.170	.053	-.152	-3.211	.002
	Project Management	.461	.064	.355	7.193	.000
	Skills	.494	.034	.685	14.528	.000
	Change Management	.026	.065	.021	.390	.697
	Solution Design	.168	.041	.184	4.127	.000
	Hardware	-.081	.032	-.107	-2.502	.015
	Software	.065	.039	.082	1.693	.095

a. Dependent Variable: ictprojectfailure

The study findings indicated that there was a significance relationship between Vision and Strategy ($p = 0.002$), Project Management ($p = 0.000$), Skills ($p = 0.000$), Hardware ($p = 0.015$) and Solution design ($p = 0.000$) when regressed with ICT project failure factors. Vision and Strategy, Solution Design, Project management, Skills, and Hardware are likely to influence ICT project failure in an organization since they are below 0.05, and if $p<0.05$ means we reject the null hypothesis and accept the alternate hypothesis. The findings indicate that all the above five factors, that is, Vision and Strategy, Solution Design, Project management, Skills, and Hardware are likely to influence ICT project failure in Kenyan Government Agencies.

4.13 Proposed Model

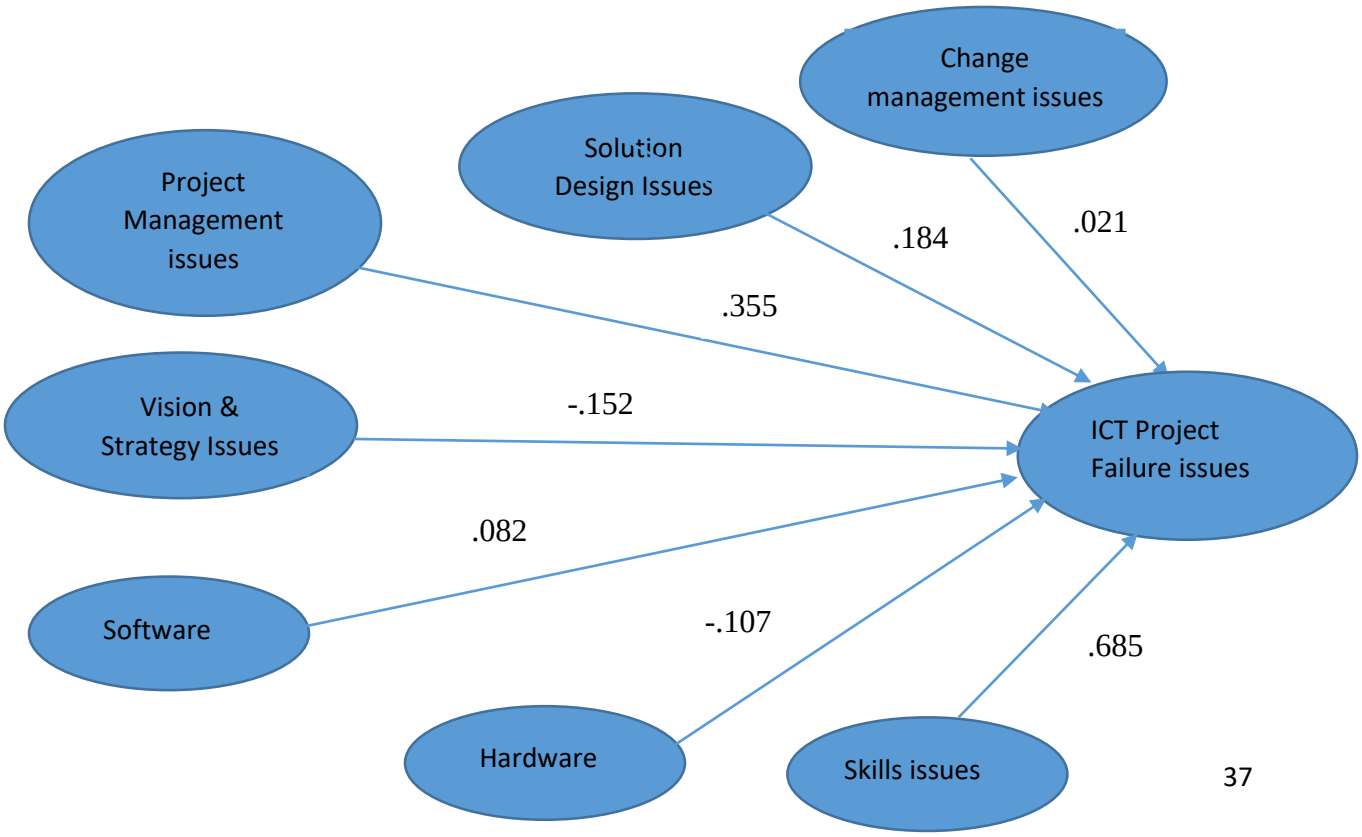
The proposed model was derived by carefully running the regression analysis without independent variables with a p-value greater than 0.05 from the full model.

