ENTERPRISE RESOURCE PLANNING TRANSFORMATION EFFECT ON
EMPLOYEE PRODUCTIVITY IN GEOTHERMAL DEVELOPMENT
COMPANY, NAIROBI CITY COUNTY, KENYA

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KENYATTA UNIVERSITY

JULY, 2017
DECLARATION

This research project is my original work and to the best of my knowledge has not been presented for examination for any other university

Signed: ..........................  Date: ..........................

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

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DEDICATION

This work is dedicated to God for granting me with the physical and mental strength to work and complete my masters.

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**ABBREVIATIONS AND ACRONYMS**

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<tr>
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<td>Business Process Re-engineering</td>
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<td>CSF</td>
<td>Critical Success Factors</td>
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<td>EP</td>
<td>Employee Productivity</td>
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<td>ERP</td>
<td>Enterprise Resource Planning</td>
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<td>GDC</td>
<td>Geothermal Development Company</td>
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<td>GUI</td>
<td>Graphical User Interface</td>
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<td>IS</td>
<td>Information Systems</td>
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<td>KWP</td>
<td>Knowledge Worker Productivity</td>
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<td>SAP</td>
<td>Systems Applications Products</td>
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OPERATIONAL DEFINITION OF TERMS

Business Process Re-engineering: Business process re-engineering is the process of analyzing and redesigning workplace business processes with the goal and intent to increase organizational efficiency and productivity.

Critical Success Factors: These are conditions that must be met in order for the ERP implementation process to occur successfully.

Employee Productivity: This refers to the person's ability to produce the standard amount or number of products, services or outcomes as described in a work description.

Enterprise Resource Planning: It is a trading software pack whose function is to integrate the various functions of an organization, streamline processes and flow of information among all the departments of an organization, among them there are Financial, Accounting, Human Resources, Supply Chain and Customer Relationship Management units and any other data oriented units for the purpose of enterprise-wide management of resources.

ERP Transformation: ERP Transformation is a complex and dynamic process that is characterized by an on-going evolution that involves a mix of technological and organizational interactions.

Information Systems: It is a collection of subsystems defined by either functional or organizational parameters that support decision-making and control in the organization.
Job Satisfaction: It is a measure of how content an individual is with his or her job and which can be attributed to the driving forces in organizational behavior such as leadership style.

Knowledge Workers: This refers to the employees who work with intangible resources. They know more about their jobs than anyone else within the organization.

Knowledge/Skill set: Awareness or familiarity gained by experience or education of a subject.

Perspective: This refers to the strategic understanding of productivity, which differs from the operational understanding of the concept of productivity.

Task Innovation and Productivity: This refers to the achievement of task excellence, which is characterized by the efficiency and effectiveness with which resources are utilized to provide a valuable output of the task. The result of this is minimized rework and improved workflow.
ABSTRACT

The transformational aspect of an ERP entails the re-engineering of the organizational business process and the influence of necessary critical factors for the radical transformation. The general objective of this study was to determine the relationship between ERP Transformation and Employee Productivity in Geothermal Development Company, Nairobi City County, Kenya. The specific objectives of the study were to assess the effect of business process re-engineering on employee productivity, to determine the influence of critical success factors on employee productivity, to analyze the effect of organizational change on employee productivity and to find out the impact of business functions on employee productivity in Geothermal Development Company, Nairobi City County, Kenya. The study was guided by the ERP Scorecards Benefits Theory, which generated a framework that explained the direct and indirect contributions of the ERP transformation. A Cross-sectional survey was used to provide an in-depth understanding of the association of the variables in context. The population of this study were 840 employees of GDC who were based at the organization’s headquarters in South C. The target population were some of the key organizational informants comprising of Executive, Senior, Middle and Lower level management from both the business and technological (IT) part of the organization who have been in constant interaction with the system. This study utilized both the stratified random sampling and simple random sampling technique in selecting 336 personnel from the population of GDC employees. Data was collected using questionnaires and the opinion of scholars and experts in ERP Transformation was sought to establish the validity of the research instruments. Reliability of the questionnaire was evaluated using the Cronbach alpha test, which provided an acceptable threshold of 0.593. Data was analyzed using descriptive statistics and inferential statistics in the form of correlation tests and regression analysis. Only 300 respondents submitted their questionnaires which gave a response rate of 89.2% and deemed representative. The study findings indicated that Organizational Change and Business Functions were statistically significant predictors of Employee Productivity and therefore, the most influential determinants of success in an ERP Transformation. The variables were significantly correlated where R (coefficient of correlation) was a positive correlation of 0.36 indicating that the measures of ERP Transformation were moderately related to Employee Productivity. The regression analysis revealed that there was a significant relationship between Employee Productivity and ERP Transformation as indicated by a significance level of 0.00 (P value was less than 0.05) which contradicted previous findings from correlation analysis. Thus, it was important to test the significance of each predictor. It was concluded that ERP Transformation explains 13% of the variation in Employee Productivity and this was attributed to Organizational Change and Business Functions which were significant predictors of Employee Productivity. This means that organizations should not implement ERP with a view of enhancing Employee Productivity and recommends that management should strive to identify the other key factors that explain 87% of the variation in Employee Productivity to achieve a higher level of performance in the organization. This study further recommends that performance in the public sector should be integrated with management activities to ensure that it is part of the wider long-term organizational goals and leads to optimal benefits in the organizations.
CHAPTER ONE: INTRODUCTION

1.1 Background of the Study
It is difficult to make a profit in the current business climate. The business condition in the market globally has been risky and characterized with uncertainty and stiff competition (Ghose & Majid, 2008). Organizations must navigate multiple challenges such as increased government regulations, stricter budgets, and keeping up with rapidly changing technologies, which all have been threats to the bottom line. Yet amid these challenges, organizations have been thriving by improving productivity.

Employee productivity has been studied since the days of Aristotle (384BC-322BC) whose theories included delegation of authority, departmentalism and leadership. Over the years, psychologists and management scientists have used behavioral and management theories to explain productivity. The present employee productivity scenario across the world has been drastically changing and changes in the measures of productivity have been taking place very rapidly.

Employee Productivity has been recognized as a performance measure encompassing both efficiency and effectiveness. It was important, therefore, to know who the productive workers are. Efficiency in productivity has been measured in terms of the ability to perform the tasks with available resources. Productivity measurement has assisted the management in planning remedial and improvement actions so that the output required was consistent with the time to fulfil the objectives (Selden & Jacobson, 2007).

Majority of the industries recorded a yearly increase in the level of employee productivity that was required to maintain a dominant position in the industry. The new reality has been an increase in employee productivity of between 10% and 25% each year. Contrary to this, according to The
Forbes Statistics (2015) and a recent report from the U.S. Bureau of Labor Statistics, worker productivity has been declining. The report revealed that productivity has been growing at a slower rate today than it was in the past. Productivity in today’s business world has a new meaning. It has not only focused on zero-defect, proficiency or perfectly managed minutes of the day but in today’s world, it has focused on adaptation, innovation and forward progress. Employee productivity has been viewed as a thought for continuous progress and improvement or a continuous endeavor for implementing new methods and technologies (Rouse, 2014). Productivity requires that a continuous level of innovation maintained both in products and in the business processes. It aimed at building a culture that empowered employees to create, innovate, and deliver a difference. Majority of the 21st century companies have focused on creating a difference for customers, delivering new and innovative solutions, and creating a culture that strengthens teams, which aims at boosting organizational success for years to come (Korir, 2015).

One of the increasing concerns within the region was a focus on how to attract the best employees and keep them engaged and productive. According to Gallup’s new 142-country study on the State of the Global Workplace, the highest proportions of actively disengaged workers were found in the Middle East and North Africa (MENA) and sub-Saharan Africa regions, at 35% and 33%, respectively (Huang, Chen & Ku, 2004). Regardless of region or industry, businesses that sought to adapt to rapidly changing global economic conditions learnt how to maintain high-productivity workplaces and grew their customer bases in widely varying social, cultural, and economic environments.

The profit making organizations in Kenya have been facing cut-throat competition in maintaining a dominant position in the market through talented and dedicated work force (Djellal, 2013). The contribution of employees on the job has been the most important factor for development and
excellence in business. Specifically, the success of a business unit is dependent on employees’ performance on different jobs in close coordination.

A remarkable number of management tools and techniques such as introduction of information systems, total quality management, benchmarking, re-engineering and change management have been spawned by the need for productivity, quality and speed in the public sector (Sanchez and Mccauley, 2006).

1.1.1 Enterprise Resource Planning Transformation
Enterprises nowadays seek have sought to transform their business processes in accordance with the fast changing customer demands so as to survive the intense global competition (Al-Mashari, 2003). Enterprise Resource Planning (ERP) systems are one of the most significant global technological advances that has emerged in recent years (Moon, 2007). This system has enabled the transformation of businesses and their performance by creating a shared database to efficiently support daily business operations across different functions, while maintaining synergies and improving synchronized reporting in the organization (Soh & Sia, 2004b; Umble & Umble, 2003).

The use of BPR as a measure of ERP transformation was introduced to respond to rapidly changing technical, business environment and customer’s needs in order to achieve performance gains while improving the strategic standing of the organization. Based on the work of Maureen, William, Wan and Dominic (2005) the idea of re-engineering traces its origin back to the management theories built up in the 19th century. During the industrial age, the focus was on traditional and bureaucratic organization of mass production whereas the modern perspective has shifted to a process-based thinking. The management theories have also created myths concerned with BPR and transformation been synonymous to each other. According to a research study by Kilonzo (2006), BPR has been described as a process that contributes to organizational transformation. It involves
broad changes such as organizational structure, strategy and business capabilities in other organizational dimensions besides the work processes. Business process reengineering (BPR) is the redesign of processes, typically using information technology (IT), in order to gain significant improvements in key areas of performance such as service, quality, cost, and speed. BPR initiatives usually aim to integrate separate functional tasks into complete cross-functional processes (Altinkemer, 2010). According to Caccia, Guimaraes and Guimaraes (2005), business process reengineering (BPR) is the fundamental rethinking and radical redesign of the business processes to achieve dramatic improvements in critical and contemporary measures of performance, such as cost, quality, service and speed. They further defined BPR as an organizational make-over that is characterized by the search for, and implementation of, radical change in business processes to achieve breakthrough results. ERP system transformation, therefore, can have a significant impact on work performance and productivity (Devadoss & Pan, 2007).

ERP Transformation is a complex and dynamic process that involves a mix of technological and organizational interactions. ERP Transformation can be described as a situation at the heart of the project where there is a strong mix of technology and business processes that promote efficiency and consistency. Other writers infer that ERP Transformation are the initial benefits that have been realized and which need to be continuously improved and maximized (Rikhardsson & Kræmmergaard, 2005). The transformation is characterized by an ongoing evolution or a continuous organic growth, which is adaptive to changes.

ERP Transformation is concerned with the business value that has been derived from the investment in the technology and not the technical aspects of the system (Akkermans & Van Helden, 2002). They further stated that ERP transformations failed because of lack of proper definition of concrete and specific business benefits.
ERP Transformation is subject to different challenges in adoption and usage which when addressed increases its chances of success (Otieno, 2008; Leopold & Otieno, 2005). This has effectively provided an opportunity of improving how the business operates which eventually translated to changes in the users’ perspective of their day-to-day tasks.

In a study by Al Mashari (2003), most businesses believed that ERP transformation resulted into greater benefits for the organization. They expected that the new technology resulted into a transformation of the previous inefficiencies into streamlined operations without considering some of the key critical dimensions of an ERP Transformation.

The concept of ERP Transformation cannot be discussed solely without consideration of the other key measures such as critical success factors, organizational change and business functions as important determinants of a transformation success. ERP Transformation approach has been designed to help stakeholders adopt change and minimize resistance (Hawking, 2005).

1.1.2 Employee Productivity
According to Rouse (2014), employee productivity, which has also been referred to as workforce productivity is an assessment of the efficiency of a worker or a group of workers. It might be evaluated in terms of the output of an employee in a specific period of time. Rouse further stated that much of the success of any organization relied upon the productivity of its workforce and hence has been an important consideration for businesses. He further defined it as the output per person/system/machine/group. According to him, it is concerned with the results achieved, the performance of activities, competencies needed to perform these activities from every individual, group or team/ department and organization as a whole.

Beheshti (2010) defined employee productivity as a measurement of the output produced using a quantity of inputs. It has been referred to as a representation of the relationship between outputs
and the inputs used to produce them. Selden and Jacobson (2007) related productivity to the person's ability to produce the standard amount or number of products, services or outcomes as described in a work description. Employee Productivity has been considered based on the interrelationship with performance and profitability. Therefore, an organization’s success was dependent on how well it maximized the creative capacity and productivity of its workforce.

