

**ANALYSIS OF ENTERPRISE RESOURCE PLANNING IMPLEMENTATION
FACTORS IN PROCUREMENT PERFORMANCE: A CASE OF GUSII WATER AND
SANITATION COMPANY KISII, KENYA**

BY

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DECLARATION

I declare that this research project is my own work and has never been presented for any academic award.

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

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It has been an exciting and instructive study period at Maseno University and I feel privileged to have had the opportunity to carry out this study as a demonstration of knowledge gained during the period of studying for my master's degree. With these acknowledgments, it would be impossible not to remember those who in one way or another, directly or indirectly played a role in the realization of this research project.

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Finally, my sincere and heartfelt thanks are reserved for my loving family more so my mum Rose for the enduring moral, spiritual, material backing, constant source of motivation and never ending support and encouragement during this research project.

DEDICATION

This research project is heartily dedicated to The Lord God Almighty my Ebenezer, thus the far he has brought me.

To my parents, sons Ian, Duke and Bruce, what can I do to reciprocate your patience, encouragement and undying support? You have been a great source of inspiration.

ABSTRACT

Most service companies consider Procurement function to be core to most organizational performance. Gusii Water and Sanitation Company (GWSCO) is one such company that has invested on its procurement function in order to realize its overall performance. One key strategy they adopted was the implementation of Enterprise Resource Planning (ERP). With ERP implemented in GWSCO, it is noted that the company has still not met the customer requirement thereby recording average performance, as 40% of water distributed cannot be accounted for. Furthermore, recent studies indicate that service organizations have adopted ERP in their business operations, however half of them are judged to have fairly performed. This could be attributed to poor handling of Critical Success Factors (CSF) in implementing ERP. With the lack of clarity on implementation experiences and challenges especially in service organization as they seek to implement ERP, there is need to establish the level of influence of ERP implementation on performance of procurement function. The purpose of this study was to analyze ERP factors on procurement performance of GWSCO, Kenya. Specifically, the study sought to establish the level of influence of Systems security, Maintenance cost, Employee resistance to change and training; on procurement performance. This study was guided by a conceptual framework where the dependent variable was procurement performance and independent variable being ERP implementation factors. The study was based on Diffusion of Innovations Theory and the Information Systems Success Model. A correlational design was adopted. Primary data was collected using structured questionnaires. Validity was guided using experts judgment while reliability was tested using test retest method at the index of 0.70. Stratified random sampling was used on a target population of 250 from various departments with a sample 152 of which 146 responses were obtained. Null hypotheses were tested using t test with a confidence level of 95% and a degree of freedom of 145. The four hypotheses were rejected at ($\text{sig}=0.012, p<0.05$) hence at $\alpha =0.05$ it was concluded the four ERP implementation factors had a significance on procurement performance. System security ($t= 19.626, p= 0.000$), maintenance cost ($t= 20.041, p= 0.000$), resistance to change ($t= 19.010, p= 0.000$) and ERP training ($t= 20.834, p= 0.000$). the study concluded that ERP system security ERP maintenance cost, ERP employee resistance to change, ERP employee resistance to change influence procurement performance and ERP training had a significant influence on procurement performance, The study recommend that the organization need to establish an effective modern ERP systems security measures, imparting effective Modern ERP trainings among its employees, and come up with strategies to minimize resistance from employees in order to realize its set objectives that are pro procurement performance platform. The study findings may be important to stakeholders in predicting procurement performance based on ERP implementation factors

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ABBREVIATIONS AND ACRONYMS

CSF	Critical Success Factors
DOI	Diffusion of Innovation
ERP	Enterprise Resource Planning
GWSCO	Gusii Water and Sanitation Company
ISSM	Information Systems Success Model
ISO	International Standard Organization
IS	Information System
ICT	Information Communication Technology
MRP	Material Requirement Planning
MRPII	Manufacturing Requirement Planning
LVSWSB	Lake Victoria South Water Services Board
TCO	Total Cost of Ownership
TQM	Total Quality Management
FMCG	Fast Moving Goods Company
SPSS	Statistical Package for Social Science
U-N	United Nation
USA	United States of America

OPERATIONAL DEFINITION OF TERMS

Enterprise Resource Planning-is a centralized information system designed to coordinate all resources that support business processes to meet customer demand by giving real time and seamless information for managers to make organizational decisions decision.

Information System-is a set of interrelated components that collect (or retrieve), process, store, and distribute information to support decision making and control in an organization.

Performance-is a basis for an organisation to assess how well it is progressing towards its predetermined objectives, identifies areas of strengths and weaknesses and decides on future initiatives with the goal of how to initiate performance improvement

Procurement–is the acquisition of goods, services and works by a procuring entity

Procurement performance -is the efficiency and effectiveness in the procurement function in order to change from being reactive to being proactive to attain set performance levels in an entity

System security-is an act of controlling access to a computer system's resources; sensitive data and operating system files and preventing unauthorized persons from entering or accessing a system.

Maintenance cost- this is the monetary value attached to the process of monitoring, evaluating, and modifying of existing information systems to make required or desirable improvements.

Resistance to change-Phenomenon leading to a reaction based on emotions and dysfunctional to an organization that affects the change process, delaying or slowing down its beginning, obstructing or hindering its implementation

Training- constitutes a basic concept in human resource development. It is concerned with developing a particular skill to a desired standard by instruction and practice

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CHAPTER ONE

INTRODUCTION

This chapter introduces the study with a background, statement of the problem, objectives, significance, scope and conceptual framework.

1.1 Background of the Study

ERP systems have found widespread usage in large and mid-sized organizations worldwide. In the last decade (Cornford and Pollock 2014), argued that, there has been a rapid increase in implementation of ERP systems in management of various functional areas in service organizations. In this regard, most service organizations have turned to ERP systems to replace existing manual system of managing functions. In analyzing rollout of ERP systems in organizations, focus has been placed on development, implementation and use of both generic and organizations specific functionalities like procurement. These technologies have been used to improve service delivery and cost reduction in organizations as they claim their footing in the competitive business environment.

ERP system has its roots in the 1960s manufacturing industry, where earlier forms of the applications were used for manufacturing resource planning (MRP) which was later named Material Resource Planning II (MRPII). In the early 90's the MRPII had evolved finally giving birth to ERP. ERP is a type of information system that extends its operation areas in other management functions such as human resources, finance and production planning (Swartz &Orgill, 2012). Moreover, in recent years ERP has incorporated other business extensions such as supply chain management and customer relationship management to become more competitive (Nieuwenhuyse, Boeck, Lambrecht, &Vandaele, 2012).

As a result of ERP systems being incorporation into other business areas like supply chain management, procurement tend to be different through the use of technology by assisting organizations build and understand how to optimize performance. The use of IT streamlines the procurement processes and also enforces policy compliance. ERP increases visibility into the complete procurement process, through a complete end to end process where organizations reduce costs, enhance profitability, increase customer satisfaction and gain competitive advantage.

ERP is useful tool which enables Organization gain a holistic view of procurement therefore identifying opportunities for consolidation and cost reduction (Thomas &Jajodia, 2014).

ERP has a positive impact on the ability of businesses to improve working capital, implement a Total Quality Management (TQM) culture, lower inventory levels, optimize raw materials and sell and deliver products to the customers (Shtub, 2012). ERP has helped alleviate the arduous job of supporting inflexible systems that in most cases result in cost increases, data redundancy and inaccuracy and above all, various inefficiencies (O'Leary, 2012). Ideally, ERP is an information system that keeps managers informed about what is happening in real-time throughout a corporation and its global connections (Jacobs et al, 2012).

Findings from recent studies; She and Thuraisingham, (2012), Al-Nafjan and Abauka,(2012) and Ouches,(2013) indicated that ERP systems implementation is affected by a number of factors; top management involvement, maintenance cost, system security, training and resistance to change. Similarly studies conducted byBhattachrya and Chellasang, (2016), Marnewick and Labuschagne and Wanjiru and Anunda,(2012) concurred that ideally ERP implementation is affected by these factors. However, the studies missed out on the extent to which these factors influenced ERP implementation in relation to procurement performance. Therefore, the purpose of this study was to analyze ERP implementing factors system security, maintenance costs, resistance of employees training of employees and procurement performance in organizations by establishing the level of influence of these factors with a case of Gusii Water and Sanitation Company (GWSCO).To achieve this, the study was based on Diffusion innovation Theory by Everest, (2013) plus Information Success Model by DeLone& McLean, (2016).

Procurement performance starts from purchasing efficiency and effectiveness in the procurement function in order to change from being reactive to being proactive to attain set performance levels in an entity (Knudsen, 1999). Van Weele (1984) views purchasing performance to be the result of two elements: purchasing effectiveness and purchasing efficiency. Performance provides the basis for an organisation to assess how well it is progressing towards its predetermined objectives, identifies areas of strengths and weaknesses and decides on future initiatives with the goal of how to initiate performance improvements. This means that purchasing performance is not an end in itself but a means to effective and efficient control and monitoring of the purchasing function (Lardenoije, Van Raaij& Van

Weele, 2005). Organisations which do not have performance means in their processes, procedures and plans experience lower performance and higher customer dissatisfaction and employee turnover (Artley& Stroh, 2001; Amaratunga&Baldry, 2002). Measuring the performance of the purchasing function yields benefits to organisations such as cost reduction, enhanced profitability, assured supplies, quality improvements and competitive advantage as noted by Batenburg&Versendaal (2006).

Gusii Water and Sanitation Company is one such organization that has adopted the use of technology through the use of Enterprise Resource Planning in order to enhance water management. However, the implementation has been slow and the company experiences loss of revenue through illegal connections and as such the organization can only account for 60% of the water that it distributes yearly (Financial Post August, 2011). Besides the ERP system has also not been fully integrated with all the functions of the organization therefore some functions operate as standalone like procurement function. Therefore, need for further study to analyses ERP implementing factors; system security, maintenance costs, resistance of employees training of employees on procurement performance in the organizations by establishing the level of influence of the factors. To achieve this, the study will be anchored on Diffusion innovation Theory by Everest, (2013) and Information Success Model by DeLone& McLean, (2016).