The aim of running multiple iterations was to see the effect of each independent variable on the dependent variable. The model with the highest resulting adjusted R squared and least residual value in the sum of squares would be chosen. The first regression was done without the independent variable change management since it had the highest p-value compared to software. The second regression was done without both change management and software as they both had a p-value of greater than 5.

The regression model that was generated without change management, the adjusted R squared value had an insignificant difference with that of the full model. The difference was 0.001. Secondly, the residual sum of square value of the model without change management increased compared to that of the full model. From the qualitative data, it was evident that change management brought about ICT project failure as factors such as government culture, employee training, resistance to change, and lack of support from senior management on endorsing the new change.

Despite Software having no significant relationship to ICT project failure in government agencies, it was noted that while it was removed from the model, the model resulted in a lesser adjusted R squared value. This implies that software has an impact on ICT project failure.

Therefore, the study opted to go with the full model as it was more representative of why ICT project fails in government agencies.



The model extends to Heek's Factor Model as it more broad and diverse in terms of the factors that lead to ICT project failure in government agencies. The proposed model has broadly categorized its variables into three: People, Project, and Technology related issues that lead to ICT project failure. The major differentiating factors identified in this research include the following: Under people-related issues, Government culture was not favorable to successfully implementation of ICT projects as government staff liked the status quo i.e. resistance to change and there was lack of management support to support new changes, Lack of training government staff on ICT project implementation was another factor which leads to less adoption of ICT projects and poor and faulty recruitment process in government agencies that lead absorption and hiring of inadequate people lacking crucial skills in implementing ICT projects.

The rigidity of ICT policies and lengthy decision making were the factors that stood out in project-related issues, which implies that these factors limit the adoption of new technologies, and also contribute to lengthy project duration which consequently leads to ICT project failure. In technology-related issues, under solution design, lack of understanding of government processes and concepts by third parties outsourced to deliver a government ICT project contributes to ICT project failure as it implies that there is a possibility of delivering an ICT project that does not do what it was expected to do.

CHAPTER FIVE: SUMMARY, CONCLUSION, AND RECOMMENDATION

5.1 Introduction

This section gives a summary of the study's major findings, relevant discussions, conclusions, and the recommendations needed. This study sought to determine the factors that contribute to ICT project failure in government agencies.

5.2 Summary of Findings

5.2.1 Project related issues

The first objective was to assess the effect of project related issues on ICT project failure in government agencies. Descriptive statistics conducted indicated that indeed project related issues especially vision and strategy, and project management issues contribute to ICT project failure in government agencies. The study further revealed that 83.2% and 81.4 percent of the respondents agreed that vision and strategy related issues and project management issues contribute to ICT failure in government agencies.

5.2.2 People Related Issues

The second objective was to assess the effect of people related issues on ICT project failure in government agencies. Descriptive statistics conducted indicated that indeed people-related issues especially change management issues contribute to ICT project failure in government agencies. The study further revealed that skills and project management had a mean of 3.65 and 4.09 respectively, which are the two dimensions of people related issues where a mean of 3 shows that respondents were undecided and 4 shows that the respondents agreed with the measurable item. The finding also showed that most measurable items under skill dimensions had a mean less than 4 which shows that they had less significance on leading to ICT project failure in government agencies.

5.2.3 Technology Related Issues

The third objective was to assess the effect of technology-related issues on ICT project failure in government agencies. Descriptive statistics conducted indicated that indeed technology-related issues especially misunderstanding of client needs under solution design dimension and use of

outdated legacy infrastructure under hardware dimension contribute to ICT project failure in government agencies. The items were the most significant measurable items under technology-related issues as they had a mean of 4 and above.

5.2.4 ICT projects Failure factors in Kenyan government agencies

The fourth objective was to identify ICT project failure factors in Kenyan government agencies. From the regression analysis done, vision and strategy, Project management, skills, solution design, Hardware, and Software factors lead to ICT project failure in government agencies.

5.3 Conclusion

5.3.1 Project related issues

From the findings, the study concludes that vision and strategy issues and project management issues lead to ICT project failure in government agencies. This is derived from the high percentage of respondents (an average of 82%) agreeing that these two dimensions lead to ICT project failure in government agencies. Additionally, all measurable items of the two variables had a mean greater than 4 meaning all respondents agreed to the two dimensions leading to ICT project ICT failure. This implies that vision and strategy are critical for an ICT project to succeed as it outlines the blueprint of the whole project and the final desired state. Project management is also critical for the success or failure of an ICT project as it outlines the minimum details necessary for the project to succeed or fail.