Employee productivity in Kenya has been declining due to a myriad of factors such as the mismatch between the supply and demand of skills, increased technological breakthroughs in developed markets etc. The growth in Kenya has been undermined by the country’s failure to create, transmit and absorb knowledge. According to Gatwiri (2014) in her MBA project at University of Nairobi on the Relationship between Manager’s Leadership Style and Employee Engagement in GDC, it was noted that Kenyan firms do not easily adopt new technology (Al-Mashari, 2003) and therefore, the Kenyan public sector has been facing a decline in employee productivity that is characterized by employees resorting to their personal work and social media during working hours.

This further resonated with the study by Korir (2015) in his MBA Project at Moi University on Performance Management and Public Service Delivery in Kenya. These studies concluded that these results in interruptions in normal operations, loss of efficiency, overworking the committed employees, increased replacement and recruitment cost, project delays, increased customer dissatisfaction and scheduling difficulties.

1.1.3 Geothermal Development Company

The Geothermal Development Company (GDC) is a 100% state owned company formed by the Government of Kenya. GDC was formed to accelerate the development of geothermal resources
in Kenya. The government’s forecast is to generate 15,000MW out of which 5000MW will be from geothermal resources (GDC ERP Report, 2011)

GDC was incorporated in the year 2008 under the Ministry of Energy and was based on the energy policy articulated in Sessional paper No. 4 of 2004, and the energy Act No.12 of 2006, which un-bundled the key players in the electricity sector to ensure operational efficiency in the Energy and Resources sector (GDC ERP Project Charter, 2011)

Initially, GDC was characterized by a disengaged work force and inadequate leadership to provide geothermal steam to power generators, ensuring electricity becomes available faster, and more cost effectively (Gatwiri, 2014). GDC recognized the need to transform itself so as to fit the emerging realities of delivering 5,000 MW by 2030 and meeting the power needs of the Kenyan economy and beyond, while creating value for its shareholders, customers and citizens. The main aim of the ERP system at GDC was to deliver information and reporting in real time to assist management in decision-making, benchmark activities and processes against the best institutions (GDC ERP Project Charter, 2011).

The ERP system has transformed the key departments, functions within GDC by targeting primarily the operations within the Planning & Strategy department, Budgeting, Finance and Accounting department, Procurement, Administration, and Human Resources Development department (GDC Annual Report, 2011). GDC has derived some key benefits from the ERP Transformation such as efficiency in the processes and procedures, effective functionality, enterprise wide integrated functionality between the Finance, Human Resources and Administration processes accessible on real time to GDC Staff and stakeholders, appropriate skills and competencies characterized by knowledgeable workforce with the skills and competencies to effectively operate, maintain and utilize the SAP ERP applications to enhance productivity,
transformation of the working culture within entire company driven by a value-centric culture, reliability of the data in support of operations and decision-making; and achievement of value in the deliverables (GDC ERP Project Closure Report, 2012).

1.2 Statement of problem
In the face of newly emerging dynamics in the business environment and particularly on employee productivity, organizations have increasingly been compelled to implement systems that help them to better adapt to the environment. Hall (2002) stated that there has been a massive effect on employee productivity as a result of the implementation of ERP to improve the organizational performance. Hall (2002) further stated that obtaining maximum benefit is possible while benefiting from optimum work force, power, and capacity, skills of human resources and equipment, in order to promote welfare.

Several studies (Gable, Sedera & Chan, 2003; Sedera & Gable, 2004) stated that the improvement in employee productivity as a result of the adoption of ERP systems has been more widespread in private organizations than in public sector organizations in Kenya. Most of the research regarding the effects of ERP Transformation on Employee Productivity have focused on the private sector with relatively little research done in the public organizations especially on the impact on business processes and individual behavior (Otieno, 2010).

Empirical research on evaluating the relationship between ERP transformation and Employee Productivity reveal that most studies have been conducted on its impact on the organization performance. Studies by Njihia and Mwirigi (2014), Ochieng (2009) and Munyiri (2000), do not explicitly reveal whether the implementation of the ERP system has an impact on the productivity of employees or not, therefore this is an area that has scarcely been addressed.
There are limited studies within the Energy and Resources sector in Sub-Saharan Africa that have particularly focused on the effect of their organizational operations on employees. GDC has provided a useful context which can be generalized across the Energy and Resources sector to determine the impact of the various factors on employee productivity.

Similar studies have been undertaken in Kenya by Bii (2008) in her MBA project at The University of Nairobi focused on the effect of BPR on employee productivity at the Kenya Tea Development Agency which is a government parastatal in the Agricultural sector. The results showed a positive increase in employee productivity which was largely attributed to the increase in operational efficiencies. Further to this, Mutua (2013) conducted a project research study on the perception of employees on the effects of BPR at Mara-Ison Technologies which is a private entity. He pointed out that there has been a lot of emphasis on organizational opinion of performance whereas the perception of employees regarding this element had been overlooked.

Employee Productivity in Kenya and particularly within the public sector is an area that has been largely ignored. Recommendations from these studies indicated that during the project implementation, it was noted that granting attention to individuals, training and improving the skillset is possible through familiarization with the solution, capacity building and culture change. These factors have been considered essential in ensuring that the project is viewed as a business transformation projects and not simply as IT projects. The challenges experienced have been mainly due to the stakeholder resistance which results into a reduced awareness of the ERP project and leads to high demand on limited project resources to fulfill their usual business responsibilities besides the consistent demands to the project. This study has sought to fill the gap by paying sufficient attention to the human resources and the factors that affect their productivity.
This study aimed at investigating the effects of ERP transformation on the organization and more specifically on the productivity of employees. Productivity is related more to the individual reactions to the introduction of such systems from a psychological and a working behavioral point of view.

1.3 Research Objectives
1.3.1 General objective
The purpose of this study was to establish the relationship between ERP Transformation and Employee Productivity in Geothermal Development Company, Nairobi City County, Kenya.

1.3.2 Specific Objectives
The study was guided by the following specific objectives:

i. To assess the effect of business process re-engineering on employee productivity at Geothermal Development Company, Nairobi City County, Kenya

ii. To determine the influence of critical success factors on employee productivity at Geothermal Development Company, Nairobi City County, Kenya

iii. To analyze the effect of organizational change on employee productivity at Geothermal Development Company, Nairobi City County, Kenya

iv. To find out the impact of business functions on employee productivity at Geothermal Development Company, Nairobi City County, Kenya

1.4 Research Questions
The study sought to answer the following questions:

i. What is the effect of business process re-engineering on employee productivity at Geothermal Development Company, Nairobi City County, Kenya?

ii. To what extent do the critical factors play a pivotal role in ensuring a successful ERP transformation at Geothermal Development Company, Nairobi City County, Kenya?
iii. What is the effect of organizational changes in business functions on employee productivity at Geothermal Development Company, Nairobi City County, Kenya?

iv. To what extent is the impact of business functions on employee productivity at Geothermal Development Company, Nairobi City County, Kenya?

v. To establish whether Business Process Re-engineering, Critical Success Factors, Organizational Change and Business Functions as measures of ERP Transformation have no effect on Employee Productivity at Geothermal Development Company, Nairobi City County, Kenya?

1.5 Significance of the Study
Based on the findings and recommendations of this study, the executive management of GDC can utilize this study to determine the benefits of ERP Transformation and its effect on the performance of employees. The ERP Transformation targeted key departments and therefore, the study provides insights on the impact of ERP on the utilization of employees in supporting the organization’s strategic goals. They can further determine the extent of support required to be expended towards technological initiatives.

This study can be beneficial to organizations in the public sector and other sectors of the economy such as the Financial Services and Manufacturing that are considering and willing to take advantages of the long run benefits of ERP on the organization as whole. Currently, the findings of this study reveal that ERP Transformation explains only 13% variation is Employee Productivity. The public and private sector can use this study to understand the impact of ERP systems adoption on productivity paradox.

This study can be useful to future researchers to determine the relationship between the education level of the respondents and the usage of ERP. The findings also indicate that some respondents
did not indicate the role they played in the ERP implementation, therefore researchers can further determine the reasons behind this and how it affects the utilization of the system.

1.6 Scope of Study
This study determined the effect of transformational characteristics of ERP and its adaptability to changes in staff productivity at GDC. The study targeted the Geothermal Development Company and was limited to the organizational headquarters in Nairobi. The study targeted some of the key employees of GDC and cut across the different key departments of the organization. The study used stratified random sampling and simple random sampling methods. The stratum was based on the level of management, which was similar to the task variability in the ERP applications.

This study established the effect of ERP Transformation on Employee Productivity for the last 6 years. GDC implemented ERP in the year 2011 and focused on the different measures of ERP Transformation and their effect on Employee Productivity. This helps to ascertain the ERP benefits in the long run.

The study was a correlation research based on a cross-sectional survey design. This study relied on primary data and complemented this with secondary data in the form of annual reports and ERP project reports. The study used a semi-structured questionnaire, which comprised of a mixture of closed and open-ended questions.

1.7 Limitations of the Study
The focus of this study was GDC, which is a relatively new organization, which was formed 9 years ago. The study findings did not reveal much information on the benefits realized by GDC overtime and therefore the study sought further information from secondary data in form of annual reports and ERP Project reports.
There was a shortage of literature on the relationship between ERP Transformation and Employee Productivity with majority of the studies addressing profitability within the organization. This literature was supplemented by conducting informal discussions with the respondents to obtain additional information on the study variables.

Majority of the respondents were not willing to divulge information for fear of victimization upon disclosure. The respondents were unaware of the exercise and once they received a directive on the approval from management, they showed full co-operation towards it. The researcher further assured them of the confidentiality of their responses.

The employees were skeptical on sharing any information regarding their current operations because GDC was portrayed negatively in the media due to ethical issues prior to the data collection exercise. The respondents were assured that the study was purely for academic purposes and that it sought to represent their original ideas.

There was a bureaucratic and lengthy process of obtaining information, which was a bottleneck that delayed the data collection process considerably. This study was conducted over a period of one month as opposed to the initial projection of two weeks. The study used informal discussions to obtain the required information from the respondents and supplemented this with information from their organization’s stakeholders such as customers.

It was difficult to secure the employees’ time considering their busy working schedules. The study aimed at acquiring sufficient data from 336 employees and therefore, proper arrangements were made with the respondents to avail themselves after their normal working hours and during lunch sessions. The respondents were informed on the value of their input to the assessment of employee productivity.
1.8 Organization of the Study

This Introductory Chapter, provides the background of the study, problem statement, research objectives, significance of the study, scope and limitations that have been encountered in the course of the study. Chapter Two presents the theoretical review on ERP Transformation and Employee Productivity, empirical review on the different measures of ERP Transformation and Employee Productivity, the research gaps and the conceptual framework. Chapter Three highlights the research design, target population, sampling size and design, data sources and collection, validity and reliability of the data collection instruments. This chapter also addresses how the study had intended to analyze and present the data. Chapter Four presents the analysis of the response rate, demographic information, descriptive statistics on the research variables and inferential statistics. This chapter further presents the interpretation and discussion of the analysis. Chapter Five provides the summary of the main findings, conclusions, recommendations related to policy and further research.
CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction
The chapter presents the literature review covering theoretical framework, empirical review on the relationship between measures of ERP Transformation and Employee Productivity and conceptual framework. This section further addresses the research gaps encountered in this study.

2.2 Theoretical Review
This study was anchored on the Knowledge-worker productivity theory, Theory X, Y and Z, ERP Scorecards Benefits theory and the ERP Systems Success Framework Theory.

2.2.1 Knowledge Worker Productivity Theory
The knowledge-worker productivity theory was developed by Peter Drucker (1999). The term knowledge work was coined when he suggested that the world was entering into an era where change is inevitable. This theory points out that knowledge-worker productivity is the biggest of the 21st century management challenges. In industrialized countries, increasing the productivity is the first requirement of survival. Drucker’s Knowledge-worker productivity theory is an advancement of the productivity improvement process developed from Frederick Winslow Taylor (1911) scientific method. The concept of productivity has been reviewed by different theorists and has culminated into the knowledge-worker productivity been termed as a transformational process in the global competitive market that has changed the existing management practice into knowledge-worker productivity practice (Benson and Brown, 2007).