Gusii Water and Sanitation Company Limited is a private limited company by shares incorporated on 12th June 2006 under the Companies Act Cap 486 laws of Kenya. The creation of the Company was due to the enactment of the Water Act 2002 which gave forth to the Water Sector Reforms. GWSCO is an agent of Lake Victoria South Water Services Board (LVSWSB) who holds the license for service provision. The Company covers two counties of Gusii namely; Kisii County and Nyamira County covering an approximate area of 1974km² with an estimated population of about 1.6 million. The company provides the services of; clean and safe water to required standards, Sewerage and Sanitation, Exhauster Services, Repair and Servicing of Meters and Water Quality Analysis.

Implementation of ERP system ultimately requires significant changes in organizations in terms of processes and practices. This necessitates organization to reengineer operations leading to number factors to be considered before implementation ERP system. According to Aladwani, (2012) ERP implementation factors can be classified into organizational, technical, and people factors. Authors like Umble (2013), Gable & Stewart (2012), and Sarker&Sarker (2013) gave importance of these factors and highlighted issues which are key for successfully implementation of ERP in organizational. This study was focused on the following factors; system security, maintenance cost, change resistance and training of staff from different categorization of technical, organizational and people factors (Al-Mashari&Zairi, 2012).

System security includes; operating system, authorization, network equipment, access, application access system functions, data access, virus prevention, intrusion monitoring, tracking data changes, the security of data backup and archiving, security management regulations of the host room, the system and the administrator's supervision. Therefore in the implementation of ERP systems, the wide spread phenomenon of no great importance to system security Such as: Users do not pay attention password confidential, and so on more than super-user authorization. Despite increasing investment in information security and its strategic role in today's business success, effective implementation of information security strategy still remains one of the top challenges facing global organizations PricewaterhouseCoopers,(2016). Success in such demanding business environments depends in large part on implementing an effective information security strategy to protect information and information assets. It is clear that most ERP implementation failure could be attributed to lack of security measures in organizations to safeguard the ERP system leading to its failure hence this study sought to establish the level of influence of system security on ERP implementation.

System maintenance types are attached to cost that an organization incurred to ensure smooth running of a system like ERP. The costs associated with maintenance of ERP have implication in the generally implementation of ERP that if not well planned for can lead to cost escalations hence hinder successful implementation of ERP. It is clear that ERP systems once implemented are prone to errors like any other system, this could be one of the reasons why ERP system at

times be unsuccessful if not planned for prior to implementation leading cost escalations. This study sought to establish the level of influence maintenance cost in ERP implementation.

The sources and types of user resistance to a new technology, such as ERP are many. An interesting framework that classifies the types of user resistance to innovations like ERP implementation by source of resistance is that of (Sheath, 2012). The framework shows that there are two reasons why individuals resist to innovations like an ERP: perceived risk and individual habit. To minimize employees resistance to ERP implementation, top management of the organization must analyze these sources of resistance and must employ the appropriate set of strategies to counter them. Improvement strategies in ERP implementation involve change management. Internal customers are critical for an organization to avoid the difficulties associated with this change Al-Mashari&Zairi, (2012). Change management is important in the entire life cycle of the ERP implementation. Rosario (2012) stated that change enterprise culture and structure should be managed by looking at three parameters: people, organization and culture of the organization. Successful ERP implementation requires strong willingness to accept change with computing ability, quality, and implementation efforts and management commitment for using the system. Regular communication, working with corporate culture, identifying job aids for users and creating friendly environment will lead to successful implementation (Barrar, 2012). User involvement is the part of change management. User should be involved in design and implementation of business processes and the ERP system (Umble, 2013). It is clear that most ERP implementation failure could be attributed to employee non willingness to embrace the new system. This study seeks to establish the level of influence of employee resistance to change on ERP implementation.

ERP users require regular trainings to ensure effective implementation. Sufficient budget should be allocated on users in the training sessions and software design process (Zhang, 2015). As mentioned earlier ERP is a complex system that requires prior training and education to enable the users to use the system effectively and efficiently (Correa &Cruz, 2015) and (Bradley, 2014). Training and education enables level of knowledge and proficiency of users increase, thus enhancing individual performance and subsequently organizational performance. Nah, (2013) stated that sufficient training can increase the probability of successful

implementation of ERP, while the absence of training can hinder the implementation. Adequate training and education may also assist the organization to build positive attitude towards the system. Training aids ERP users to accept organizational change-taking place with the implementation of the system. In addition, training increases ease of use and reduces user resistance, which in turn enhances the likelihood of ERP systems use and success (Bradley, 2012). Implementing an ERP system without adequate training may possibly have drastic consequences (Somers & Nelson, 2014).It can be asserted that unsuccessful ERP implemented could be attributed to lack of appropriate skills to manage the system as required for organization to realize performance of the system. This study seeks to establish the level of influence of employee training and education on ERP implementation.

1.2 Statement of the Problem

Most service companies consider Procurement function to be core to most organizational performance. Gusii Water and Sanitation Company is one such organization that has invested on its procurement function in order to realize its overall performance. One such strategy is the implementation of ERP. ERP is an Information System designed to coordinate all resources that support business processes to meet customer demand. ERP has evolved over the years and incorporated other business extensions such as supply chain management and customer relationship management to become more competitive in improving organizational performance. With ERP implemented in GWSCO, a report by UN-Habitat indicated that the company has still not met the customer requirement thereby recording average performance, as 40% of water distributed could not be accounted for. Service organizations were not initially targeted by many ERP vendors, as they developed products suitable for manufacturing companies. Nevertheless, recent studies indicate that service organizations have adopted ERP in their business operations, however half of them are judged to have fairly performed. This could be attributed to poor handling of Critical Success Factors (CSF) in implementing ERP leading to decreased organizational performance. Hence there is need to establish the relationship between ERP implementation factors and procurement performance. This study was therefore designed to analyze Enterprise Resource Planning implementation factors and performance of procurement function of Gusii Water and Sanitation Company in Kisii, Kenya.

1.3 Objectives of the Study

1.3.1 General Objective

The main objective of the study was to analyze ERP implementation factors on procurement performance in Gusii water and Sewerage Company.

1.3.2 Specific Objectives

The specific objectives were to:

- i) Establish the influence of ERP systems security implementation on procurement performance of Gusii Water and Sanitation Company.
- ii) Establish the influence of ERP maintenance cost of implementation on procurement performance of Gusii Water and Sanitation Company
- iii) Establish the level of influence of ERP employee resistance to change on procurement performance of Gusii Water and Sanitation Company.
- iv) Establish the influence of ERP training on procurement performance of Gusii Water and Sanitation Company.

1.4 Hypothesis:

The study tested the following hypotheses

H₀₁: ERP systems security has no significant influence on procurement performance

H₀₂: ERP maintenance cost has no significant influence on procurement performance

H₀₃: ERP employee resistance has no significant influence on procurement performance

H₀₄: ERP training has no significant influence on procurement performance.

1.5 Scope of the Study

The study focused on ERP systems implementation factors (system security, maintenance cost resistance to change and staff training) at Gusii water and Sanitation Company on procurement performance. Gusii water and Sanitation Company is located in Kisii Town of Kisii County in the South Western region of Kenya. The study will be carried out between April 2017 and July 2017.

1.6 Justification of the Study

Gusii Water and Sanitation Company is an organization that has adopted the use of technology through the use of Enterprise Resource Planning in order to enhance water management.

However, the implementation has been slow and the organization experiences loss of revenue through illegal connections and as such the organization can only account for 60% of the water that it distributes yearly (Financial Post August, 2011). Since it is the key provider of clean and safe water for both domestic and industrial use, the customer demands should be met through quality services. This should also translate to better profits.

The findings of this study may be useful in the development of an ICT policy framework to guide ERP implementation in procurement and other functions within organizations. The policy could be applied to overcome key challenges that hinder successful ERP implementation. Further, from the findings of the study the company could be able to assess the level of influence of the factors affecting effective ERP implementation and come up with strategies to improve the level of implementation such that the organization reaps from the benefits of the system. Additionally this study may enable users to also appreciate the fact that the ERP system will not replace the work of procurement function but it will remain as a tool to enhancement to their performance. Finally the findings of this study will give room for further research to other organizations.

1.7 Conceptual Framework on ERP implementation factors on procurement performance

A conceptual framework is a scheme a researcher uses to operationalize concepts or variables to achieve a set of objectives. This study will adopt a conceptual framework to describe the relationship between the independent and dependent variables. Independent variables influence the dependent variables, while a dependent variable is a criterion that can be predicted or explained. Independent variables in this study comprised of; system security, maintenance cost, resistance to change and employee training. On the other hand procurement performance will be the dependent variable. Various aspects under each of the independent variables will be measured on a five point likert scale to establish the extent to which they influence procurement performance at GWSCO under the study.