5.3.2 People Related Issues

From the findings, the study concludes that people-related issues especially change management dimensions lead to ICT project failure in government agencies. This is derived from the statistical analysis which showed that the mean for the measurable items under change management was 4.06 while that of skills was 3.65. This implies that change management has a greater significance in contributing to ICT project failure as opposed to the skills dimension, this could be due to the fact that it caters to how the project will be rolled out to the stakeholders, the adoption plan, and how to deal with resistance.

5.3.3 Technology Related Issues

From the findings, the study concludes that technology-related issues especially misunderstanding of client needs and requirements, using outdated legacy infrastructure lead to ICT project failure

in government agencies. This is derived from statistical analysis which showed that out of the 10 measurable items under technology-related issues, only 3 had a mean of 4 and above. This implies that it is very critical to engage in stakeholder involvement during the ICT project life cycle, to understand the stakeholder needs and requirements to prevent failure of the ICT project. The use of legacy infrastructure also contributes greatly to ICT project failure due to their incompatibility of new and upcoming technologies. Unreliability also leads to ICT project failure as most end users will stop adopting the ICT project once it starts getting unreliable and revert to the old ways of doing things.

5.3.4 ICT projects Failure factors in Kenyan government agencies

From the findings, the study concludes that the majority of the factors that lead to ICT project failure in government agencies are mostly associated to project issues especially project management issues, and people-related issues the skills of both end-users and technical teams. Under technology issues, solution design was the most significant and had the highest beta coefficient implying that ambiguous and complicated designs make end-user to shy off from adopting the ICT projects.

5.4 Recommendation

5.4.1 Project related issues

The study sought to assess the effect of project related issues on ICT project failure in government agencies. The study recommends that government agencies should ensure the presence of clear vision and strategy of all ICT projects as this will ensure that top management is committed to the ICT projects, there are clear deliverables of ICT projects and the project managers will be available to provide ICT project guidance to the ICT project team members. The government should formulate project management policies that will guide ICT project management teams in all government agencies. These measures will help in averting ICT project failure and help in flagging project failure in an early stage.

5.4.2 People Related Issues

The study sought to assess the effect of people related issues on ICT project failure in government agencies. The study recommends the creation and upholding of change management processes in all government agencies that will guide the implementation and adoption of ICT projects. This is crucial as it is a very important factor in curbing ICT project failure in government agencies. The

study also recommends that government agencies should organize frequent training to their respective employees on the implementation of ICT projects. The study also recommends that government agencies should have strict recruitment processes, especially for ICT staff to mitigate hiring unqualified people. The study also recommends that government agencies should frequently review that culture and push for a more flexible culture that is willing to learn and change.

5.4.3 Technology Related Issues

The study sought to assess the effect of technology-related issues on ICT project failure in government agencies. The study recommends that government agencies should ensure that there are constant stakeholder engagement and involvement throughout the cause of the project to ensure stakeholder satisfaction. The study also recommends that government agencies should invest in new modern technologies and face out the legacy infrastructure currently in place that contribute to ICT project failure. The study also recommends that government agencies should employ appropriate project management methodologies depending on the project requirements. The study further recommends that government agencies should ensure that their software solutions are passed through rigorous testing and there are proper monitoring tools in place to ensure that software solutions have little downtimes and perform as desired to increase their reliability.

5.4.4 ICT projects Failure factors in Kenyan government agencies

The study sought to identify ICT project failure factors in Kenyan government agencies. The study recommends that government agencies should prepare prevention and mitigation measures against all the factors identified by this study that lead to the failure of ICT projects in government agencies. By the creation of these measures, government agencies should be able to curb and flag early any ICT project failures. Refer to table 4.14 for the summary of factors leading to ICT project failure in Kenyan government agencies.

5.5 Suggestions for Further Research

A comparative study is recommended to compare the resulting ICT project failure factors identified in this research with those identified in other government agencies with different and/or similar political environment and/or economic level to ascertain the resulting ICT project failure factors in government agencies with similar and different economic and/or political environment.

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APPENDIX I: QUESTIONNAIRE

Instructions

- Kindly fill in this questionnaire by responding to the questions concerning your institution.
- Put a tick (√) in your choice or provide a brief explanation where appropriate.
- You need not write your name.