According to Drucker (1999), the theory was based on six determining factors, which are task independence, productivity, novelty, continuous learning, quality and knowledge worker as an asset. The employees within a firm should be capable of collaborative performance to make their strengths and weaknesses irrelevant to the task by eliminating all constraints associated with a
particular task. This theory recognizes the use of technology as an extension of the knowledge worker and strives to ensure that continuous innovation is inbuilt into the worker’s job. Productivity therefore, was analyzed from the perspective of both quantity and quality. This theory supports the recognition of the workers as an enormous capital asset because of their substantial contribution to the organization. This theory was revisited by North (2009) to enhance understanding of the six determining factors where he stated that knowledge workers generate wealth for their organizations through the knowledge they possess which is generated in a value added process. Increasingly, organizations survival depends on competitive advantage obtained by enhancing the productivity of the knowledge workers. The knowledge workers should be closely aligned with their companies’ organization wide strategies (Davenport, 2005).

This theory maintains that a holistic approach is required that not only focuses on the individual but the entire organization. Several studies have been informed by this theory. For instance, studies by Benson and Brown (2007), Horwitz, Heng and Quazi (2003), Marks and Scholarios (2007), Tam and Frenkel (2002) seek to examine the unique features of knowledge workers in contrast to non-knowledge workers particularly with regard to organizational commitment and professional identity, job satisfaction and intention to quit. All these studies have depicted the emergence of a greater depth of understanding of knowledge workers.

The adoption of ERP systems has an influence on the nature of the job and the perception of workers towards accepting the new system. This theory is relevant in creating a need for organizations to align their work processes to accommodate the changes imposed by the ERP system on worker productivity.
2.2.2 Theory X, Y and Z

There are several other theories related to Employee productivity most notably is Douglas McGregor (1960), Theory X and Theory Y. Theory X states that people inherently dislike work, need direction, have little or no ambition and are driven by fear as their major motivator. Theory Y on the other hand, states that people derive satisfaction from their work, seek responsibility and are goal directed. The key elements in Theory Y are the concepts of supportive leadership and participative management. These two theories represent opposite management attitudes about employee motivation for productivity. McGregor proposed that a manager’s outlook impacts the productivity and performance of an employee. Ouchi (1980) produced an addendum to the two theories referred to as Theory Z which states that increased productivity is a result of coordinating the individual efforts and providing them with incentives to do so.

This theory lays emphasis on the management style of leadership as the intervention that will shape the employees’ working style while ignoring other factors that might have played a role. This study has addressed the other organizational factors that have an effect on employee productivity. Studies by Dobre (2013) on employee motivation and organizational performance reveal that people are different and are motivated by diverse needs not only physiological needs, safety requirements and self-actualization needs.

Several studies have been informed by this theory. Bii (2008) in her MBA research project focused on employee productivity at Kenya Tea Development Agency, which is a government parastatal in the Agricultural sector. Mutua (2013) conducted a research study on the perception of employees on the effects of BPR at Mara-Ison Technologies, which is a private entity. This theory is relevant in understanding the organizational factors that affect employee productivity.
2.2.3 ERP Scorecards Benefits Theory

The ERP Scorecards benefit theory is a combination of Kaplan and Norton’s (2009) Balanced Scorecard 4 dimensions which are Finances, Internal Business Processes, Customer Satisfaction, Learning and Growth and the 3 levels which according to Zuboff (1985) are Automate, Informate and Transformate. The Balanced Scorecard is a strategic planning and management tool that is used to align business activities to the organizational strategy, vision, mission and core values. It provides a framework for translating activities into action with the four dimensions. The figure below details the factors considered in each dimension.

Figure 2.1: Kaplan and Norton Balance Score Card

Chand, Hunton and Vasudevan (2005) advanced Zuboff’s (1985) theory in stating that the 3 levels can be used to gauge the maturity of an organization in implementing an ERP system. The
combination generated a framework that sought to explain, understand and identify the direct and indirect contributions of the ERP transformation (Chand et al., 2005) which is useful in determining the impact on employee productivity.

Several studies in the Telecommunications and Aviation Industry (Chand, 2005; Legare, 2002; Cheboi, 2010) were informed by this theory. These studies concluded that the ERP scorecards framework yielded operational, tactical and strategic benefits. The findings revealed a need for understanding the framework in the Energy and Resources sector. This framework is more appropriate in evaluating the benefits of ERP transformation since it aligns the operations with the strategic business objectives to maximize on the value added contribution of the ERP to the organization. Hence, indicating the relevance to this study.

2.2.4 ERP Systems Success Framework

Several theories have been published in relation to ERP Transformation such as ERP Systems Success Framework (Ifinedo & Nahar, 2006). The ERP Systems Success Framework is based on the works of Ifinedo and Nahar (2006). They defined a framework for measuring ERP success which initially was a five-dimension model but later modified to have a sixth dimension in the course of research. The initial framework was adapted from the works of Gable et al., (2003) and Myers and Kappelman (1996). The six dimensions are System Quality, Information Quality, Vendor/Consultant Quality, Individual Impact, Workgroup Impact and Organizational Impact. The research was conducted in the Nordic-Baltic region comprising of three Estonian and four Finnish firms. The framework postulates that the success of an ERP implementation can be measured by the dimensions mentioned above. This theory aimed at providing insights into the adoption of ERP on the perception of derived benefits to be reaped from such systems.
The ERP Systems Success Framework theory concentrates on private firms and on the belief that insights would add to the body of knowledge on the success of ERP assessment. This theory was relevant in determining the output of a successful ERP transformation. It was a valuable contribution to the ERP evaluation research because of the use of quality and impact attributes in a single framework.

Several studies (DeLone & McLean, 1992; Grover, Jeong & Segars, 1996; Gable et al., 2003) suggested that the notion of ERP success was based on enhancing the organizational efficiency and effectiveness. Further studies that were anchored on this theory (Ross, 1999; Yu, 2005; Cheboi, 2010) stated that benefits occur after a period of time after the ERP implementation. These studies were conducted on a few selected organizations in the Telecommunications and Aviation Industry which revealed a contextual gap. Hence, relevant to this study.

2.3 Empirical Review
This section has attempted to discuss the past studies according to the objectives of the study.

2.3.1 Business Process Re-engineering and Employee Productivity
Based on the work of Maureen, William, Wan & Dominic (2005) the idea of re-engineering traces its origin back to the management theories built up in the nineteenth century. During the industrial age, the focus was on traditional and bureaucratic organization of mass production whereas the new perspective has shifted to a process based thinking. The management theories have also created myths that are concerned with re-engineering such as the myth of re-engineering and transformation which is concerned with BPR and transformation as synonymous to each other. According to studies by Adams (1984), BPR is a process that contributes to organizational transformation. It involves broad changes such as organizational structure, strategy and business capabilities in other organizational dimensions besides the work processes.
Carr and Johansson (1995) strongly proposed that to successfully implement BPR, organizations should incorporate strategically driven re-engineering programs. This view was supported by Sarkis, Presley and Liles (1997) stating that BPR needs to be viewed as a strategic program that not only has an impact on the function that has direct control over the process but other functions as well. Studies by Davenport and Short (1990) show that the use of IT plays a major contributing role in order to reap the full benefits of BPR. BPR is considered as an early-stage procedure for the identification of the organizational demand for ERP whereby a clear interpretation of the processes, functions and legacy data is required for the ERP to be considered effective.

Several studies globally (Bergeron & Falardeau, 1994; Yap & Pavri, 1995) suggested that BPR is known to produce highly positive results for firms, including significant reductions in costs, errors, and times, increased customer satisfaction, and better overall organizational efficiency and effectiveness. Other studies conducted also identified benefits that are attributed to BPR which are cost reductions (Case, 1992), increase in productivity (Smith & McKeen, 1992), a higher quality of goods and services offered (Barton, 1993) and a simplified organizational structure (Davenport, 1995; Stanton, Hammer & Power, 1993).

Local studies in BPR by Thiga (1999), Owuor (2000), Kilonzo (2006) and Munyiri (2000) have all focused on documenting the extent of adoption of BPR by companies in Kenya and the factors that drive towards this decision. The studies have been conducted in relation to improvement in company performance, which was recognized as the ultimate measure for assessing the overall benefits. In these studies, company performance has been measured in a wide variety of ways (Venkatraman, 1993) but majority of the authors have used one item to measure company performance, which is company profitability (return on total assets). The aspect of Employee Productivity is scarcely addressed.
2.3.2 Critical Success Factors and Employee Productivity

ERP transformation is a complex process with a lot of factors and conditions which can potentially influence the transformation process (Soja, 2006). The presence of those conditions and factors can help to produce good results for ERP transformation, whereas the absence can have the opposite effect. There are a few studies which have been conducted on the analysis of critical success factors for effective ERP transformation in the Kenyan public sector organizations. However, most of these studies have been done in the developed countries.

Many researchers (Nah & Kuang, 2001; Umble et al., 2003; Sarker & Lee, 2000; Leopoldo & Otieno, 2005) have carried out research to determine the validity of the CSFs as truly necessary conditions for the transformation success and their effect on the organization.

In the study by Finney and Corbett (2007), an exhaustive analysis of prominent MIS journals on CSF resulted in a list which has been broken down into two categories. The two categories are as indicated below:

<table>
<thead>
<tr>
<th>Strategic Critical Success Factors</th>
<th>Tactical Critical Success Factors</th>
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<tr>
<td>Top Management Commitment and Support</td>
<td>Balanced Team</td>
</tr>
<tr>
<td>Visioning and Planning</td>
<td>Empowered decision makers</td>
</tr>
<tr>
<td>Project Champion</td>
<td>Team morale and motivation</td>
</tr>
<tr>
<td>Project Management</td>
<td>Project cost planning and management</td>
</tr>
<tr>
<td>Change Management</td>
<td></td>
</tr>
<tr>
<td>Managing cultural change</td>
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</table>

Source: Finney and Corbett (2007)

In this study, the focus has been on commitment by top management, excellent project management, organizational commitment to change and extensive education and training.
According to Otto Korhonen (2013), earlier researchers defined top management concerns in four dimensions which are change management, process, people and project. The transformation process requires an organization wide commitment towards monitoring the progress and providing clear direction. Studies conducted by Khaled, Zahran and Tillal (2008) show that project management is an essential component of the transformation process. Project Management coordinates the use of knowledge, skills and monitors the progress and achievement of objectives. In a study conducted by Goeun (2013) on critical success factors, he summarized user training, extensive education on the new business processes as essential for understanding the transformation. This was further supported by the studies conducted by Stephan, Herwig and Roland (2009) on the need for change management strategies to ensure acceptance of the system and full realization of the benefits of the system.

The analysis of CSFs has been based on the study by Jiang, Klein and Balloun (1996) on the ranking of CSFs in a survey conducted in the USA. The study suggested that top management support, project management, adequate user training, user readiness, adequate resources, user commitment as the necessary factors that are required for a successful impact of ERP implementation within an organization. This has formed the basis of analyzing the selected factors that are critical to the effect of ERP on the productivity of the workforce.

In 2002, Northern Eastern University Shenyang China (IEEE Journal, 2002, paper no 0-7695-1874-5/03), did a research to establish critical success factors for ERP transformation in China. The research identified the key factors to successful implementation of ERP projects namely business process change as necessary during the implementation, top management support was ranked the highest of the critical factors, education and training was always underestimated and
given less time due to schedule pressure and organizational wide support which was crucial to the success of the project.

A study by Frimpton (2012) on ERP projects in Ghana’s public service sector revealed that a successful ERP implementation is dependant on the management support, education and training among other variables under study. Alandwani (2000) supported Frimpton’s study by stating that top management support was essential in the efficiency and effectiveness of a project in his study on the ERP project performance in Kuwait. A case study conducted in Ireland by Butler and Fitzgerald (1996) analyzed the relationship between the CSFs and effective project execution where they listed top management support, project management, change management as essential to the success of a project. All these studies revealed that a positive relationship exists between the identified critical factors and the efficiency of the project but none of the studies has focused on the identified critical factors for this study which are Management support, Education and Training, Project Management and Change Management.

A study by Masika (2012) in his research project on the analysis of the critical success factors that impact the effective implementation of ERP system projects in selected public sector organizations stated that adequate education and training was ranked as the highest factor across the respondents who were drawn from various sectors of the economy. The assumption that was made in this study was that all the selected public sector organizations had completed the projects or were in their final stages of completion. This study addressed the critical success factors that were required for a successful and sustainable long term impact of ERP transformation within the organization.

2.3.3 Organizational Change and Employee Productivity
Organizational Change is viewed as the process of continually renewing an organization’s direction, structure, and capabilities to serve the ever-changing needs of external and internal
customers (Moran & Brightman, 2001; Burnes, 2004). The environment in which an ERP transformation takes place is within a social context that consists of various stakeholders where each hold a certain cultural assumption towards the ERP transformation (Skokie & Legged, 2002). The ERP transformation process always mandates a change in the business process and organization culture. According to Gatwiri (2014), the implementation of adequate employee engagement and effective leadership offers competitive advantage in an organization. Engaged employees usually act in the interests of their organization and tend to generate high business outcomes as measured by increased sales, improved productivity, and profitability and enhanced employee retention. Swanepoel, Erasmus, VanWyk and Scheck (2005) emphasized that the ability of an organization, to successfully implement business strategies, to gain a competitive advantage and optimize human capital, was largely dependent on the leadership styles that encourage employee engagement.