Independent Variable

Dependent variable

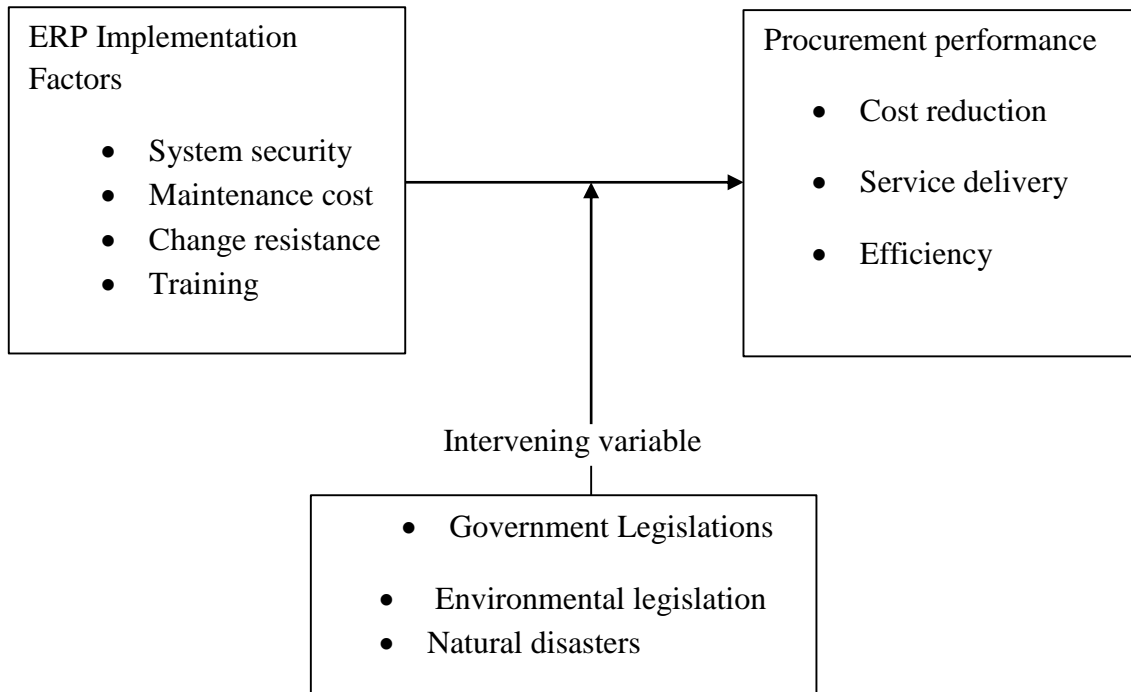


Figure 1. 1 Conceptual frame work on ERP implementation factors on Procurement performance

Source: Adapted from emerald insight database (2016)

CHAPTER TWO

LITERATURE REVIEW

This chapter reviews relevant literature, both theoretical and empirical, relating to ERP implementation factors and literature summary gap.

2.1 Theoretical Literature

Enterprise Resource Planning is one of many IS representing a process-oriented information system with a view of organizational re-alignment. This system represents a class of “off-the-shelf” software solutions that facilitate process-based management views within a context of business applications (Sommer,2012). It is a solution to the growing demands of business environment to improve client services, increase efficiency at less cost by centralizing all operations at one centralized database (Liou, 2015). ERP system emerged from the old version of Manufacturing Requirement Planning which mostly focused on large manufacturing enterprises. ERP has the ability to manage the firm all resources in very efficient and effective manner and decreasing the expense by providing in time information (Egdaira&Rajemi, 2015). ERP is also a tool that aids managers in decision making as it provide all real time information through business intelligence portal to higher management (Hwang & Min 2015). It keeps updating all real time information to avoid any delay and data duplication (Kilic&Zaim, 2015).

This study was anchored on Diffusion of Innovations Theory (DOI/DIT) by Rogers, (2013). This theory was first discussed historically in 1903 by the French sociologist Gabriel Tarde (Toews, 2003) who plotted the original S-shaped diffusion curve, followed by Ryan and Gross (1943) who introduced the adopter categories that were later used in the current theory popularized by Everett Rogers. Everett Rogers coined this theory in 1962 and later revised in 2003 and subsequently in 2013. The Diffusion of Innovation theory is often regarded as a valuable change model for guiding technological innovation where the innovation itself is modified and presented in ways that meet the needs across all levels of adopters. It also stresses the importance of communication and peer networking within the adoption process. Additionally this study will use the Information Systems Success Model as advanced by Delone& McLean (2016). This model borrows from earlier research in communications by Shannon and Weaver as well Mason’s theory on Information Influence.

2.1.1 Diffusion of Innovations Theory

This theory has its backbone in communications and seeks to explain how an idea or product gains momentum and spreads through a specific population or social system. The result of this diffusion is that users accept the new idea or innovation. Adoption as brought out in the theory assumes that users have different perception on innovation compared to previous products or innovations. This facilitates the diffusion process.

Diffusion of Innovations Theory assert that theoretically, 49%-87% of difference of an innovator's rate of adoption is explained by its perceived attributes, type of innovation decision, and nature of social system which the innovation is accepted and the extent of the agents promotion efforts in diffusing the innovation (Nzuki, 2012). The theory is useful to both the developers and users of ERP systems in appraising how these systems are implemented in various projects. As argued by Rogers (2013), an innovation such as use of Enterprise systems in organizations is viewed as a technological innovation. This is realized as a result of paradigm shift from stand-alone information systems to integrated information systems.

The research study borrowed from the third (decision) and fourth (implementation) steps in the DOI theory. With the use of ERP systems implemented at GWSCO, it can be interpreted as a technological advancement and the company is assumed to have undergone the first, second, and third processes in the diffusion of innovations theory as advanced by Rogers (2013). These include gathering knowledge about the ERP systems, persuading stakeholders to support the selected systems in automating their institutional operations and making the decision to effect the systems. While guided by the diffusion of innovations theory, the researcher will sought to establish the institutional experiences during the implementation phase of the ERP systems in organizations. The information systems success model as advanced by Delone& McLean (2016) borrows from earlier research in communications by Shannon and Weaver as well Mason's theory on Information Influence.

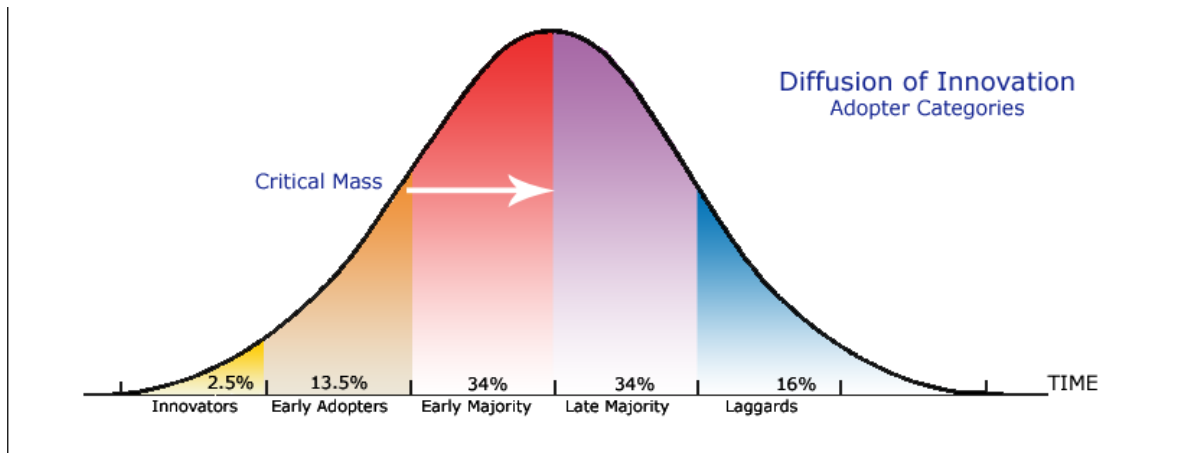


Figure 2. Diffusion of Innovation Adopter Categories by Rogers, (2013)

2.1.2 Information Systems Success Model

This model is anchored on three key pillars of information systems; System Quality, Information Quality and Service Quality. The theoretical model makes use of a causal relationship to analyze success of implementation of information systems in institutions.

DeLone and McLean revised the Information Systems Success Model to comprise six interrelated dimensions which influence success in implementation of an information system. These dimensions are information quality, system quality and service quality as independent aspects which affect the intention to use, user satisfaction and net benefits derived from implementation of an information system. The model stipulates that an information system such as an ERP system can be assessed in terms of information, system and service quality. Additionally, the model can determine system use, intended use, end user satisfaction and net benefits from deployment of the system. Net benefits derived from use of an ERP system can be of either positively or negatively influence the satisfaction of users. Net benefits from implementation of an ERP system aid in determining the feasibility of implemented system (DeLone & McLean, 2016).

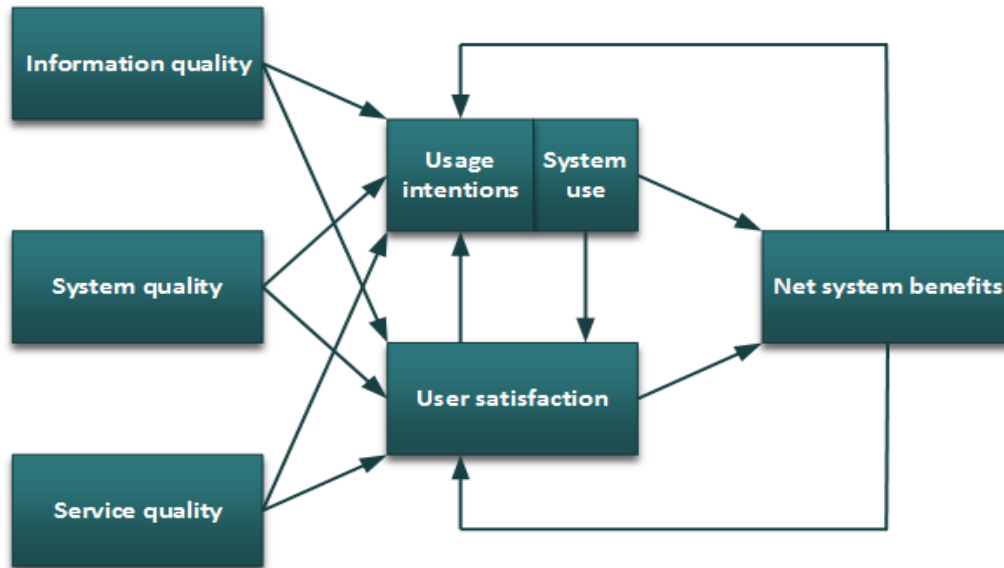


Figure 2. 2ISSM model by DeLone & McLean, (2016)

2.1.3 System Security

A system security is responsible for controlling access to a computer system's resources; sensitive data and operating system files and preventing unauthorized persons from entering or accessing a system. A system must therefore include a certain amount of protection for such data, and must in turn control access to those parts of the system that administer this protection. System security controls involves processes and methodologies which keep information confidential, available and assuring its integrity. ERP being an IS it requires these controls to ensure its success. Information Systems Success Model (ISSM) by DeLone & McLean stipulates that a system is safe when it has quality data, information, system and service; this can only be achieved when an organization has put in place tight security control measures that ensure the system is not infiltrated.