Section A: Background Information

1. Division/Department…….
2. Which of the following best describes your work experience in this organization?
    - Less than 1 year { }
    - 2-5 years { }
    - 6-10 years { }
    - More than 10 years { }
3. Level of education
    - No formal education { }
    - Diploma Level { }
    - Certificate Level
    - Undergraduate { }
    - Post-Graduate { }
    - Other { }
4. Position in the organization
    - Management { }
    - Operational { }

Section B: Project Related Issues

5. What is your level of agreement with the following statements regarding project-related issues and ICT Project failure in government agencies? Use a scale of 1. Strongly Disagree 2. Disagree 3. Not Decided 4. Agree 5 Strongly Agree

B.1 Vision and Strategy Issues

	Statement	**1**	**2**	**3**	**4**	**5**
	Absence of a long term view (strategy/vision) contributes to ICT project failure in government agencies					
	Absence of ICT project guidance contributes to ICT project failure in government agencies					
	Low top management commitment and support contribute to ICT project failure in government agencies					
	The rigidity of ICT policies contributes to ICT project failure in government agencies					

In your opinion, in what ways do you think Vision and Strategy Issues contribute to ICT failure in government agencies?

B.2 Project Management Issues

	Statement	**1**	**2**	**3**	**4**	**5**
	Lack of teamwork and collaboration in project teams contributes to ICT project failure in government agencies					
	Poor documentation of user needs and requirements contributes to ICT project failure in government agencies					
	Lack of stakeholders involvement contributes to ICT project failure in government agencies					
	Lack of an ICT budget contributes to ICT project failure in government agencies					
	Poor ICT project risk analysis contributes to ICT project failure in government agencies					
	Lack of a clear stakeholder communication plan contributes to ICT project failure in government agencies					
	Lack of continuous monitoring on ICT project progress contributes to ICT project failure in government agencies					

In your opinion, in what ways do you think Project Management Issues contributes to ICT failure in government agencies?

Section C: People Related Issues

6. What is your level of agreement with the following statements regarding the people related issues and ICT project failure in government agencies? Use a scale of 1. Strongly Disagree 2. Disagree 3. Not Decided 4. Agree 5 Strongly Agree

C.1 Skills Issues

	Statement	**1**	**2**	**3**	**4**	**5**
	Lack of IT knowledge and skills among developers and users/operators contributes to ICT project failure in government agencies					
	The level of experience among developers and users/operators contributes to ICT project failure in government agencies					
	Lack of frequent employee training on implementation of ICT projects contributes to ICT project failure in government agencies					
	The level of personal education among developers and users/operators contributes to ICT project failure in government agencies					

In your opinion, in what ways do you think Skills issues contribute to ICT failure in government agencies?

C.2 Change Management Issues

	Statement	**1**	**2**	**3**	**4**	**5**
	Poor Risk assessment and management of the change contributes to ICT project failure in government agencies					
	Lack of change communication plan contributes to ICT project failure in government agencies					
	Lack of managing change resistance contributes to ICT project failure in government agencies					
	lack of employee training on the change contributes to ICT project failure in government agencies					
	Resistance to change contributes to ICT project failure in government agencies					

In your opinion, in what ways do you think change management issues contribute to ICT failure in government agencies?

Section D: Technology Related Issues

1. What is your level of agreement with the following statements regarding technology-related issues and ICT project failure in government agencies? Use a scale of 1. Strongly Disagree 2. Disagree 3. Not Decided 4. Agree 5 Strongly Agree

D.1 Solution Design issues

	Statement	1	2	3	4	5
	Lack of inputs from key local stakeholders contributes to ICT project failure in government agencies					
	Presence of designs that are over-technical or over-ambitious contributes to ICT project failure in government agencies					
	Lack of piloting the ICT project contributes to ICT project failure in government agencies					
	Misunderstanding the client needs and requirements contributes to ICT project failure in government agencies					

In your opinion, in what ways do you think solution design issues contribute to ICT failure in government agencies?

D.2 Hardware Issues

	Statement	1	2	3	4	5
	Inadequate computing devices (computers, servers and storage devices) contributes to ICT project failure in government agencies					
	Use of outdated legacy infrastructure contributes to ICT project failure in government agencies					
	Low internet speeds and unstable connectivity contributes to ICT project failure in government agencies					

In your opinion, in what ways do you think hardware issues contribute to ICT failure in government agencies?

D.3 Software Issues

	Statement	1	2	3	4	5
	The inability of computerized systems to interchange data contributes to ICT project failure in government agencies					
	Unreliability of the ICT solution contributes to ICT project failure in government agencies					
	Lack of availability of the ICT solution contributes to ICT project failure in government agencies					

In your opinion, in what ways do you think software issues contribute to ICT failure in government agencies?

SECTION E ICT Project Failure in Government Agencies

Please tick (√) to indicate the extent to which the agency has achieved the aspects below of ICT project failure in government agencies. Use a scale of 1. Strongly Disagree 2. Disagree 3. Not Decided 4. Agree 5 Strongly Agree

1. Project plan.
2. Skills and knowledge in project management
3. project risk management
4. The design and technology used are in line with the current technology.
5. User requirement
6. End-user involvement in the user acceptance process.
7. ICT manpower in several public agencies

THANK YOU