According to a research project by Gatwiri (2014) on the Relationship between Manager’s leadership styles and Employee Engagement in GDC revealed that the leadership style used at Geothermal development Company were transformational leadership styles and democratic leadership styles. These results are consistent with prior literature where Hellriegel and Slocum (1996) maintain that transformational leadership was required by top managers for future organizations. The results are also consistent with the findings of (Hersey, Blanchard & Johnson 1996), who identified democratic leadership as one of the leadership styles used by managers in strategy implementation.

Therefore, there should be no doubt regarding the importance to any organization of its ability to identify where it needs to be in the future, and how to manage the changes required getting there (Burnes, 2004; Rieley & Clarkson, 2001).
According to studies by Senior (2002), Graetz (2000) and Burnes (2004), due to the increased importance of organizational change and its impact on workforce productivity, there is a need for top management support and commitment. The successful management of change has been accepted as a necessity for survival and success in today’s highly competitive and continuously evolving environment (Luecke, 2003; Okumus & Hemmington, 1998). Studies by Balogun and Hailey (2004) reported a failure rate of around 70% of all change programmes initiatives that do not have the right structures in place to maximize the organizational benefits. A study by Doyle (2002) stated that only a few organizations were successful in managing organizational changes.

Ngai and law (2007) in their exploratory study on the organizational factors and impact on ERP success concluded that organizational change enables the employees to understand the overall change by ensuring their acceptance and readiness effectively translates to their productivity.

### 2.3.4 Business Functions and Employee Productivity

At the heart of the inter-functional collaboration lies the changes that are introduced with the objective of providing a greater control on employee productivity. The functional coverage of an ERP is wide and takes in almost all the company’s functions and hence assumes a strategic importance that leads to profound change (Parr, 2000). At this stage, change becomes inevitable and process re-engineering is often embarked upon in order to maximize the benefits of integration.

A study by Sarkis, Presley and Liles (1997) stated that ERP Transformation was viewed as a strategic program that not only has an impact on the function that has direct control over the process but other functions as well. ERP cuts across several functions, including internal operations of the organization and its suppliers, customers, banks, etc.

A study by Shehab and Sharp (2004) supported Davenport and Short (1990) in emphasizing the integration of isolated business units to achieve organizational improvements. In the traditional
organization, employees were confined to their departments, which impaired the ability to achieve an overall understanding and coordination, eventually reducing the efficiency and effectiveness.

Kamhawi (2008) stated that gaining strategic management and decision making capabilities were the main themes influencing ERP adoption decision. The assessment of the benefits and risks of ERP had remained a strategic interest to the adopting organizations. Achieving operational efficiencies such as improvements in productivity, optimizing inventory and data integration capabilities are some of the prime benefits being sought by ERP adopters. Several studies (Davenport, 1998; Robey & Ross, 2002) have demonstrated that cross-functional coordination of business units is necessary if full benefits are to be realized from an ERP Transformation.

Studies by Ochieng (2009), Mwania (2013), Kinuthia (2012), Njihia and Mwirigi (2014), Mahamed and Richu (2012) and Otieno (2010) have demonstrated that integration of business functions in organizations guarantees streamlined operations, improved productivity, efficient workflows, effortless communication, tracking and forecasting, and eventually improved customer service and satisfaction which enables an organization to maintain a competitive edge in the industry.

2.3.5 ERP Transformation and Employee Productivity

Studies by Davenport and Short (1990) show that the use of IT plays a major contributing role in order to reap the full benefits of organizational transformation. In the past, IT was traditionally used for supporting the existing business function but in the recent times, it functions as a role enabler of new organizational forms and patterns of collaboration within and between organizations. Today, most organizations have integrated part or all of the business functions to achieve higher efficiency and productivity. ERP transformation refers to the integration of all the
business functions and processes in an organization that result to numerous benefits (Al Mashari, 2003).

A study conducted by Hsiuju and Chewn (2003) stated that it was necessary for firms to adopt ERP to improve their competitiveness in the industry. These benefits such as competitiveness were realized after implementation according to a study conducted by Ross (1999). A study by Yu (2005) further supported Ross (1999) when studying 28 Taiwanese companies and concluded that it took three to four months upon full operation of an ERP before realization of benefits. Other writers inferred that even after the initial benefits have been realized, they need to be continuously improved and maximized (Rikhardsson & Kræmmergaard, 2005).

Studies by Davenport (1996) and Liang (2007) show that ERP systems trigger changes that have an extensive effect on an organization and its employees. This often changes the tasks that have to be performed and consequently the nature and quality of job performance (Devadoss & Pan, 2007). Other studies show that ERP implementation has a massive effect on organizational performance which has been categorized into four dimensions which are technological, business practices, strategy and competitiveness (Hall, 2002).

A study by Nyandiere (2002) on the challenges facing ERP implementations in Kenya focused on 28 organizations which had implemented ERPs and had been selected from the different sectors of the economy such as industrial and allied, finance and investment, commercial and services, and agricultural. In his study, he concluded that a number of the companies had successfully implemented the ERP and were reaping the benefits of increased efficiency and better resource management. This study has focused on determining the value add of ERP to the workforce and not necessarily the adoption of the ERP.
Koech (2014) studied the effect of ERP on organizational performance within the Agro-processing Industry and more specifically in KTDA managed factories in Bomet County. In his study, he further determined the factors that are necessary for the successful implementation of the ERP. This study has not established the relationship between the workforce productivity and the organizational performance and hence does not provide conclusive results that can be generalized across the different sectors of the economy.

Otieno (2010) studied ERP implementations in Kenya and his focus was on the adoption of ERP in Kenya. He analyzed the organizations to determine the issues associated with implementation of ERP in developing countries. This research has focused on a case of GDC that had implemented ERP in 2010 and hence his study does not adequately address this research. Cheboi (2010) addressed the ERP post implementation impact on performance in selected corporations drawn from aviation, utilities, regulatory and communication sectors. He analyzed the reasons for adoption of the ERP, when and why payoffs occur. This study has established the relationship between ERP transformation and employee productivity as one of the organizational impacts of using the system.

A research conducted by Njeru and Omondi (2015) also focused on the adoption of ERP systems in manufacturing institutions in Kenya where he studied the drivers and barriers of ERP adoption. In their study, their focus was on analyzing the drivers and barriers from the context of manufacturing institutions hence the findings cannot be generalized to the energy and resources sector.

Waweru (2006) in his MBA research project identified the effects of a successful ERP implementation on organization performance such as profitability, improved customer service among others. Njeru, Omondi, Chirchir and Wafula (2015) studied the adoption of Enterprise
Resource Planning System in Kenya. Other studies (Otieno, 2008; Leopold & Otieno, 2005) on the adoption of ERP systems in public and private sector stated that the sector an organization lies in plays a critical role in the adaptation of the system. All these studies focused on the general impact of the ERP system on the organization whereas this study determines the effect of this on employee productivity.

2.4 Summary of Literature Review and Research Gaps
The preceding sections have presented the literature on the study variables and revealed that majority of the studies on ERP have been conducted in other sectors of the economy. These studies have particularly focused on organizations which cannot be compared to GDC in size and operations. A series of empirical studies conducted between the year 2000 and 2014 reveal that majority of the studies have focused on the effects of ERP implementation on organization performance in Kenya, challenges facing ERP implementations in Kenya and the barriers and drivers of adoption from the perspective of the manufacturing and agricultural sector. This implies a need to develop a more extensive plan of research that establishes an overview of the relationship between ERP Transformation and Employee Productivity in totality. A summary of the research gaps identified in this study are presented in Table 2.2.
Table 2.2: Summary of the research gaps identified from the review of literature

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<thead>
<tr>
<th>Author</th>
<th>Study Focus</th>
<th>Key Finding</th>
<th>Knowledge Gaps Identified</th>
<th>Focus of the current study</th>
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<tbody>
<tr>
<td>Njeru et al. (2015)</td>
<td>Implementation of ERP systems in Kenya</td>
<td>Research shows that ERP systems have an extensive effect on organizational performance as the ultimate measure.</td>
<td>Very few studies if any have been done and published on ERP implementation specifically in Kenya and yet scholars suggested that there was a big case for Kenya to implement ERP. In addition, Kenya has witnessed significant challenges in ERP implementation on both the public and private sector. The few studies have focused on the organizational performance and failed to critically assess the effect of ERP Transformation on employee productivity.</td>
<td>This study focused on the relationship between ERP Transformation and Employee Productivity in totality. This study has used the case of GDC as one of the recently established state corporations in the Energy and Resources sector.</td>
</tr>
<tr>
<td>Otieno, J. (2008)</td>
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<tr>
<td>Author</td>
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| Michael Frimpton, (2012)  
Aladwani, (2000)  
Jiang & Klein, (1999)  
Butler & Fitzgerald, (1996) | The influence of CSFs on ERP systems project | A positive relationship existed between the identified critical factors which are Management support, Education and Training, Project Management, Change Management, User Commitment among others and the efficiency of the project. | Most of the studies have been conducted in developed countries and focused on a number of CSFs that were relevant to the organizations under study depending on the extent of the ERP implementation and which cannot be generalized to other organizations. | This study focused on the identified CSFs that were relevant in the context of GDC. |
| Ifinedo & Nahar (2006)  
Gable, Sedera and Chan (2003)  
Myers and Kappelman (1996) | ERP Systems Success Framework | The framework stated that the success of an ERP Transformation can be measured from six dimensions which combined both the quality and impact aspects of an organization. | The framework postulated that the dimensions could result in different outcomes depending on the size of the firm. Also, the focus of the research was on the private organizations and therefore the interpretation may not be generalized to the public sector. | The study determined the effect of ERP transformation on the productivity of the workforce in the public sector. |
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<th>Author</th>
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<tr>
<td>Chand, Hunton &amp; Vasudevan (2005) Zuboff (1985)</td>
<td>ERP Scorecards Benefits Theory</td>
<td>The combination of the Balanced Scorecard and Zuboff’s three levels generated a framework that sought to explain, understand and identify the direct and indirect contributions of the ERP transformation which were useful in determining the impact on employee productivity.</td>
<td>This theory does not align benefits to the reasons for the ERP Transformation and only considered the benefits from the management’s point of view.</td>
<td>The study established the relationship between ERP transformation and employee productivity from a holistic point of view.</td>
</tr>
<tr>
<td>Umble (2003)</td>
<td>An analysis of the Critical Success Factors within organizations</td>
<td>The key factors were categorized under 10 main points which covered the management, project and technical team and</td>
<td>The study focused on all the critical factors that were required within an organization therefore, lacked theoretical basis that could successfully link the CSFs to implementation outcomes.</td>
<td>This study addressed management support, education and training, project</td>
</tr>
<tr>
<td>Author</td>
<td>Study Focus</td>
<td>Key Finding</td>
<td>Knowledge Gaps Identified</td>
<td>Focus of the current study</td>
</tr>
<tr>
<td>--------</td>
<td>-------------</td>
<td>-------------</td>
<td>---------------------------</td>
<td>---------------------------</td>
</tr>
<tr>
<td>Peter Drucker (1999)</td>
<td>Knowledge-worker theory</td>
<td>The knowledge-worker productivity theory was based on six determining factors which were task, autonomy, innovation, continuous learning, quality and knowledge worker as asset.</td>
<td>This theory was based on understanding the individual levels and how it affected the organizational performance. This theory was based on the performance of the knowledge workers within an organization.</td>
<td>This study focused on the organizational factors that led to the productivity of employees. The study incorporated a holistic approach that not only focused on the individual but the entire organization.</td>
</tr>
<tr>
<td>Yap&amp;Pavri (1995) Kettinger&amp;Grover, (1995) Bergeron&amp;Falardeau, (1994)</td>
<td>BPR as a measure of ERP Transformation on</td>
<td>BPR has resulted to benefits that lead to better overall</td>
<td>Company performance has been considered as the ultimate measure and dependent variable.</td>
<td>This study extended the literature to</td>
</tr>
<tr>
<td>Author</td>
<td>Study Focus</td>
<td>Key Finding</td>
<td>Knowledge Gaps Identified</td>
<td>Focus of the current study</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>------------------------------</td>
<td>----------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>organizational performance</td>
<td>organizational efficiency and effectiveness.</td>
<td>Theory X and Y emphasized on the management style of leadership while ignoring other factors that could have an influence on the workers’ style.</td>
<td>employee productivity</td>
</tr>
<tr>
<td>Douglas McGregor (1960)</td>
<td>Assessment of Employee Productivity</td>
<td>Theory X and Theory Y represented opposite management attitudes about employee productivity and performance</td>
<td></td>
<td>This study established the relationship between ERP Transformation and employee productivity.</td>
</tr>
</tbody>
</table>

Source: Literature Review (2016)
2.5 Conceptual Framework
The conceptual framework shows the relationship between ERP transformation (Independent variable) and Employee Productivity (Dependent variable).