2.1.4 Cost of Maintenance

Maintenance is the process of monitoring, evaluating, and modifying of existing information systems to make required or desirable improvements. System maintenance is an ongoing activity, which covers a wide variety of activities, including removing program and design errors, updating documentation and test data and updating user support. Maintenance may be categorized into three classes or type, namely: corrective, adaptive, perfective, and preventive (Clientz & Swanson, 2012). Corrective Maintenance deals with removing errors in a program,

which might have crept in the system due to faulty design or wrong assumptions. Thus, in corrective maintenance, processing or performance failures are repaired. Faults results from design errors, logic errors and coding errors (Takang& Grubb, 2012).

The need for correcting errors is usually triggered by bug reports drawn up by the end users (Coenen& Bench-Capon,2013). Examples of corrective maintenance include correcting a failure to test for all possible conditions or a failure to process the last record in a file Martin & McClure (2013).In adaptive maintenance, program functions are changed to enable the information system to satisfy the information needs of the user.

2.1.5 Resistance to Change

Resistance is a phenomenon that affects the change process, delaying or slowing down its beginning, obstructing or hindering its implementation and increasing its costs (Ansoff, 1990).Oreg, (2006) defined resistance to change as a “tri-dimensional (negative) attitude towards change, which includes effective and behavioral components” and such kind of resistance needs to be eliminated (Maben, Forgeson, & Green, 2001).

2.1.6 Training and Education

Training constitutes a basic concept in human resource development. It is concerned with developing a particular skill to a desired standard by instruction and practice. Training is a highly useful tool that can bring an employee into a position where they can do their job correctly, effectively, and conscientiously (Chand,2016). Training is the act of increasing the knowledge and skill of an employee for doing a particular job with specific goals of improving one's capability, capacity, productivity and performance.

2.1.7 Procurement Performance

Procurement performance starts from purchasing efficiency and effectiveness in the procurement function in order to change from being reactive to being proactive to attain set performance levels in an entity (Knudsen, 1999). Van Weele (1984) views purchasing performance to be the result of two elements: purchasing effectiveness and purchasing efficiency. Performance provides the basis for an organisation to assess how well it is progressing towards its predetermined objectives, identifies areas of strengths and weaknesses and decides on future initiatives with the goal of how to initiate performance improvements. This means that purchasing performance is not an end in itself but a means to effective and efficient control and monitoring of the purchasing function (Lardenoije, Van Raaij & Van Weele, 2005). Purchasing efficiency and effectiveness represent different competencies and capabilities for the purchasing function. CIPS Australia (2005) presents the differences between efficiency and effectiveness. Efficiency reflects that the organisation is “doing things right” whereas effectiveness relates to the organisation “doing the right thing”. This means an organisation can be effective and fail to be efficient, the challenge being to balance between the two (CIPSA, 2005).

Constable, Passmore and Coats (2008) argue that, unlike private enterprises, organizations providing public services are directly accountable to citizens and their democratic representatives. As such, for an organisation to change its focus and become more competitive, performance is a key driver to improving quality of services while its absence or use of inappropriate means can act as a barrier to change and lead to deterioration of the purchasing function (Amaratunga & Baldry, 2002). Organisations which do not have performance means in their processes, procedures and plans experience lower performance and higher customer dissatisfaction and employee turnover (Artley & Stroh, 2001; Amaratunga & Baldry, 2002). Measuring the performance of the purchasing function yields benefits to organisations such as cost reduction, enhanced profitability, assured supplies, quality improvements and competitive advantage as noted by Batenburg & Versendaal (2006).

2.2 Empirical Literature

2.2.1 ERP System Security and Performance

She and Thuraisingham, (2012) carried out a study Unit on security for ERP systems in USA. Their main purpose of the study was to establish security solution in ERP as well as directions for secure ERP systems. From the researchers synthesis of various studies they found that security is critical for ERP systems and organizations need to develop security policies using the approach of network layer, presentation layer and application layer. From the findings of the researchers it can be acknowledged that security issues are key in successful ERP implementation however the researchers failed to indicate to which extent these issues affect ERP implementation moreover the study did not link ERP implementation to procurement performance. Therefore this study seeks to establish the extent to which security policies affect ERP implementation in service organizations.

A study conducted by Arabska, Leach and Lu,(2012) on risks and controls in implementation of ERP systems in USA, indicated that ERP implementation is different from other information systems and significant risk affecting ERP implementation were, technological change, organizational change and project complexity. The study indicated that these risks were hallmarks of most (if not all) ERP implementation. The researcher further indicated that the risk need to be understood and mitigated using controls like project team members skills and knowledge, consultant involvement, post implementation review and training sessions. The researched used interviews, survey and literature review to come up these findings. They concluded that ERP system implementation is dependent in first instance on identifying the major business risks alongside the controls to minimize the risks involved in ERP implementation. From the findings of this research it can be claimed that ERP is different from other information systems but the study did not indicate what the differences were and extent to which the risks affect ERP implementation further the relationship of risks identified and implementation of ERP. This study seeks to bridge the gap by establishing the extents to which the risk identified affect ERP implementation in relation to procurement performance in organizations.

In India Bhattacharya and Chellasang, (2016) carried out an analysis on security issues in ERP implementation process in India power distribution companies. They carried out in-depth

interviews and review of literature with an aim to establish the security issues in ERP implementation. Their findings were security measures during and after ERP implementation was essential for successful ERP implementation, ERP security is necessary for data integrity and finally security for important data is of great importance in ERP implementation. The researchers concluded that security is a vital element for overall successful implementation of ERP, which has both regulatory and financial impact which cannot be ignored. From conclusion of the researchers it can be noted that security is vital and has both regulatory and financial impact which cannot be ignored however the researcher did not indicate the extent which the financial and regulatory impact will affect ERP implementation if ignored. This study looked at the extent to which the financial and regulatory impacts affected ERP if overlooked in the implementation process.

Wanare and Mudiraj, (2014) of Marathwada University carried out a study on system issues and their counter measure in ERP implementation. Their purpose was to establish the importance of ERP system security and various issues tackled by the organizations. They found out that, for organizations to overcome system security issue they need segregation of duties controls, support and keep updates with ERP development team and have better security policies and making them by creating awareness among stakeholders. They concluded that many organizations are not giving the importance of security constrains of database information which is key in successfully implementation of ERP additionally they noted that information protection mechanism is key in successfully implementation of ERP systems. From the findings of this study it can be acknowledged that system security is a concern for successfully implementation of ERP however the study missed out on how these key issues like influence implementation of ERP in relation to procurement performance. This study thus established the extent to which information protection mechanism relate to ERP system security implementation.

Marnewick and Labuschagne ,(2012) in South Africa carried out a study on a security framework for an ERP system. The researchers carried out interviews along aside review of literature to establish the security framework used when implementing ERP. They found that the generic information security framework existed and it consisted of three components;

people, policy and technology which are interdependent such that any change to one of the component will affect the other two, ERP cannot be implemented or managed without taking the security framework into consideration and finally security framework provides guidelines, policies and standards to implement and manage the ERP system. They concluded that security framework ensures that all aspects surrounding IT and corporate security are built into ERP and ERP security measures are ongoing process that requires checks and controls. Even though these research found that security framework consisted of three components people, policy and technology which are interdependent such that any change to one of the component will affect the other two, the failed to indicate effects of removing one component during implementation and extent it will affect ERP issues. This study thus sought to establish the effects of removing either component of security framework and extent to which it will affect ERP system security implementation.

2.2.2 ERP Maintenance Cost and Performance

Equey, Kusters, Varole and Montandin, (2014) in Netherlands carried out an empirical study of ERP implementation cost in swiss to classify cost drives in maintaining of ERP. They carried out in-depth surveys with a sample 125 respondents and found that cost drivers can be classified into three variables; enterprise characteristics cost, people cost and implementation cost. Additional they ascertained the relationship between the maintenance cost and the variables established using a measure of correlation ,which indicated a linear relationship existed between the variables with; enterprise characteristics being ($r=-0.167$),people($r=0.182$) and implementation($r=0.186$).whereas this study made a conclusion that maintenance cost had a positive correlation ,however the study didn't indicated the extent to which these cost drivers affect ERP implementation in relation to procurement performance in organization. This study thus bridged the gap by establishing the extent to which the cost drivers affect ERP implementation in relation to procurement performance.

In Malaysia Suprananian, Abdullan and Ponnann,(2014) carried a research on the cost analysis on ERP system implementation amongst Malaysian SMEs with a purpose to outlining key drivers in ERP maintenance. They employed exploratory survey where 111 companies based in Klang valley, Malaysia were surveyed. They found out that the major cost drivers for ERP implementation among Malaysian SMEs were caused by the external consultants, upgrading of skills for employees, reengineering of business processes and selection of ERP models. They

concluded that theirs was a significance correlation of two cost drivers that is, human resources in relation to implementation of ERP. Whereas the study found a significance correlation between two cost drivers, the study did not how the correlation affect ERP implantation in relation to procurement performance and effects of the correlation. This study thus sought to establish extent to which the cost drivers affect ERP implementation alongside correlation of the drivers to procurement performance.

In a study carried out on ERP maintenance model by See pu,Guy and Taiwan,(2013) in Australia, it was found out that ERP Maintenance models existed but they were insufficient for ERP maintenance and upgrade process. This was achieved through a survey in Australia. The researchers concluded that a preliminary ERP model reflecting fundamentals of ERP maintenance and upgrade activities should be adopted for successful implementation of ERP. Even though the researchers conclude that a preliminary ERP model reflecting fundamentals of ERP maintenance should be adopted for successful ERP implementation, the study failed to outline the extent to which these fundamentals will influence successfully ERP implementation. This study thus sought to bridge the gap by establishing the level of influence of these ERP fundamentals during implementation process.

Owuoche,(2013) of Musinde Muliro University in Kenya carried out a study on a model for evaluating total cost of ownership(TCO) of public universities ERP systems with case study of Maseno University. He used interviews, document analysis with a population of four campus of the university and found that the major factors that influence TCO are; number of implementation locations, scope of business impact, technology familiarity among users and life cycle of technology and system supremacy. The researcher concluded that, operation and maintenance cost account for 51% of cost, end-users 23%, hardware and software maintenance account for 16% and implementation cost 7%.Simmilary Equey,Kusters,Varole and Montandin,(2014)concurrred that maintenance cost affects ERP implementation but both studies missed out on the extent to which this cost affect ERP implementation in relation to procurement performance. This study therefore sought to establish the extent to which these cost affect ERP implementation in relation to procurement performance.

2.2.3 ERP Resistance to Change and Performance

In Saudi Arabia Al-Nafjan and Abauka, (2012) carried out a study on the impact of change management in ERP system implementation. They investigated and identified reasons for resistance to diffusion and why individuals within organizations resistance change. They reviewed literatures and established that individuals resist change due to psychology factors; resentment, frustration, feeling of failure, preference for stability habits and selective perceptions. These factors make individuals resist and innovation like ERP. They concluded that successful ERP implementation projects are less about technology more about people and processes, they further indicated that top management should be proactive about change management instead of reactively confronting resistance when it has occurred. Whereas the study found out that successfully ERP implementation is not about technology and more about people and process, the study did not indicate how and to what extent people and processes hinder successfully implementation of ERP. This study seeks to establish the extent to which people and process hinder ERP implementation.

Aladwdani, (2012) carried a research about change management strategies for successfully implementation of ERP. He reviewed literatures and found out that the reasons of innovation resistances are mainly two; perceived risk and habit of individuals. He concluded that to overcome resistance to change top management has to study the structures and needs of users and causes of potential resistance among individuals, deal with the situations by using appropriate strategies and techniques in order to implement ERP successfully and finally evaluate the status of change management efforts. Additional the researcher suggested process-oriented conceptual framework consisting of three phases; knowledge formulation, strategy implementation and status evaluation. Even though the researcher made the above conclusion, he did not indicate the extent to which the structures affected successfully ERP implementation. This study thus sought to establish the extent to which structures require minimizing resistance affect ERP implementation in relation to procurement performance.

Altanomy, Tarhini and Anaraiba, (2016) in Saudi Arabia carried out a study on the relationship between change management strategy and successful ERP implementation. The researchers reviewed literature and found out that ERP critical success factors fall beneath one of the five

categories namely change management, top management support, business processes, re-engineering, vendor support and user involvement. They concluded that change management strategies are extremely known for sustainability of organization for successful ERP implementation. The strategies to be used are change management model, approaches for managing change associated with ERP and elements of change management strategies. The researchers concurred with the findings from Aladwdani, (2012) .Even though these researchers concurred that change management is key to successfully ERP implementation they missed out to which level of influence structures will affect ERP implementation in relation to procurement performance. Therefore this study thus seeks to establish the level of influence of ERP employee resistance in relation to procurement performance.

Wanjiru and Anunda,(2012) from the university of Nairobi in Kenya carried a study about change management strategies adopted by fast moving goods company(FMCG) to implementation of ERP system. Their main purpose was to determine change management strategies that are adopted at FMCG. They used cross-sectional survey with a target population of FMCG in Nairobi with 20 multinational companies and 60 local with a sample of 40.From the questionnaires analysis it was found out that the strategies used were establishing change management process with a mean of 4.52 and communication of expected change with a mean of 3.50.They concluded that consistence in change management strategies lead to successfully implementation of ERP at FMCG. This study focused on strategies to overcome resistance of employee however it did not indicate the extent to which the highlighted strategies could influence ERP implementation. This study seeks to establish the extent to which the different strategies influence ERP implementation.

In Kenya,Ireri,Omondi,Chirchir and Wafula,(2015) conducted a research on adoption of ERP systems in Kenya with a focus on Ordinance factories corporations. They carried out individual interview and by use questionnaires and the findings were, respondents had ideas about information systems yet not comfortable due to fear of failure, complexity of ERP and lack of communication. They concluded that a multi-prolonged model to be used to reduce incidences of resistance. This confirms the findings of Al-Nafjan and Abauka,(2012) that individuals resist change due to psychology factors. However the study didn't indicate to what extent the

multi-prolonged model will reduce incidences of resistance. This study seeks to establish the extent to which the multi-prolonged model will minimize incidences of resistance toward ERP implementation.

2.2.4 ERP Training and Performance

Doroba and Nastase, (2012) in Romania carried out a study on training issues in ERP implementation with an aim of establishing how training affects ERP implementation. They reviewed relevant existing literature from secondary data. From the reviews they found out that lack of interest from senior managers concerning staff training during implementation, underestimation of cost, training managers neglecting key end users and finally using traditional training methods are major causes of ERP failure. They also indicated that increased ERP performance can be achieved when end users are collaborated in the training methods even though end user training is time consuming and involves significance investment. Even though the study concluded that end user collaboration can increase performance it missed out to what level performance will influence ERP implementation. Therefore this study seeks to establish the extent to which end-user collaboration in training will influence ERP implementation

Hererhoff,Arntzen and Muller, (2012) in their study of a training model for successful implementation of ERP in Norway, investigated the role of training in improving the usage of ERP. They carried out a survey with a population of 6000 users of ERP global and a sample of 3000 in 6 main locations (5 in Europe and 1 in Africa) and got 470 responses. They found that for ERP to be successful in organizations a training model should be established with organization structures clearly indicating roles and responsibilities. They concluded that ERP implementation should be included in organizations strategic plans and IT be aligned with business goals. Even though the researchers found out that a training model is required for success ERP implementation, they did not indicate how the training model will influence ERP implementation in relation to procurement performance. This study thus seeks to establish how training models will influence ERP implementation.

Noudoostbeni,Yasin and Jenatabedi,(2012) carried out a study on a mixed method for training ERP systems based on knowledge sharing in Malaysian small and medium

enterprises(SME's).They carried out interview and their findings were that most important factors in trainings are lecturing, on job trainings and computer based trainings. They concluded that these methods saves the learning time and reduces the training cost and also increases the users' proficiency of ERP system. Even though these researchers made this conclusion, they did not indicate to what extent to which these training factors influence ERP implementation in relation to procurement process. Therefore this study will focus on establishing the extent to which these factors influence ERP implementation in relation to procurement performance.

Ndungu&Kyalo in Kenya carried out a study on the evaluation of ERP implementation experience for selected universities. They applied descriptive statistics, factor analysis and logistic regression analysis and found out that, most ERP projects in university were abandoned or stalled due to limited skills to drive the implementation process and concluded that increased investment towards improvement in institution connectivity blending with internal and external expertise will drive ERP implementation to greater levels. Even though these researchers concluded that limited skills lead to failure of ERP they didn't indicated how limited the skills were and what skills were limited. Thus this study will seek to highlight necessary skills required for ERP successful implementation and how best they can be blended with the organizational environments.

Mwenje, (2013) in Kenya carried a study on ERP systems implementation strategies in commercial bank with an objective of establishing the activities involved in ERP implementation in commercial banks of Kenya. The study used census survey with a population of commercial banks in Kenya. The result of the survey was activities involved in ERP implementation are staff training, cost and benefit analysis and selection of full time team to support the project leader. The researcher clustered ERP implementation strategies as organizational structures and training stakeholders at various levels, Vendor/ IT skills and support of top management. The study concluded that for ERP to be implemented successfully, training of stakeholders at various levels and integrating ERP in the organization structure was key. However the study missed to indicate how trainings of stakeholders at different levels could influence implementation of ERP. This study thus seeks to establish the extent to which

training stakeholders at different levels could influence ERP implementation in relation to procurement performance

2.3 Summary of Literature Gap

In summary, from the reviews above it can be asserted that ERP implementation is a key strategy for organizations to achieve competitive edge. The reviews indicate that ERP is affected by a number of factors; System security, maintenance cost, resistance to change and staff training. The reviewed literature highlights that these factors affect successfully ERP implementation however they missed the extent to which these factors influence ERP implementation. Moreover the studies did not link ERP implementation to procurement performance. Insights gained from the literature further indicated that there were few studies conducted to assert the relationship between ERP implementation factors and procurement performance in service organization. Most researchers focused their studies on manufacturing, production, public sector and SMEs to establish the Critical Success Factors for successfully ERP implementation using interviews qualitative survey designs. The current study will be focusing service organizations to establish the extent to which the identified factors will influence ERP implementation. In light of this plus the gaps identified in the literature; this study therefore sought to bridge the gap by establishing the level of influence of these factors in relation to procurement performance. To achieve this, the study will utilize the Diffusion of Innovations Theory by Rogers (2013) and the Information Systems Success Model advanced by Delone& McLean (2016) to analyze ERP systems implementation factors in relation to procurement performance in service organizations

CHAPTER THREE

METHODOLOGY

This chapter discusses the research design, target population, sample and sampling procedures, research instruments, validity and reliability, data collection procedure and data analysis techniques.

3.1 Research Design

This study employed correlational design with an illustration of a case study. Correlation research design was used to determine the extent to which two variables are related. This design uses a statistic known as correlation coefficient to measure the strength and direction of the linear relationship between the involved variables. The study design facilitated towards gathering of reliable data describing the true characteristics of ERP implementation factors and procurement performance in Kisii County, Kenya.

3.2 Study Area

The Company's area of jurisdiction covers two counties of Gusii namely; Kisii County and Nyamira County covering an approximate area of 1974km² with an estimated population of about 1.6 million. The company is based in Kisii town, Kisii County and provides the services of; clean and safe water to required standards, Sewerage and Sanitation, Exhauster Services, Repair and Servicing of Meters and Water Quality Analysis. The company has been selected since past researches indicate that ERP systems are at implementation phase, hence warranting further research by the level of influence of ERP implementation factors on procurement performance in company.

3.3 Target Population

According to Cooper and Schindler (2003), a population is defined as the total collection of elements about which we wish to make some inferences. Gall *et al*, (1983) also defines a target population as the members of a real or hypothetical set of people, events or objects to which the researcher wishes to generalize the results of the research. The target populations for this study was 250 employees of GWSCO drawn from various departments; Maintenance, operations, human resource, finance, procurement and transport department since all their functions are centralized as distributed in the table below:

Table 3.1 Target Population

S/No.	Department	Number
1.	Maintenance	70
2.	Operations	40
3.	Human resource	10
4.	Procurement	20
5.	Finance	10
6.	Transport	60
Total		250

Source: GWSCO (2017)

3.4 Sample Size and Sampling Procedures

According to Kothari (1990) sampling is the process by which a relatively small number of individuals, objects or events is selected in order to find out something about the entire population from which it was selected. Stratified random sampling will be used in this study. Stratified random sampling technique is suitable as it gives each respondent in every department a chance of being selected and also ensures that all departments are represented. According to Kothari (2003) an optimum sample is the one that fulfills the requirements of efficiency, representativeness, reliability and flexibility. The sample size will be 152 employees as per Morgan and Krejcie sample size table (see appendix IV).