In this study, the dependent variable was Employee Productivity, which was characterized by measures such as task innovation and productivity, job satisfaction, perspective, motivation and knowledge/skill set. The independent variable in this study was ERP Transformation, which entailed the measures of Business Process Re-engineering, Critical Success Factors, Organizational Change and Business Functions.
**Enterprise Resource Planning**

- Business Process Re-engineering
  - Process Examination

**Critical Success Factors**

- Top Management commitment and support
- Project Management
- Extensive Education and Training
- Organizational commitment to change

**Organizational Change**

- Culture
- Resistance to change

**Business Functions**

- Integration aspects

**Employee Productivity**

- Task Innovation and Productivity
- Job Satisfaction

**Perspective**

- Productive use of information

**Knowledge/Skill set**

- Value added analysis

---

Figure 2.2: Conceptual Framework
In this study, the dependent variable was Employee Productivity as described by measures such as task innovation and productivity, job satisfaction, perspective and knowledge/skill set. The independent variable in this study was ERP Transformation, which according to this study was defined by measures such as Business Process Re-engineering, Critical Success Factors, Organizational Change and Business Functions.
CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction
This chapter presents the research methodology that was used in this study. It comprises of the research design for the study, the target population, sample size and sampling technique, data collection procedure, research instruments, data collection method, data validity and data reliability. It further highlights the techniques that were used in collection, treatment, and analysis of data. It also defines the kind of data that the researcher collected from GDC.

3.2 Research Design
The study was a correlation research based on a cross-sectional survey design. The study determined whether and the extent of the degree to which a relationship existed between the study variables. The research design that was most suitable for the study is the survey method that was conducted at a particular instance of time to minimize the chance of drawing incorrect or biased inferences from the collected data. A survey assists the researcher to establish whether significant associations among variables exist at one point in time, depending on the resources available and the target population (Owens, 2002). A survey design also allows for the identification of attributes of a large population from a small group of individuals (Fowler, 2002).

The purpose of the research design was to ensure that the data and the subsequent findings were capable of providing answers to the research questions outlined in the study. This design was used by Munyiri (2014) in assessing the impact of ERP implementation on the organizational performance in the energy sector parastatals in Kenya.
This study is based on a case of GDC, which provides the characteristics that are essential in understanding the relationship between ERP Transformation and Employee Productivity within the Energy and Resources sector.

### 3.3 Target Population

According to Mugenda and Mugenda (2003), a study population refers to an entire group of individuals, events or objects having common observable characteristics. The population of this study were the employees of GDC who were based at the organization’s headquarters in South C. GDC comprises of 840 employees at the headquarters. The table below presents the population of GDC, which comprises of 840 employees at the headquarters.

**Table 3.1: Population of GDC**

<table>
<thead>
<tr>
<th>Management Level</th>
<th>Target Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Executive Management</td>
<td>10</td>
</tr>
<tr>
<td>Senior Management</td>
<td>30</td>
</tr>
<tr>
<td>Middle Level Management</td>
<td>200</td>
</tr>
<tr>
<td>Lower Level Management</td>
<td>600</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>840</strong></td>
</tr>
</tbody>
</table>

Source: Survey (2016)

### 3.4 Sample Size and Sampling Technique

Sampling in research is important since it was not possible to study every member or element in the target population as it would have been costly and time consuming. This study used both the stratified random sampling and simple random sampling technique in selecting 336 personnel from the target population of 840 GDC employees at the headquarters. This represented 40% of the entire population which according to Fraenkel and Wallen (2006), a sample size of 20% is adequate for a study and hence justified the size for this study. The stratum was based on the level of
management which was similar to the task variability in the ERP applications. This technique was best suited to this particular study as it assured a fair representation and generalization of findings to the entire population of GDC. The table below shows the sample size that was selected for this study.

Table 3.2: Sample Size of GDC

<table>
<thead>
<tr>
<th>Management Level</th>
<th>Target Population</th>
<th>Sample Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Executive Management</td>
<td>10</td>
<td>4</td>
</tr>
<tr>
<td>Senior Management</td>
<td>30</td>
<td>12</td>
</tr>
<tr>
<td>Middle Level Management</td>
<td>200</td>
<td>80</td>
</tr>
<tr>
<td>Lower Level Management</td>
<td>600</td>
<td>240</td>
</tr>
<tr>
<td>Total</td>
<td>840</td>
<td>336</td>
</tr>
</tbody>
</table>

Source: Survey (2016)

3.5 Data Sources and Collection Instruments

This study relied on primary data. The study also used secondary literature to provide additional information to the data collected. The secondary data comprised of research publications, newspapers, the internet and other sources.

There is no single method of data collection which is perfect. The use of more than one method has been highly recommended particularly for collecting primary data. The study used a semi-structured questionnaire which comprised of both closed ended questions provided with a list of responses from which the respondents were able to select an appropriate answer and open ended questions for the respondents to provide a detailed information about the study which enabled both qualitative and quantitative information to be gathered (Saris, 2014). This method was appropriate because it was convenient in providing detailed information and allowed the respondents to reveal sensitive issues which they would otherwise feel uncomfortable to talk about in an interview.
The questionnaire was designed in the form of a likert scale (1-5) to allow the participants to indicate their perception of each question. This was to ensure uniformity in the questions and consistency in the responses. The questionnaire comprised of Section A: General Information, Section B: Business Process Re-engineering and Employee Productivity, Section C: Critical Success Factors and Employee Productivity, Section D: Organizational Change and Employee Productivity, Section E: Business Functions and Employee Productivity and Section F: Employee Productivity.

3.6 Validity and Reliability of data collection instruments

3.6.1 Validity of Research Instruments

According to Borg and Gall (1989), validity is the degree by which the sample of test items represents the content the test is designed to measure. This study employed content validity, which is a measure of the degree to which data collected using a particular instrument represents a specific domain or content of a particular concept. Mugenda and Mugenda (2003) contend that the usual procedure in assessing the content validity of a measure is to use a professional or expert in a particular field.

To establish the validity of the research instrument the researcher sought the opinion of scholars and experts in ERP transformation particularly ERP implementers. This allowed for modification of the instrument thereby enhancing validity. The study also involved submitting a questionnaire similar to the sample used in the study to two senior research experts for their opinion with regard to the instrument's validity. In addition, questions of a similar nature, or even opposing questions, were introduced in different parts of the questionnaire.
3.6.2 Reliability of Research Instruments
Reliability, according to Eriksson and Kovalainen (2008), is the extent to which a measure, procedure or instrument yields the same result on repeated trials. Mugenda and Mugenda (2003) define reliability as a measure of the degree to which a research instrument yields consistent results or data after repeated trials. In order to test reliability in research, three methods are widely used which are the test re-test method, the split-halves method and the internal-consistency method. This study measured the reliability of the questionnaire using the internal consistency method, which is the most popular method of determining reliability. Cronbach's alpha test was used (Nunnaly & Bernstein, 1994). Cronbach's alpha is a measure of internal consistency, that is, how closely related a set of items are as a group. Reliability with a predetermined threshold of 0.7 is considered acceptable. That is, values above 0.7 indicate presence of reliability while values below signify lack of reliability of the research instrument. The results in this study indicated that the Cronbach Alpha was 0.593 suggesting that the measured items had a fairly strong internal consistency. These values are above the acceptable minimum value of 0.50 (Cronbach, 1951) and slightly below the recommended value of 0.7 (Nunnally & Bernstein, 1994).

3.7 Data Collection Procedures
The researcher obtained an introductory letter from Kenyatta University which was presented to the National Commission for Science, Research, Technology and Innovation (NACOSTI) to acquire a research permit to conduct the research study. The GDC executive and senior management were informed of the data collection process that was conducted at the organizational headquarters two weeks prior to the actual data collection period.

The study used the drop and pick method of questionnaire administration. This was justifiable to the study as it ensured that the respondents were provided with ample time to fill in the
questionnaires with maximum concentration. The completed forms were collected within one week of administration. Each respondent was required to individually attend to the questionnaire without discussing or sharing their responses with colleagues to guard against influenced answers. Follow-up visits to the organizations were organized upon agreeable dates and time. This allowed for probing and in-depth responses to be sought from the questions asked. The obtained data was compiled and reflected upon based on the responses from the completed questionnaires.

3.8 Data Analysis and Presentation
After data collection, the filled-in and returned questionnaires were edited for completeness, coded and entries made into Statistical Package for Social Scientists (SPSS) version 20.0 software. The primary data was analyzed using descriptive statistics by calculating the mean, percentages and standard deviation. Pearson correlation analysis was used to establish the degree of relationship between the variables under study.

Further, regression analysis was used to establish the effect of the independent variable on the dependent variable. The regression model assumed the following equation:

\[ Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon \]

Where: \( Y \) = Dependent Variable (Employee Productivity)

\( \beta_0 \) = Constant

\( \beta_i \) = Coefficients

\( \varepsilon \) = Error

\( X_1 \) = Business Process Re-engineering

\( X_2 \) = Critical Success Factors
\[ X_3 = \text{Organizational Change} \]

\[ X_4 = \text{Business Functions} \]

Thematic content analysis was used to analyze the qualitative data to establish patterns in the form of perceived benefits, which were critical to the relationship between ERP Transformation and Employee Productivity.

Demographic information was presented in the form of pie charts and tables whereas the descriptive statistics for the research variables were presented in the form of tables showing the mean and standard deviation.

The information obtained was cross-checked with information available in literature in order to establish interrelationships, consistency or divergence.

### 3.9 Ethical Considerations

To ensure ethics was observed in research, a letter of introduction from the University was presented to the respondents to seek their consent. This letter sought permission from the organization to conduct the study and required the availability of the target human resources and provision of the necessary documentation to support the study. The study required a sample size of 336 respondents from GDC whose availability was critical during the data collection period.

This study treated all data that was obtained from the respondents during the data collection exercise as purely for academic purposes. This ensured confidentiality for the safety, social and psychological well-being of the respondents. The study represented the original ideas from the respondents. This study further used and acknowledged the works of other researchers and scholars and the sources of their workings and findings.
CHAPTER FOUR: DATA ANALYSIS, INTERPRETATION AND DISCUSSION

4.1 Introduction
This chapter presents the findings of this study based on the primary data. Data was gathered using questionnaires as shown in Appendix II.

4.2 Response Rate
A total of 336 questionnaires were distributed to the sampled respondents. Out of these, 300 respondents managed to submit their questionnaires. This gave a response rate of 89.2%, which according to Owens (2002), a response rate of 75% and above was deemed sufficient to represent the population.

4.3 Reliability Tests
To find out whether the questionnaire was reliable, we measured its internal consistency, which is the most popular method of determining reliability. To test for reliability of the four predictor variables, the study used Cronbach’s Alpha. The results are presented in Table 4.1

Table 4.1: Cronbach’s Alpha Test

<table>
<thead>
<tr>
<th>Reliability Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cronbach’s Alpha</td>
</tr>
<tr>
<td>0.593</td>
</tr>
</tbody>
</table>

Source: Survey (2016)

According to Nunnaly and Bernstein (1994), values above 0.7 indicate presence of reliability while values below, signify lack of reliability of the research instrument. Srinivasan (1985) further proposed that co-efficients of 0.5 or higher were considered sufficient. The results indicate that the Cronbach Alpha was 0.593 suggesting that the measured items had a fairly strong internal consistency.
4.4 Respondents Demographic Information

The demographic factors analyzed included gender, age, area of specialization, education level, years of service, designation and experience with ERP project implementation of the respondents at the Geothermal Development Company.

4.4.1 Gender and Age of Respondents

The research sought to establish the gender and age of the respondents. The results are shown in Table 4.2

Table 4.2: Respondents Gender and Age

<table>
<thead>
<tr>
<th>Gender</th>
<th>18' to 25 yrs</th>
<th>26' to 30 yrs</th>
<th>31' to 35 yrs</th>
<th>36' to 40 yrs</th>
<th>41' to 45 yrs</th>
<th>46' to 50 yrs</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>20</td>
<td>23</td>
<td>40</td>
<td>30</td>
<td>15</td>
<td>2</td>
<td>130</td>
</tr>
<tr>
<td>Male</td>
<td>26</td>
<td>30</td>
<td>51</td>
<td>29</td>
<td>25</td>
<td>9</td>
<td>170</td>
</tr>
<tr>
<td>Total</td>
<td>46</td>
<td>53</td>
<td>91</td>
<td>59</td>
<td>40</td>
<td>11</td>
<td>300</td>
</tr>
</tbody>
</table>

Source: Survey (2016)

From the findings presented in Table 4.2, the study had a sample size N of 300 participants, out of whom; male respondents constituted 56.67% while the female respondents comprised of 43.33% of the total. This is almost equal in terms of distribution. This is in line with the constitutional requirements on the one third gender rule that all positions should have one third of either gender.

The findings also indicate that majority of the respondents that is ninety one (91) respondents were between 31 – 35 years of age. This implies that GDC has more middle-aged employees, which can be attributed to the level of experience and expertise that is required to work for an energy generation company. Further, majority of them might have progressed from lower levels to higher levels within the organization.
The findings also indicate that eleven (11) respondents were between the age of 46 – 50 years and out of whom; female respondents were two (2) while male respondents were nine (9). This implies that GDC has fewer women as they advance in age which can be attributed to the societal pressures such as family. Majority of the women might have left the organization due to career demands based on their organizational experience to less demanding companies.

4.4.2 Education and Area of Specialization of Respondents

This research also sought to establish the highest academic qualifications that the respondents had attained against the area of specialization. The study classified the respondents’ level of education into four levels, which comprised of Diploma, Bachelors’ degree, Post-graduate degree and PHD. The education level was mapped against the area of specialization, which focused on the key organizational departments. The results are presented in Table 4.3

Table 4.3: Education and Specialization

<table>
<thead>
<tr>
<th>Education Level</th>
<th>Specialization</th>
<th>Percent</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Engineering</td>
<td>Finance</td>
<td>HR</td>
</tr>
<tr>
<td>Diploma</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Bachelors’</td>
<td>65</td>
<td>45</td>
<td>10</td>
</tr>
<tr>
<td>Degree</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post-graduate</td>
<td>9</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Degree</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PHD</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Percent</td>
<td>28.33</td>
<td>20.00</td>
<td>8.33</td>
</tr>
</tbody>
</table>

Source: Survey (2016)

From the findings presented in Table 4.3, two hundred (200) respondents reported to have a Bachelor’s degree, followed by Diploma holders at sixty six (66), Post-graduate degree holders at thirty two (32) and only two (2) PHD holders. There was a general distribution of the bachelor
degree holders across the different areas of specialization with sixty five (65) in Engineering, fifty (50) in ICT, forty five (45) in Finance, thirty (30) in Procurement and ten (10) in Human Resources. This implies that Engineering department has majority of the respondents, which can be attributed to the high academic qualification that is necessary for administering technical tasks as opposed to administrative tasks carried out in Human Resources department which had the least respondents with a bachelor’s degree. Further, bachelor degree holders are at an advantage in applying for positions within GDC since the organization might have an entry criteria that is favorable to them. The findings also mean that the employees believe that career advancement is attributed to the education level and therefore, they strive to attain higher education qualifications. This is significant in assuring the responses are based on an informed and educated respondents and perspective. Academic qualification and experience is a critical factor in the performance of project team members during project execution (Frimpton, 2012).

4.4.3 Age and Work Experience
It was important for this study to establish the work experience of the respondents, which was a key factor in the way they execute their duties and responsibilities. The experience was taken as the number of years that the respondents had been in the organization. The results were analyzed and presented in Table 4.4.
Table 4.4: Age and Work Experience

<table>
<thead>
<tr>
<th>Work Experience</th>
<th>Count</th>
<th>Age 18' to 25 yrs</th>
<th>26' to 30 yrs</th>
<th>31' to 35 yrs</th>
<th>36' to 40 yrs</th>
<th>41' to 45 yrs</th>
<th>46' to 50 yrs</th>
<th>Percent</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>18' to 25 yrs</td>
<td>26' to 30 yrs</td>
<td>31' to 35 yrs</td>
<td>36' to 40 yrs</td>
<td>41' to 45 yrs</td>
<td>46' to 50 yrs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 - 2 yrs</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0%</td>
<td>0</td>
</tr>
<tr>
<td>3 – 5 yrs</td>
<td>10</td>
<td>20</td>
<td>15</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>16.67%</td>
<td>50</td>
</tr>
<tr>
<td>6 – 10 yrs</td>
<td>0</td>
<td>10</td>
<td>100</td>
<td>80</td>
<td>40</td>
<td>20</td>
<td>0</td>
<td>83.33%</td>
<td>250</td>
</tr>
<tr>
<td>11-15 yrs</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0%</td>
<td>0</td>
</tr>
<tr>
<td>Over 15 yrs</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0%</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>10</td>
<td>30</td>
<td>115</td>
<td>85</td>
<td>40</td>
<td>20</td>
<td></td>
<td>100%</td>
<td>300</td>
</tr>
</tbody>
</table>

Source: Survey (2016)

From the findings presented in Table 4.4, majority of the respondents with 6 – 10 years of experience accounted for 83.33% whereas the rest of the respondents who had 3 - 5 years accounted for 16.67%. Majority of the respondents with 6 – 10 years were between 31 – 35 years of age, which implies that they had joined the organization during its inception in 2008. This further shows that they have been in the organization long enough to understand and acquire adequate knowledge of internal processes and procedures to facilitate the smooth implementation and assessment of ERP. Frimpton (2012) stated that experience is a critical factor in the performance of project team members during project implementation and assessment.

Majority of the respondents with 3 – 5 years were between 26 – 30 years of age, which means that GDC was their first employer and the experience acquired is limited to the Energy and Resources sector.
4.4.4 Previous Experience with ERP systems

This study sought to find out the years of experience the respondents had worked with ERP systems whether within or outside the organization. This was valid in establishing the extent of change management that will be required during transformation. This is as shown in Figure 4.1

Figure 4.1: Years of ERP Experience prior to GDC Implementation

From the findings presented in Figure 4.1, 40% of the respondents had no prior experience with ERP, 33.33% reported an experience of 3 years or less, 23.33% reported 3 to 5 years’ experience and only 3% had an experience of more than 5 years. This means that majority of the respondents will require change management to enable them to understand and appreciate the system. This result was consistent with GDC’s critical need for change management during the ERP implementation (Simiyu, 2016).

The results further revealed that the respondents who had reported an experience of 3 years or less, would require an adequate training and capacity building on ERP. The results show that only a few respondents would require little effort in adjusting to the new system.
4.4.5 Designation and Role played in ERP implementation

The study sought to establish the designation of the respondents within the organization’s hierarchical structure and the role they played in the ERP implementation. The findings are presented in Figure 4.2 and Figure 4.3.

Source: Survey (2016)

Figure 4.2: Level of Authority

Majority of the respondents were sampled from the Lower management at 66.67% whereas Middle management and Senior Management were reported at 15.67% and 16.67% respectively. The Executive management accounted for 1%.

The results revealed that majority of the respondents who might have interacted widely with the system in their daily tasks were in the Lower Management category. The cumulative percentage of respondents from Middle and Senior management was less than half of the lower management, which means that the organization have fewer people carrying out oversight roles. The executive management might have been least involved in the study because of their unavailability and limited interaction with the system. The role of Middle, Senior and Executive management cannot be underscored in any ERP Transformation (Buenger, 1996). The findings indicated that all the levels of the organization were represented in this study.
The end users formed 50.33% of the respondents who utilized the ERP while Business Process Owners and ICT technical accounted for 10% and 13% respectively. The respondents reported that only 3.33% were responsible for Quality Assurance whereas 22.67% of the respondents did not indicate their role in the ERP Implementation did not provide their role, which was assumed that they were not working with the organization during the implementation period.

The results revealed that majority of the respondents had interacted widely with the system in their daily tasks. There are certain tasks in ERP projects such as project management and quality assurance that require an oversight role, which can be managed by one or two people. Business process owners were specifically the Heads of Departments who were in charge of the various processes within their departments and this could have attributed to the 10% reported.

4.5 Descriptive Statistics for the research variables
This section presents the findings based on the research objectives of this study. The study used descriptive and inferential statistics in the analysis and discussion.
4.5.1 Business Process Re-engineering
This section sought to assess the reasons for BPR in GDC, the extent to which performance improvements were realized from BPR, the types of processes GDC focused on in re-engineering and whether the target realization was achieved.

4.5.1.1 Reasons for Business Process Re-engineering
The respondents were asked to indicate the reasons for the business process re-engineering within the organization. The results are as indicated in Table 4.5

Table 4.5: Reasons for Business Process Re-engineering

<table>
<thead>
<tr>
<th>Valid</th>
<th>Opportunities offered by new technologies</th>
<th>Pursuit of Strategic Benefits</th>
<th>Competition in Business environment</th>
<th>Problems in Business Processes</th>
<th>Changes in the business environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>60.0</td>
<td>90.0</td>
<td>160.0</td>
<td>120.0</td>
<td>130.0</td>
</tr>
<tr>
<td>Percent</td>
<td>20.00</td>
<td>30.00</td>
<td>53.33</td>
<td>40</td>
<td>43.33</td>
</tr>
<tr>
<td>Yes</td>
<td>240.0</td>
<td>210.0</td>
<td>140.0</td>
<td>180.0</td>
<td>170.0</td>
</tr>
<tr>
<td>Percent</td>
<td>80</td>
<td>70</td>
<td>46.67</td>
<td>60</td>
<td>56.67</td>
</tr>
<tr>
<td>Total</td>
<td>300.0</td>
<td>300.0</td>
<td>300.0</td>
<td>300.0</td>
<td>300.0</td>
</tr>
</tbody>
</table>

Source: Survey (2016)

Majority of the respondents were aware of the reasons for BPR. The biggest driver for implementation of BPR were the opportunities brought about by new technology as indicated by 80% of the respondents. These were opportunities for streamlined operations, quality and speed that the respondents believed would benefit the organization. The implementation of BPR would expose the organization to new opportunities brought about by technology. The respondents as reported by 70% of the sample indicated that BPR would help the business in achieving its strategic benefits of quality service and continual improvement. This means that technology was recognized as an enabler within the business environment and organizations utilize technological solutions to maintain a competitive edge in the industry. The transformation process was critical in shaping
strategies that turned into business benefits in the long term. Only 60% of the respondents indicated that the other driver of BPR were the problems in the business processes such as transparency, accountability and integration of the business process that hindered visibility of the different functions. This means that re-engineering the processes would easily identify the problematic areas and offer real-time solutions.

Other reasons included changes in the business environment and competition in business environment, which accounted for 56% and 46% respectively. This could be attributed to the fact that the organization is the key player in geothermal production and therefore, these reasons were insignificant in driving the need for BPR. The context of an organization was a critical determinant in the implementation of BPR.

The study revealed that with the introduction of ERP as a new technology, a business is not only able to experience new opportunities but also achieves strategic benefits. The findings are consistent with studies by Sarkis, Presley and Liles (1997) in stating that BPR was viewed as a strategic program that has direct control on organization functions and processes.

4.5.1.2 Performance Improvements

The study sought to establish whether performance improvements had been realized from the BPR. The respondents were required to indicate the extent of the performance improvements using a Likert scale; 1-No extent, 2-Little extent, 3-Moderate extent, 4-Great extent, 5-Very great extent. Analysis was done using the mean and standard deviation and the results of the analysis are as shown in Table 4.6 and 4.7
The results revealed that BPR led to some changes in measures of performance such as reduction in throughput time, enhanced skills and value of workers and improvement in quality among other improvements. Majority of the respondents at 50% reported that there were significant improvements on the organization working methods and, skills and value of workers. Re-engineering the business processes was beneficial to the employees in their performance of day-to-day tasks and they acquired adequate knowledge of the internal processes. The findings are consistent with Bergeron and Falardeau (1994), Yap and Pavri (1995) that BPR contributes to significant reduction in cost, errors and times, and increases the customer satisfaction.

From the sample, only 20% of the respondents indicated that there was no improvement on cost reduction. The focus was on speed and quality and therefore, cost was not an important
improvement consideration in the organizational context. It was also noted that 16.67% of the respondents had indicated that there was a very high improvement in the organizational working methods. Only a few people felt that there was a significant impact of this measure on the organization since majority of the respondents had indicated that there was either a slight improvement, fair improvement or high improvement realized from BPR on the other performance measures. The respondents were rarely inclined on the extreme ends of the scale. The other improvements realized from BPR had a moderate impact on the organization. This implies that ERP transformation had a significant contribution in reducing the throughput time, improving quality and had an overall impact in improving the organization working methods. These findings were consistent with Devadoss and Pan (2007), and Al Mashari (2003) that ERP system transformation can have a significant impact on job performance and productivity.