Table3.2 Sampling Size

S/No	Department	Population	Proportion	Sample
1.	Maintenance	110	$(110/250)*152$	67
2.	Operations	40	$(40/250)*152$	24
3.	Human resource	10	$(10/250)*152$	6
4.	Procurement	20	$(20/250)*152$	12
5.	Finance	10	$(10/250)*152$	6
6.	Transport	60	$(60/250)*152$	37
Total		250		152

Source: GWSCO (2017)

3.5 Data Collection

Primary data was obtained using self-administered questionnaires. The researcher used questionnaires, as they are the most common instruments since they give raw data which is accurate because they keep the respondents confidentiality

3.5.1 Source of Data

Data was obtained from primary sources. Primary data was deemed reliable since they are considered original in nature and raw in form while published reports and documents will give secondary data.

3.5.2Data Collection Instruments and Procedures

Primary data was obtained using self-administered questionnaires. The researcher used questionnaires, as they are the most common instruments because they keep the respondents confidentiality, the respondent can answer at his or her own pace. The questionnaire with closed ended questions was used to collect both quantitative data to answer related questions. A brief introduction was made to the respondents before administering the questionnaires with the aim of explaining the questionnaires. Confidentiality was assured to the respondents through the letters of transmittal that accompanied the questionnaires.

3.5.3 Validity and Reliability of Instrument

To establish validity, the instrument was given to two experts to evaluate the relevance of each item on the scale: very relevant (4), quite relevant (3), somewhat relevant (2), and not relevant (1). Validity was determined using Content Validity Index (CVI). CVI is item rated 3 or 4 by both judges divided by the total number of items in the questionnaire. The CVI obtained was 0.78 which is acceptable in research. Test retest method was adopted to gauge the reliability where six employees drawn from each of the six departments were given the questionnaires to fill and the same was repeated and over 70% consistency in responses was ascertained.

The Content Validity Index (CVI) was determined using the formula:

$$CVI = \frac{K}{N} = \frac{5}{6} = 0.833$$

Where:

K = Total number of items in the questionnaire declared valid by both raters / judges.

N = Total number of items in the questionnaire

The computed CVI of the instrument was $\alpha=0.833 > \alpha=0.7$, the minimum, acceptable as recommended in the survey studies by Amin, (2005).

3.6 Data Analysis and Presentation

Data analysis was based on the research questions designed at the beginning of the research. Raw data collected from the field was sorted and summarized in tables. Duly filled questionnaires were edited for completeness and consistency. The data was then coded and checked for any errors and omissions. The data was analyzed using procedures within Statistical Package for Social Sciences (SPSS) PC version 23.0.

CHAPTER FOUR

RESULTS AND DISCUSSIONS

This chapter presents results and discussion on the analysis of the data on Enterprise Resource Planning implementation factors on procurement performance in organizations with specific focus on Gusii Water and Sanitation Company. Four variables, as per the objectives of the study were used to measure the level of influence of ERP implementing factors on procurement function. The variables used were; system security, maintenance cost, resistance to change and training.

4.1 Background Information

Table 4.1 illustrates the response rate of the respondents that participated in the survey. The study targeted 152 respondents in data collecting on the factors affecting the implementation of Enterprise Resource Planning in organizations with a specific focus on Gusii Water and Sanitation Company. 146 out of 152 target respondents filled in and returned the questionnaire contributing to 96%. This complied with Mugenda and Mugenda (2003) who suggested that for generalization a response rate of 50% is adequate for analysis and reporting, 60% is good and a response rate of 70% and over is excellent.

This response rate was attributed to the data collection procedure, where the researcher personally administered questionnaires and waited for respondents to fill, and picked the filled questionnaires. The 6% questionnaires that were not returned were due to reasons like, the respondents were not available to fill them in at that time and with various follow-ups there were no positive responses from them. The response rate demonstrates a willingness of the respondents to participate in the survey.

Table4. 1 Response Rate

Response	Frequency	%
Filled in questionnaire	146	96
Un returned questionnaire	6	4
Total	152	100

Source; Research data, 2017

4.2 Demographic Characterization of the Respondents

The study found it important to establish the general information of the respondents since it structures the foundation beneath which the study can fairly entrance the relevant information. The analysis centered on this information of the respondents so as to categorize the different results according to their knowledge and responses.

4.2.1 Distribution of respondents by Gender

Respondents were asked to state their gender to ascertain whether gender had any influence on implementation of Enterprise resource planning. The findings of the study are as presented in the table 4.1

Table4. 2 Distribution of respondents by Gender

Gender	Frequency	%
Male	65	44.5
Female	81	55.5
Total	146	100

Source; Research data, 2017

According to the findings 55.5% of the respondents were female, while 44.5% were male. The findings show that there were more female than male. This analysis indicates that distribution was nearly equal; this can be interpreted to mean there's gender equality in the implementation of ERP.

4.2.2 Distribution of respondents by Age

The study sought to determine the respondents' age bracket. The findings of the study are as presented in Table 4.2 below.

Table4. 3 Distribution of respondents by Age

Age	Frequency	%
21-30	31	21.2
31-40	51	34.9
41-50	35	24.0
51 and above	29	19.9
Total	146	100

Source; Research data, 2017

The findings indicated that 19.9% of the respondents were above 50 years, 21.2% of the respondents were between the ages of 21-30 years while 24.0% of the respondents were between the ages of 41-50 years, whereas 34.9% were in the age bracket of 31-40 years. Based on the findings, the respondents who were between the ages of 31-40 years were the majority. This is an indication that the young employees were able to appreciate technology.

4.2.3 Distribution of respondents by Level of Education

Respondents were asked to state their highest level of education to ascertain the influence level of education on the implementation of enterprise resource planning. The findings of the study are as presented in Table 4.3

Table4. 4 Distribution of respondents by Level of Education

Level of Education	Frequency	%
Phd	19	13.0
Masters	0	0.0
Bachelors	51	34.9
Diploma	47	32.2
Certificate	29	19.9
Others	0	0.0
Total	146	100

Source; Research data, (2017)

The study found that 13.0% of the respondents were PhD holders, 19.9% of the respondents had certificate holders, and 32.2% of the respondents diploma holders, whereas 34.9% of the respondents were bachelors holders. Since majority of the respondents (34.9%) had bachelor’s degree, this meant that the respondents had knowledge on ERP and they were in position to give appropriate responses. This meant that, a large percentage of the respondent had knowledge on ERP and understands how ERP is being implemented more so in procurement function.

4.2.4 Experience in ERP

The respondents (employees) were asked the duration of service in ERP adopted organization to ascertain the influence of experience on the implementation of Enterprise Resource Planning System. The findings of the study are as presented in Table 4.5.

Table4. 5 Distribution of respondents by year of work experience

Work experience in years	Frequency	%
Less than one year	6	11.0
3-5 years	22	15.1
6-10 years	44	30.1
More than years	64	43.8
Total	146	100

Source; Research data, (2017)

The findings of the study revealed that most of the staff (43.8%) interviewed had more than 10 years of ERP implementation in the organizations. It was also found that (30.1%) had 6-11 years, 15.1% of the respondents had 3-5 years, while (11.1%) of the respondents had less than 2 years’ experience. From the findings it can be said that most of the staff had experience and were therefore considered to have information with regard to Enterprise resource planning.

4.3.1 Test on Influence of Security systems on the procurement performance

The hypothesis formulated is as below;

H₀₁: ERP systems security has no significant influence on procurement performance

Table 4. 6 One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
System_ Security _Control	146	3.12	1.307	.108

To find out this a t test table was used to test the hypothesis. From the t test (table 4.6) indicated this factor had a mean of 3.12, std deviation of 1.307 and (table 4.7) indicating degree of freedom was 145 and significance confidence level was 95%. A critical t value from the student table, t table t(0.05) is 1.660. This critical t value was then compared against the computed t value of 19.626. From the comparison it was established that $19.626 > 1.660$ leading to failure to accept the null hypothesis (ERP system analysis has no significance influence on procurement performance) hence the alternative hypothesis (ERP system analysis has latest significance influence on procurement performance). From the analysis above it can be concluded that ERP system security had at least significance influence on procurement performance. This implies that if security issues are not well managed in organization the system can be infiltrated hence exposure of organization to internet crimes and competitors. This finding is consistent with that of Sevirin, Stewart and Bai, (2012) in their study by asserting that security issues are pertinent in ERP implementation due to increased internet crimes which can to exposure of organization if systems in organizations are not secured.

Table4. 7 One-Sample Test

	Test Value = 1					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
System_ Security _Control	19.626	145	.000	2.123	1.91	2.34

N= the total sample size (Respondents interviewed) = 146

Degree of freedom of 145

The significant confidence level of 95% on one tailed test

The critical t value from the student t table, t (0.05) is 1.660. this critical t value of 1.660 is compared against the computed t value of 19.626 and it was established that $19.626 > 1.660$ leading to failure to accept null hypothesis(ERP systems security has no significant influence on procurement performance) thus alternative hypothesis was accepted (ERP systems security has at least some significant influence on procurement performance).From the analysis above it can be concluded that ERP systems security has some significant influence on procurement performance.

4.3.2 Test on Influence of ERP maintenance cost on procurement performance

H₀: ERP maintenance cost has no significant influence on procurement performance.

Table 4. 8 One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
System maintenance cost during ERP implementation	146	3.37	1.429	.118

The second hypothesis of ERP maintenance cost was tested to establish whether it had influence in procurement performance. To find out this a t test table was used to test the hypothesis. From the t test table(4.8)indicated this factor had a mean of 3.37, std deviation of 1.429 and table 4.9 indicating degree of freedom was 145 and significance confidence level was 95%. A critical t value from the student table t table t(0.05) is 1.660. This critical t value was then compared against the computed t value of 20.041 .From the comparison it was established that $20.041 > 1.660$ leading to failure to accept the null hypothesis(ERP maintenance cost has no significance influence on procurement performance) hence the alternative hypothesis(ERP maintenance cost has at least significance influence on procurement performance. From the analysis above it can be concluded that ERP maintenance cost had at least significance influence on procurement performance. From the findings it can be acknowledged that maintenance cost have impact in implementing ERP in functions in organization and managers needs to make right decision in the implementation process of the system .This finding conforms with the findings of Yazon, Lu and Minuslaw,(2012) who argued that maintenance cost aid managers make informed decision in ERP system investment in all departments in organization procurement included.

Table 4. 9 One-Sample Test

	Test Value = 1					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
System maintenance cost during ERP implementation	20.041	145	.000	2.370	2.14	2.60

N= The total sample size (Respondents interviewed) = 146

Degree of freedom of 145

The significant confidence level of 95% on one tailed test

The critical t value from the student t table t(0.05) is 1.660, from this, the critical t value of 1.660 is compared against the computed t value of 20.041 and from that we find out that $20.041 > 1.660$ leading to failure to accept the null hypothesis (ERP maintenance cost has no significant influence on procurement performance) thus we accept the alternative hypothesis (ERP maintenance cost has at least some significant influence on procurement performance). From above it is clear that ERP maintenance cost has at least some significant influence on procurement performance.

4.3.3 Test on influence of employee resistance on procurement performance

H₀₃: ERP employee resistance has no significant influence on procurement performance

Table 4. 10 One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error
Resistance by employees during ERP implementation in the Organization	146	3.23	1.419	.117

The researcher sought to establish whether resistance to change had influence in procurement performance. To find out this a t test table was used to test the hypothesis. From the t test (table 4.10) indicated this factor had a mean of 3.23, std deviation of 1.419 and table 4.11 degree of freedom was 145 and significance confidence level was 95%. A critical t value from the student table t table t(0.05) is 1.660. This critical t value was then compared against the computed t value of 19.010. From the comparison it was established that $19.010 > 1.660$ leading to failure to accept the null hypothesis (ERP resistance to change has no significance influence on procurement performance) hence the alternative hypothesis (ERP resistance to change has at least significance influence on procurement performance). From the analysis above it can be concluded that ERP resistance to change had at least significance influence on procurement performance. This implies that if change is well managed in organization it leads minimized resistance in implementing ERP in procurement hence performance of the function. This concurs with the findings of Kapupu, (2015) who indicated that if organization embrace a think-feel-do strategy which minimizes resistance employees since managing resistance is imperative to successful implementing ERP projects.

Table 4. 11 One-Sample Test

	Test Value = 1		Sig. (2- tailed)	Mean Difference	95% Confidence Interval of the Difference	
	t	df			Lower	Upper
Resistance by employees during ERP implementation in the Organization	19.010	145	.000	2.233	2.00	2.47

N= the total sample size (Respondents interviewed) = 146

Degree of freedom of 145

The significant confidence level of 95% on one tailed test

The critical t value from the student t table $t(0.05)$ is 1.660, from this, the critical t value of 1.660 is compared against the computed t value of 19.010 and from that we find out that $19.010 > 1.660$ leading to failure to accept null hypothesis (ERP employee resistance has no significant influence on procurement performance) thus we accept the alternative hypothesis (ERP employee resistance has at least some significant influence on procurement performance), hence ERP employee resistance has at least some significant influence on procurement performance.

4.3.4 Test Influence ERP training on procurement performance

H₀₄: ERP training has no significant influence on procurement performance

Table 4. 12 One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
Types of trainings models offered to procurement staff during implementation of ERP system	146	3.35	1.363	.113

The study tested the fourth hypothesis of ERP training to establish whether it had influence in procurement performance. To find out this a t test table was used to test the hypothesis. From the t test table (12) indicated this factor had a mean of 3.23, std deviation of 1.419 and table 13 degree of freedom was 145 and significance confidence level was 95%. A critical t value from the student table t table $t(0.05)$ is 1.660. This critical t value was then compared against the computed t value of 20.834. From the comparison it was established that $20.834 > 1.660$ leading to failure to accept the null hypothesis (ERP training has no significance influence on procurement performance) hence the alternative hypothesis (ERP training has at least significance influence on procurement performance). From the analysis above it can be concluded that ERP training had at least significance influence on procurement performance. From this finding it can be asserted that training is a key success factor in implementing ERP in procurement function it makes work more easy and achievable. This conforms to findings of Nastase and Doroba, (2012) that training employees be hands-on, on key skills in operating the

system while carrying out procurement activities and keeping a brace with current technologies which are key in successfully implementation of ERP.

Table 4. 13 One-Sample Test

		Test Value = 1				95% Confidence Interval of the Difference	
		t	do	Sig. (2-tailed)	Mean Difference	Lower	Upper
Types of trainings models offered to procurement staff during implementation of ERP system		20.834	145	.000	2.349	2.13	2.57

N= the total sample size (Respondents interviewed) = 146

Degree of freedom of 145

The significant confidence level of 95% on one tailed test

The critical t value from the student t table $t(0.05,145)$ is 1.660, from this we compare the critical t value of 1.660 against the computed t value of 20.834 and from that we find out that $20.834 > 1.660$ leading to failure to accept null hypothesis (ERP training has no significant influence on procurement performance) thus we accept the alternative hypothesis (ERP training has at least some significant influence on procurement performance). From above it is clear that ERP training has at least some significant influence on procurement performance.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

This chapter presents a summary of the findings on the analysis of ERP implementation factors in private organization with a specific focus of Gusii water and Sanitation Company, conclusion, recommendations and areas for further research.

5.1 Summary of the Findings

Objective one of the study sought to establish the influence of ERP system security implementation on procurement performance. It was established that ERP system security had a significance influence on procurement performance.

Objective two sought to establish the influence of ERP maintenance cost in procurement performance. It was established that ERP maintenance cost had a significant influence on procurement performance

Objective three sought to establish the influence of ERP employee resistance to change on procurement performance. The study revealed that ERP employee resistance to change had a significance influence on procurement performance.

Objective four sought to establish the influence of ERP training on procurement performance. The study established that ERP training had a significant influence on procurement performance.

5.2 Conclusion

Based on the finding of objective one that ERP system security had a significance influence on procurement performance, the study concludes that ERP system security influences on procurement performance.

Based on the finding of objective two that ERP maintenance cost has a significant influence on procurement performance, the study concludes that ERP maintenance cost influences on procurement performance

Based on the finding of objective three that ERP employee resistance to change had a significance influence on procurement performance, the study concludes that ERP employee resistance to change influences in procurement performance.

Based on the finding of objective four that ERP training had a significant influence on procurement performance, the study concludes that ERP training influences on procurement performance

5.3 Recommendations

Based on the conclusion of objective one that ERP system security has an influence on procurement performance, the study recommends that the organization should establish an effective modern ERP systems security that will help it improve on procurement performance plat form. It is through this establishment that will ensure that an organization achieve better procurement process.

Based on the conclusion of objective two that ERP maintenance cost has an influence on procurement performance the study recommends, the organization should find ways of minimizing maintenance cost since it impacts on overall performance

Based on the conclusion of objective three that ERP employee resistance to change has an influence in procurement performance, the study recommends that the Organization should come up strategies to minimize resistance from employees in order to realize its set objectives that are pro procurement performance platform. When there are no effective friendly control methods of ERP resistance among employees, the organization will find it difficult to realize its dreams on procurement platform. The organization should design an effective cost maintenance technique during the process of ERP installment on Procurement platform which will enable the organization realizes better procurement performance.

Based on the conclusion of objective four that ERP training has a positive influence on procurement performance the study recommends that that the organization should fulfill its set objective of imparting effective Modern ERP trainings among its employees on the basis of better performance on procurement activities. It is through installment of effective ERP trainings that an organization offers to its employees that will make the organization realizes better performance on procurement platform.

5.4 Suggestions for further studies

The study suggests the following areas for future considerations:

- i. Study in same area but using different methodology
- ii. Study with the same methodology but in different context
- iii. Study with different constructs for the same concepts.
- iv. Research should be done on the risk management of Enterprise Resource Planning systems since there is increased internet crime which may lead to the exposure of an organization if not well safeguarded and control measures put in place.

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APPENDICES

Appendix 1: Introduction Letter

To Whom It May Concern

Dear Sir/Madam,

RE: COLLECTION OF DATA

I am a master of Business Administration (Supply Chain Management Option) student from the Department of Business and Economics, Maseno University (Homabay Town Campus).

As part of the requirement for the award of the degree, I am expected to undertake a research study on ANALYSIS OF ENTERPRISE RESOURCE PLANNING IMPLEMENTATION FACTORS ON PROCUREMENT PERFORMANCE IN GWSCO.

I am therefore, seeking your assistance to fill the questionnaires attached. The attached questionnaire will take about twenty minutes to complete. Kindly answer all the questions. The research results will be used for academic purposes only and will be treated with utmost confidentiality. Only summary results will be made public. No one, except the institution will have access to these records. Should you require the summary, kindly indicate so at the end of the questionnaire. A self-addressed envelope is provided for your reply. Your cooperation will be appreciated.

Yours sincerely,

Ruth N.Ototo

Tel 0723732475

Ruthnyaboke10@yahoo.com

Maseno University

Appendix II: Research Questionnaire

SECTION ONE: GENERAL INFORMATION

Please tick (✓) as appropriate

1. Age

21-30 years ()

31-40 years ()

41-50 years ()

Above 51 years. ()

2. Gender

Male ()

Female ()

3. Level of education

PHD () Masters () Bachelors () Diploma () Certificate ()

others (specify)

4. How many years have you worked for GWSCO in your current position?

Less than 2 years ()

3-5 years ()

6-10 years ()

More than 10 years ()

5. Total number of years of work experience

Less than 2 years ()

3-5 years ()

6-10 years ()

More than 10 years ()

SECTION TWO: ERP SYSTEM AND PROCUREMENT PERFORMANCE

Part A: ERP implementation factors

1. SYSTEM SECURITY

In a scale of 1-5, rate the safety of ERP system security measures in the organization from the factors in the table below;

(Key: 1 = No extent, 2 =Less great, 3 = Moderate great, 4 = Great extent, 5 = Very great extent)

S/No.	ISSUES	1	2	3	4	5
i.	Risks identification methods in place to during ERP System implementation.					
ii.	Type of information protection mechanism used in ERP during implementation.					
iii.	Security safety controls to safeguard ERP system from infiltration.					
iv.	Level of Security policies in place during implementation on ERP					
v.	Financial and regulatory measures in place to mitigate system security issues.					