The findings also revealed a considerable number of benefits were achieved as a result of BPR which was consistent with studies by Bergeron and Falardeau (1994) in suggesting that BPR is known to produce highly positive results in organizations.

Table 4.7: Impact of Performance Improvements

<table>
<thead>
<tr>
<th>Description</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduction in cost</td>
<td>300</td>
<td>2.47</td>
<td>.993</td>
</tr>
<tr>
<td>Reduction in throughput time</td>
<td>300</td>
<td>3.20</td>
<td>.793</td>
</tr>
<tr>
<td>Improvement of quality</td>
<td>300</td>
<td>2.90</td>
<td>.747</td>
</tr>
<tr>
<td>Enhanced skills and value of workers</td>
<td>300</td>
<td>3.20</td>
<td>.873</td>
</tr>
<tr>
<td>Increased customer satisfaction</td>
<td>300</td>
<td>3.06</td>
<td>.853</td>
</tr>
<tr>
<td>Improved organization working methods</td>
<td>300</td>
<td>2.47</td>
<td>.993</td>
</tr>
<tr>
<td>Valid N (listwise)</td>
<td>300</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Survey (2016)
The mean indicated that the highest performance improvement was reduction in throughput time and enhanced skills and value of workers with a mean of 3.20 and increased customer satisfaction at 3.06; all with standard deviation of 0.793, 0.873 and 0.853 respectively. Generally, the standard deviation for all measures is less than 1 which means that the mean scores indicate a fair representation of the results obtained. However, the perceptions of reduction in cost and improved organization working methods had moderate means at 2.47 meaning that these measures were perceived from extreme ends of the scale as either no improvement or very high improvement. There was no consensus on the impact of their improvement on the organization.

4.5.1.3 Type of Processes

The study sought to establish the processes that GDC focused on during the implementation. The support process is an activity that supports the day-to-day operations of an organization whereas the Core process refers to activities, which are key to a firm's continued competitiveness. Secondary processes on the other hand refer to those processes used to measure, monitor and control business activities. They ensure that the core or support process meets operational goals, financial, regulatory, and legal. The results of the study were analyzed in Table 4.8

Table 4.8: Types of Processes

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Missing</td>
<td>22</td>
<td>7.3</td>
<td>7.3</td>
<td>7.3</td>
</tr>
<tr>
<td>Core</td>
<td>80</td>
<td>26.7</td>
<td>26.7</td>
<td>34.0</td>
</tr>
<tr>
<td>Secondary</td>
<td>90</td>
<td>30.0</td>
<td>30.0</td>
<td>64.0</td>
</tr>
<tr>
<td>Support</td>
<td>108</td>
<td>36.0</td>
<td>36.0</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>300</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

Source: Survey (2016)

36% of the respondents indicated that re-engineering focused on support processes whereas secondary and core processes accounted for 30% and 26.7% respectively. The key departments
such as Finance, Procurement and Human Resources were recognized as supporting functions to the core mandate of developing green energy. From the sample, 7.3% of the respondents did not provide a response, which was attributed to a lack of understanding of the targeted processes.

### 4.4.1.4 Target Realization

The study sought to establish whether the targets of efficiency, enterprise wide integration, and appropriate capability transfer had been achieved. The results are as indicated in Table 4.9

Table 4.9: Target Realization

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>267</td>
<td>89.0</td>
<td>89.0</td>
<td>89.0</td>
</tr>
<tr>
<td>No</td>
<td>33</td>
<td>11.0</td>
<td>11.0</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>300</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

Source: Survey (2016)

From the results, the study established that there was an 89% success rate in realization of ERP targets. ERP transformation contributed to the realization of key benefits such as efficiency in processes and procedures, effective functionality, enterprise wide integrated functionality among others. These key benefits had a significant impact on the operations of the organization. These findings were consistent with Chand (2005) who concluded that ERP Transformation yielded a number of benefits categorized as operational, tactical and strategic in nature. This is further supported by Delone and McLean (1992), Grover, Jeong and Segars (1996) that the notion of a successful ERP was based on enhancing the organizational efficiency and effectiveness. 11% of the respondents reported that the ERP targets were not realized. These benefits had an insignificant impact on these respondents.
4.5.2 Critical Success Factors

The study sought to establish the critical success factors that contribute to the success of an ERP transformation. The respondents were required to indicate the extent of performance using a Likert scale; 1-No extent, 2-Little extent, 3-Moderate extent, 4-Great extent, 5-Very great extent. The analysis was done using mean and standard deviation and the results of the analysis are shown in Table 4.10.

Table 4.10: Impact of Critical Success Factors

<table>
<thead>
<tr>
<th>Descriptive Statistics</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top management</td>
<td>300</td>
<td>4.30</td>
<td>.587</td>
</tr>
<tr>
<td>Organization resistance</td>
<td>300</td>
<td>1.53</td>
<td>.764</td>
</tr>
<tr>
<td>Change management</td>
<td>300</td>
<td>3.07</td>
<td>1.239</td>
</tr>
<tr>
<td>Project management</td>
<td>300</td>
<td>3.60</td>
<td>1.085</td>
</tr>
<tr>
<td>Financial resources</td>
<td>300</td>
<td>3.03</td>
<td>1.081</td>
</tr>
<tr>
<td>Vendor selection</td>
<td>300</td>
<td>3.40</td>
<td>1.359</td>
</tr>
<tr>
<td>Valid N (list wise)</td>
<td>300</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Survey (2016)

From the results, Top Management support contributed to the success of the ERP implementation with a mean of 4.3 and a standard deviation of 0.587 followed by Project Management with a mean of 3.6 and a standard deviation of 1.085. This infers that top management and project management are critical to the success of the ERP implementation. Further to this, organization resistance had the lowest mean of 1.53 and a standard deviation of 0.764, which means that ERP implementation cannot thrive in an environment where there is a cultural resistance to new technology. Majority of the respondents therefore, indicated that this would have little to moderate impact on the success of the ERP. These results resonate with other similar studies by Khaled, Zahran and Tillal (2008) which revealed that project management was an essential component in the success of an ERP. Studies conducted by Jiang, Klein and Balloun (1996) suggested that top management support,
project management, adequate resources as the necessary factors required for successful ERP implementation. These results confirm the studies conducted by Jiang, Klein and Balloun (1996). The results also show that vendor selection had a mean of 3.4 and a standard deviation of 1.359, which was attributed to the little to moderate contribution of this factor to the success of an ERP implementation hence no consensus on whether this factor influenced the success as indicated by the high standard deviation.

ERP projects demands that users adopt new business processes, ways of working, communication channels and software tools. The results support Klaus (2002) in suggesting that an elaborate change management strategy is required to ensure success of ERP projects.

4.5.3 Organization Change

The study analyzed the effect of organizational change factors on Employee Productivity. This study outlined some factors which were considered relevant to the context of GDC. The respondents were required to indicate this using a Likert scale; 1-No extent, 2-Little extent, 3-Moderate extent, 4-Great extent, 5-Very great extent. Analysis was done using mean and standard deviation and the results of the analysis are shown in Table 4.11

Table 4.11: Impact of Organizational Change Factors

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organization culture</td>
<td>300</td>
<td>4.17</td>
<td>.688</td>
</tr>
<tr>
<td>Resistance to change</td>
<td>300</td>
<td>4.33</td>
<td>.747</td>
</tr>
<tr>
<td>Communication &amp; Involvement</td>
<td>300</td>
<td>4.13</td>
<td>.807</td>
</tr>
<tr>
<td>Leadership styles</td>
<td>300</td>
<td>3.60</td>
<td>1.085</td>
</tr>
<tr>
<td>Reward &amp; Motivation</td>
<td>300</td>
<td>2.60</td>
<td>1.145</td>
</tr>
<tr>
<td>Organization strategy</td>
<td>300</td>
<td>2.67</td>
<td>.944</td>
</tr>
<tr>
<td>Valid N (list wise)</td>
<td>300</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Survey (2016)
From the results, Resistance to change, Organizational culture, Communication and Involvement and, Leadership Styles had the highest impact with a mean of 4.33, 4.17, 4.13 and 3.60 respectively. These results infer that majority of the respondents are aware of the importance of these factors to the overall organizational climate. Further to this, the respondents were conversant with these factors because much emphasis had been placed on the culture, addressing resistance to change and communication within public sector institutions. This supported previous studies conducted by Burnes (2004), and Riely and Clarkson (2001) on the importance of managing organizational resistors. Ngai and Law (2007) in their exploratory study on organizational factors concluded that the overall organizational change can only be understood by focusing on culture, resistance to change and communication to ensure the overall acceptance and readiness of employees.

The results revealed that Reward and Motivation, and Organization Strategy had the lowest impact with a mean of 2.60 and 2.67 respectively. The factors had a limited impact on the productivity as indicated by the high standard deviation of 1.145 and 0.944 respectively. Majority of the respondents reported that these factors had minimal to moderate impact on the organization.

4.5.4 Business Functions
This section sought to find out the extent to which integrating business functions has contributed to the performance of the organization. The study further expressed key statements referring to the extent to which the respondents agreed or disagreed with the statements.

4.5.4.1 Integration of functions and their contribution to performance
Integration of business functions has led to a number of benefits (Davenport & Short, 1990). The respondents were required to indicate this using a Likert scale; 1-No extent, 2-Little extent, 3-Moderate extent, 4-Great extent, 5-Very great extent. Analysis was done using mean and standard deviation and the results are presented in Table 4.12
Table 4.12: Impact of Integration of Functions

<table>
<thead>
<tr>
<th>Descriptive Statistics</th>
<th>N</th>
<th>Mean</th>
<th>Std.Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Competitive advantage</td>
<td>300</td>
<td>4.33</td>
<td>.747</td>
</tr>
<tr>
<td>Business process efficiency</td>
<td>300</td>
<td>4.13</td>
<td>.807</td>
</tr>
<tr>
<td>Cross-functional understanding</td>
<td>300</td>
<td>4.00</td>
<td>.818</td>
</tr>
<tr>
<td>IT integration</td>
<td>300</td>
<td>3.50</td>
<td>.959</td>
</tr>
<tr>
<td>User requirements</td>
<td>300</td>
<td>3.07</td>
<td>1.183</td>
</tr>
<tr>
<td>Individual productivity</td>
<td>300</td>
<td>4.33</td>
<td>.747</td>
</tr>
<tr>
<td>Beneficial for Individual tasks</td>
<td>300</td>
<td>4.17</td>
<td>.688</td>
</tr>
<tr>
<td>Organizational costs</td>
<td>300</td>
<td>3.87</td>
<td>.807</td>
</tr>
<tr>
<td>Overall productivity</td>
<td>300</td>
<td>3.93</td>
<td>.630</td>
</tr>
<tr>
<td>Valid N (listwise)</td>
<td>300</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Survey (2016)

The study was able to ascertain the impact of the business functions on performance and employee productivity. The results revealed that integrating the business functions contributed to a greater extent in achieving competitive advantage, business process efficiency, cross-functional understanding, individual productivity and individual tasks with means of 4.33, 4.13, 4.00, 4.33 and 4.17 respectively. This is consistent with studies by Davenport and Short (1990) in their emphasis on integration to achieve organizational improvements and studies by Ochieng (2009) and Otieno (2010) which demonstrated that integration of functions guaranteed improved productivity and enabled an organization to maintain a competitive edge in the industry.

IT integration and User Requirements had the lowest mean of 3.50 and 3.07 respectively, which means that these measures had a moderate effect on performance. User Requirements had a standard deviation of 1.183, which means that majority of the respondents reported a moderate impact on contribution to the organizational performance. Generally, the standard deviation for all measures is less than 1 which means that the mean scores indicate a fair representation of the results obtained.
4.6 Impact of study variables

The study variables were measured using a categorical scale, the average of each variable was determined and was used to represent the level of impact as represented in table 4.13

Table 4.13: Organizational Impact of the study variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>X₁</td>
<td>3.79</td>
<td>0.469</td>
</tr>
<tr>
<td>X₂</td>
<td>3.84</td>
<td>0.419</td>
</tr>
<tr>
<td>X₃</td>
<td>3.94</td>
<td>0.492</td>
</tr>
<tr>
<td>X₄</td>
<td>3.82</td>
<td>0.493</td>
</tr>
</tbody>
</table>

Source: Survey (2016)

The mean indicated that the Organizational Change had the highest impact with a mean of 3.94 followed by Critical Success Factors with a mean of 3.84; with a standard deviation of 0.492 and 0.419 respectively. Generally, the standard deviation for all measures is less than 1 which means that the mean scores indicate a fair representation of the results obtained. However, Organizational Change and Business Functions were perceived from the extreme end of the scale reporting a high improvement. There was a general consensus on the impact of their improvement on the organization.