2. COST OF MAINTENANCE

In a scale of 1-5, rate the extent to which Cost of maintenance factors influence ERP system implementation.

(Key: 1 =No extent, 2 =Less extent, 3 = Moderate great, 4 =Great extent, 5 = Very great extent)

S/No.	ISSUES	1	2	3	4	5
i.	Cost drivers that are attributed to maintenance of ERP system during implementation					
ii.	Fundamentals of ERP maintenance put in place during implementation process.					
iii.	Frequency of system maintenance during implementation					
iv.	Cost attributed to Cost drivers for maintaining ERP system during implementation					
v.	System maintenance cost during ERP implementation					

3. RESISTANCE TO CHANGE

In a scale of 1-5, rate the extent to which the employee resistance factors influence ERP implementation in the organization.

(Key: 1 = No extent, 2 = Less extent, 3 = Moderate extent, 4 = Great extent, 5 = Very great extent)

S/No.	ISSUES	1	2	3	4	5
i.	Communication and involvement of employees when implementing ERP system.					
ii.	Causes of resistance by employees during ERP implementation in the organization.					
iii.	Structures in place to handling resistance during ERP system implementation					
iv.	Strategies that the organization has put in place to minimize resistance.					

4. TRAINING

In a scale of 1-5, rate the level to which training influence ERP implementation using the factors in the table below

(Key: 1 =No extent, 2 =Less extent, 3 = Moderate extent, 4 =Great extent, 5 =Very great extent)

S/No.	ISSUES	1	2	3	4	5
i.	Need identification for relevant trainings while implementing ERP system.					
ii.	Level of end-user collaborations during ERP trainings					
iii.	Types of trainings models offered to procurement staff during implementation of ERP system.					
iv.	Availability and allocation of efficient funds for conducting trainings during ERP system implementation					
v.	Intervals of carrying out trainings of employs during the system implementation.					

Part B: Procurement Function Performance

In a scale of 1-5, rate the extent to which ERP system influence procurement performance in the organization from factors in the table below;

(Key: 1 = No extent, 2 = Less extent, 3 = Moderate extent, 4 = Great extent, 5 = Very great extent)

S/No.	ISSUES	1	2	3	4	5
i.	Quality of information collected using the ERP system.					
ii.	Integration of department in the organization.					
iii.	Communication within all departments in the organization.					
iv.	Time spent on carrying out activities of various departments.					
v.	Number of tasks the system can carry out at once.					
vi.	Ability of system to reduce errors while carrying out activities.					
vii.	Efficiency of ERP system on daily work routine					

Appendix III: Research work Plan

Phase	Description	Number of weeks											
		1	2	3	4	5	6	7	8	9	10	11	12
1	Proposal writing	■	■										
2.	Data collection			■	■								
3.	Data analysis					■	■						
4.	Report writing							■	■				
5	Compilation									■	■		
6	Presentation											■	
7.	Submission of final report												■

Appendix III: Research Budget

S/N.	Item	Quantity	Unit price	Total cost
1.	Photocopying papers	5 Reams	500.00	2,500.00
2.	Notebooks	10	100.00	700.00
3.	Pencils	10	40.00	280.00
4.	Computer services	Lumpsum		6,000.00
5.	Binding	Lumpsum		1,000.00
6.	Stationery Flash disk	1	4,000.00	4,000.00
7.	Photocopying	Lumpsum		3,000.00
8.	Data collection	Lumpsum		
9.	Pre test visits	Lumpsum		10,000.00
10.	Subsistence during field work	Lumpsum		40,000.00
11.	Data analysis	Lumpsum		20,000.00
	TOTAL			87,480.00

Appendix IV: Morgan and Krejcie Sample- Size- Table

Table 3.1									
<i>Table for Determining Sample Size of a Known Population</i>									
N	S	N	S	N	S	N	S	N	S
10	10	100	80	280	162	800	260	2800	338
15	14	110	86	290	165	850	265	3000	341
20	19	120	92	300	169	900	269	3500	346
25	24	130	97	320	175	950	274	4000	351
30	28	140	103	340	181	1000	278	4500	354
35	32	150	108	360	186	1100	285	5000	357
40	36	160	113	380	191	1200	291	6000	361
45	40	170	118	400	196	1300	297	7000	364
50	44	180	123	420	201	1400	302	8000	367
55	48	190	127	440	205	1500	306	9000	368
60	52	200	132	460	210	1600	310	10000	370
65	56	210	136	480	214	1700	313	15000	375
70	59	220	140	500	217	1800	317	20000	377
75	63	230	144	550	226	1900	320	30000	379
80	66	240	148	600	234	2000	322	40000	380
85	70	250	152	650	242	2200	327	50000	381
90	73	260	155	700	248	2400	331	75000	382
95	76	270	159	750	254	2600	335	1000000	384

Note: N is Population Size; S is Sample Size *Source: Krejcie & Morgan, 1970*

Appendix V: Student t Table

t Table

cum. prob one-tail two-tails	$t_{.50}$	$t_{.25}$	$t_{.20}$	$t_{.15}$	$t_{.10}$	$t_{.05}$	$t_{.025}$	$t_{.01}$	$t_{.005}$	$t_{.001}$	$t_{.0005}$
	1.00	0.50	0.40	0.30	0.20	0.10	0.05	0.02	0.01	0.002	0.001
df											
1	0.000	1.000	1.376	1.963	3.078	6.314	12.71	31.82	63.66	318.31	636.62
2	0.000	0.816	1.061	1.386	1.886	2.920	4.303	6.965	9.925	22.327	31.599
3	0.000	0.765	0.978	1.250	1.638	2.353	3.182	4.541	5.841	10.215	12.924
4	0.000	0.741	0.941	1.190	1.533	2.132	2.776	3.747	4.604	7.173	8.610
5	0.000	0.727	0.920	1.156	1.476	2.015	2.571	3.365	4.032	5.893	6.889
6	0.000	0.718	0.906	1.134	1.440	1.943	2.447	3.143	3.707	5.208	5.959
7	0.000	0.711	0.896	1.119	1.415	1.895	2.365	2.998	3.499	4.785	5.408
8	0.000	0.706	0.889	1.108	1.397	1.860	2.306	2.896	3.355	4.501	5.041
9	0.000	0.703	0.883	1.100	1.383	1.833	2.282	2.821	3.250	4.297	4.781
10	0.000	0.700	0.879	1.093	1.372	1.812	2.228	2.764	3.169	4.144	4.587
11	0.000	0.697	0.876	1.088	1.363	1.796	2.201	2.718	3.106	4.025	4.437
12	0.000	0.695	0.873	1.083	1.356	1.782	2.179	2.681	3.055	3.930	4.318
13	0.000	0.694	0.870	1.079	1.350	1.771	2.160	2.650	3.012	3.852	4.221
14	0.000	0.692	0.868	1.076	1.345	1.761	2.145	2.624	2.977	3.787	4.140
15	0.000	0.691	0.866	1.074	1.341	1.753	2.131	2.602	2.947	3.733	4.073
16	0.000	0.690	0.865	1.071	1.337	1.746	2.120	2.583	2.921	3.686	4.015
17	0.000	0.689	0.863	1.069	1.333	1.740	2.110	2.567	2.898	3.646	3.965
18	0.000	0.688	0.862	1.067	1.330	1.734	2.101	2.552	2.878	3.610	3.922
19	0.000	0.688	0.861	1.066	1.328	1.729	2.093	2.539	2.861	3.579	3.883
20	0.000	0.687	0.860	1.064	1.325	1.725	2.086	2.528	2.845	3.552	3.850
21	0.000	0.686	0.859	1.063	1.323	1.721	2.080	2.518	2.831	3.527	3.819
22	0.000	0.686	0.858	1.061	1.321	1.717	2.074	2.508	2.819	3.505	3.792
23	0.000	0.685	0.858	1.060	1.319	1.714	2.069	2.500	2.807	3.485	3.768
24	0.000	0.685	0.857	1.059	1.318	1.711	2.064	2.492	2.797	3.467	3.745
25	0.000	0.684	0.856	1.058	1.316	1.708	2.060	2.485	2.787	3.450	3.725
26	0.000	0.684	0.856	1.058	1.315	1.706	2.056	2.479	2.779	3.435	3.707
27	0.000	0.684	0.855	1.057	1.314	1.703	2.052	2.473	2.771	3.421	3.690
28	0.000	0.683	0.855	1.056	1.313	1.701	2.048	2.467	2.763	3.408	3.674
29	0.000	0.683	0.854	1.055	1.311	1.699	2.045	2.462	2.756	3.396	3.659
30	0.000	0.683	0.854	1.055	1.310	1.697	2.042	2.457	2.750	3.385	3.646
40	0.000	0.681	0.851	1.050	1.303	1.684	2.021	2.423	2.704	3.307	3.551
60	0.000	0.679	0.848	1.045	1.296	1.671	2.000	2.390	2.660	3.232	3.460
80	0.000	0.678	0.846	1.043	1.292	1.664	1.990	2.374	2.639	3.195	3.416
100	0.000	0.677	0.845	1.042	1.290	1.660	1.984	2.364	2.626	3.174	3.390
1000	0.000	0.675	0.842	1.037	1.282	1.646	1.962	2.330	2.581	3.098	3.300
Z	0.000	0.674	0.842	1.036	1.282	1.645	1.960	2.326	2.576	3.090	3.291
	0%	50%	60%	70%	80%	90%	95%	98%	99%	99.8%	99.9%
	Confidence Level										

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