4.7 Inferential statistics

This study used Regression analysis to obtain an equation, which describes the extent to which the variation in the dependent variable is explained by the independent variable. Regression analysis is a good tool to investigate the strength of the relationship between one dependent variable (Y) against a changing variable (independent variable). The study used a regression model to establish the impact of ERP Transformation on employee productivity based on the mean and standard deviations of the study variables. The regression model assumed the following equation:
\[ Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \epsilon \]

Where: \( Y \) = Dependent Variable (Employee Productivity) and measured by the number of transactions

\( \beta_0 \) = Constant

\( \beta_i \) = Coefficients

\( \epsilon \) = Error

\( X_i \) = Performance variables:

\( X_1 \) = Business Process Re-engineering

\( X_2 \) = Critical Success Factors

\( X_3 \) = Organizational Change

\( X_4 \) = Business Functions

4.7.1 Tests of Regression Assumptions

To test for Normality, multiple linear regression assumes that variables have a normal distribution. This means that the residual errors are normally distributed and the residual will approximate a normal curve. In SPSS, we test for normality using a Histogram superimposed with a Normal curve.
Figure 4.4: Histogram for the residuals

From the graph, the normal curve takes a bell shape. The residuals approximated a normal distribution and thus our models satisfied the normality test.

To test for Linearity, multi-linear regression assumes linear relationship between the independent variable and the dependent variable. To test for this assumption, scatter plots were used for the different variables.
The scatter plot shows that a positive linear relationship appears between Business Process Re-engineering and Employee Productivity, where an increase in Business Process Re-engineering leads to an increase in Employee Productivity as well.

Figure 4.5: Chart on Employee Productivity against Business Process Re-engineering

The scatter plot shows that a positive linear relationship appears between Critical Success Factors and Employee Productivity, where an increase in Critical Success Factors leads to an increase in Employee Productivity as well.

Figure 4.6: Chart on Employee Productivity against Critical Success Factor
The scatter plot shows that a positive linear relationship appears between Organization Change and Employee Productivity, where an increase in Organization Change leads to an increase in Employee Productivity as well.

The scatter plot shows that a positive linear relationship appears between Business Functions and Employee Productivity, where an increase in Business Functions leads to an increase in Employee Productivity as well.

All the independent variables exhibited a linear relationship with the dependent variable. Hence, the data did not violate the linearity assumption.
To test for Homoscedasticity, Multiple linear regression assumes homoscedasticity, which means that variances along the best fit of line remain similar as you move along. A scatter plot was used with standardized residual values to observe the variance along the line of best fit.

![Scatterplot](image)

Source: Survey (2016)

Figure 4.9: Test for Homoscedasticity

From the scatter plot, the variance was uniform, equidistant on both sides of the best line of fit, and thus the homoscedasticity assumption was satisfied. To test for Multi-collinearity among the measures of the independent variable, which is a common concern (Hair, Anderson & Ronald, 1995), multilinear Regression assumes no collinearity between independent variables. Multi-collinearity was tested using the Tolerance VIF test where a value between 1 and 10 indicated no multi-collinearity.
Table 4.14: Tests for Multi-collinearity

Coeficients

<table>
<thead>
<tr>
<th>Model</th>
<th>Collinearity Statistics</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Tolerance</td>
<td>VIF</td>
</tr>
<tr>
<td>Critical Success Factors</td>
<td>.736</td>
<td>1.359</td>
</tr>
<tr>
<td>Organizational Change</td>
<td>.754</td>
<td>1.326</td>
</tr>
<tr>
<td>Business Functions</td>
<td>.969</td>
<td>1.031</td>
</tr>
</tbody>
</table>

a. Dependent Variable: Business Process Re-engineering

Source: Survey (2016)

From the test, all VIF values were slightly above 1, hence our data does not indicate any extreme correlations between the independent variables.

With our data holding true for all the assumptions, we can confidently fit the model and use it for inference purposes.

4.7.2 Tests of Hypotheses

Null Hypotheses (H₀): Business Process Re-engineering, Critical Success Factors, Organizational Change, Business Functions as measures of ERP Transformation have no effect on Employee Productivity.

Alternative Hypotheses (Hₐ): Business Process Re-engineering, Critical Success Factors, Organizational Change, Business Functions as measures of ERP Transformation have a positive effect on Employee Productivity.
To test for model fit, ANOVA model was used.

Table 4.16: Summary of One-Way ANOVA Results on the measures of ERP Transformation

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Regression</td>
<td>11.870</td>
<td>4</td>
<td>2.967</td>
<td>10.996</td>
<td>.000</td>
</tr>
<tr>
<td>Residual</td>
<td>79.607</td>
<td>295</td>
<td>.270</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>91.477</td>
<td>299</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Survey (2016)

The relationship was significant at critical value (0.05) since the reported p-value (0.000) was less than the critical value. This means that the measures of ERP Transformation were significant at 95% confidence level which contradicted previous findings from correlation analysis, which reported that there was a significant correlation among the variables (r = 0.36). Thus, it was
important to test the significance of each predictor to determine its effect on Employee Productivity.

Table 4.17: Co-efficients of determination

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>(Constant)</td>
<td>1.457</td>
<td>.381</td>
<td>3.824</td>
</tr>
<tr>
<td></td>
<td>Business Process Re-engineering</td>
<td>.062</td>
<td>.071</td>
<td>.053</td>
</tr>
<tr>
<td></td>
<td>Critical Success Factors</td>
<td>.094</td>
<td>.090</td>
<td>.071</td>
</tr>
<tr>
<td></td>
<td>Organizational Change</td>
<td>.181</td>
<td>.070</td>
<td>.161</td>
</tr>
<tr>
<td></td>
<td>Business Functions</td>
<td>.281</td>
<td>.062</td>
<td>.250</td>
</tr>
</tbody>
</table>

Source: Survey (2016)

The results indicated that Business Process Re-engineering ($\beta=0.062$, $p = 0.383$) and Critical Success Factors ($\beta=0.094$, $p = 0.298$) were not significant predictors of Employee Productivity as established from the reported p-values. Organizational Change ($\beta=0.181$, $p = 0.010$) and Business Functions ($\beta=0.281$, $p = 0.000$) were significant predictors of Employee Productivity ($p$-value < 0.05). This means that management should emphasize on Organizational Change and Business Functions for a successful ERP Transformation. Organizational Change factors such as communication and involvement, culture and the integration of business functions have an effect on the overall employee productivity. Employee productivity can be reported in an organization without emphasis on re-engineering the business processes and identifying critical success factors.

Thus, based on the correlation and regression analysis results, this study rejects the null hypotheses ($H_0$) and accepts the alternate hypotheses ($H_A$) that there is a significant relationship between Organizational Change, Business Functions as measures of ERP Transformation and Employee Productivity.
Thus, the regression equation takes the form:

\[ Y = 1.457 + 0.181 X_3 + 0.281 X_4 \]

Where;

\( Y \) = Employee Productivity

\( X_3 \) = Organizational Change

\( X_4 \) = Business Functions

This means that assuming zero change in Organizational Change and Business Functions, the average employee productivity would be 1.457 (Constant). A unit increase in Average Organizational Change, increases the Average Employee Productivity by 0.181 whereas a unit increase in Average Business Functions, increases the average Employee Productivity by 0.281. This is consistent with the findings by Cheboi (2010) on the post implementation impact on performance where he established that one of the organizational impacts of ERP implementation was the improvement in Employee Productivity. This also resonated with the study by Gatwiri (2014) where she concluded that the Democratic and Transformational leadership at GDC was responsible for establishing direction, developing a culture that encourages excellent performance and providing forums for employee engagement that influence the strategy implementation process of the organization with regard to achieving its set goals.
5.1 Introduction
This chapter presents the summary of the findings. It also draws conclusions and recommendations from the findings of this study and makes suggestions for future research.

5.2 Summary
The purpose of this study was to establish the relationship between ERP Transformation and Employee Productivity. Specifically, this study sought to determine the effect of business process re-engineering on employee productivity, the extent to which the critical success factors played a pivotal role in ensuring a successful ERP transformation, the effect of organizational change on employee productivity and the impact of business functions on employee productivity.

The gender representation was almost equal in terms of distribution, which was in line with the constitutional requirements on the one-third gender rule that all positions should have one third of either gender. Further, majority of the respondents were middle-aged employees which can be attributed to the level of experience and expertise required to work for an energy generating company. The number of women in the organization decreased with advancement in age, which can be attributed to societal commitments such as family.

The findings indicated that 78% of the respondents from the different departments were bachelor degree holders and above. This means that the organization has a preference for bachelor degree holders in the entry criteria. This can also be attributed to the employees belief that career advancement is attributed to education level, and therefore strive to attain higher education qualifications.
The regression analysis revealed that there was a significant relationship between employee productivity and ERP Transformation as indicated by a significance level of 0.00 (P value was less than 0.05). For this study, an R-squared of 0.13 was obtained indicating that ERP Transformation explains only 13% of the variation on Employee Productivity. The findings further indicated that Organizational Change and Business Functions were significant predictors of Employee Productivity (p-value < 0.05). On the other hand, Business Process Re-engineering and Critical Success Factors were not significant predictors of Employee productivity (p-value > 0.005). Therefore, the Executive management should focus on Organizational Change and Business Functions integration as the measures of ERP Transformation in an organization. This is consistent with the findings by Cheboi (2010) on the post implementation impact on performance where he established that one of the organizational impacts of ERP implementation was the improvement in employee productivity.

5.3 Conclusions
From the findings, 83.33% of the respondents had been in the organization long enough to understand and acquire knowledge of internal processes and procedures to facilitate a smooth ERP Transformation. It was concluded that the responses were based on an informed and educated sample.

The respondents were drawn from different functions such as Engineering, ICT, Finance, Procurement and HR. This means that for proper assessment of ERP, the focus should be on the operations of all key departments.

From the sample, 16.67% of the respondents reported that they had no prior experience with ERP, which means that their initial encounter with ERP was at their current organization. This assured that the responses were based on the organizational context and not in comparison with their
experiences from past organizations. There is a need for adequate training and capacity building on ERP to enable them to understand and appreciate the system. These findings are consistent with the studies by Balogun and Hailey (2004) on the importance of change programme initiatives to maximize the organizational benefits.

ERP Transformation explains 13% of the variation in Employee Productivity. The variables were significantly correlated where R was a positive correlation of 0.36 indicating that ERP Transformation is moderately related to Employee Productivity. This means that organizations should not implement ERP Transformation with a strategic view of enhancing Employee Productivity.

Organizational change and Business functions were significant predictors of Employee Productivity within the organization. This means that to increase employee productivity in an ERP Transformation, it is necessary to take into consideration organizational change factors such as the culture, communication and integration of business functions.

5.4 Recommendations
5.4.1 Policy Recommendations
The Government of Kenya has made it imperative for the public sector to continuously improve their performance and should therefore, adopt sustainability strategies that will make them more efficient and achieve superior economic development performance. Therefore, performance should be integrated with the management activities to ensure that it is part of the long-term organization goals.

The Ministry of Energy should focus on the development of human capacity in Geothermal Technology in Kenya as an area that has great potential. From the findings, only 3% of the respondents had a prior experience of ERPs in the Energy sector prior to GDC and therefore, the
ministry should ensure that an adequate number of skilled human resources have been groomed in the management of geothermal projects and would be in a position to direct the proposed organizational initiatives as subject matter experts.

5.4.2 Managerial Practice Recommendations
ERP Transformation explains 13% of the variation in Employee Productivity and management should strive to identify some of the other key factors that explain the remaining 87% variation to achieve higher levels of performance in the organization.

The findings indicated that ERP Transformation was embraced as a strategic initiative in the organization. The management should explore other non-technological initiatives that drive integration, innovation, automation and collaboration in the organization.

From the findings, GDC was able to achieve its targets for the ERP implementation and to ensure that this is sustainable in the future; a cost-benefit analysis should be performed on a periodical basis. This should constitute a dashboard showing the organization’s performance and which should inform strategic decisions within the organization in order to ensure realization of optimal benefits.

Management should incorporate training and on-going capacity building because experienced staff can either move to other departments or leave the organization. As the organization evolves, there are new employees who will be on-boarded to utilize the system and therefore, they will require adequate capacity for this (Otto, 2013). It would also be practical for the employees to understand the changes attributed to the business processes in the organization.

5.4.3 Suggestions for Further Research
The evolution of ERP systems is an area that is subject to further research. From the analysis, ERP Transformation explains only 13% of the variation in Employee Productivity. There is potential
for further research to determine the 87% which can be attributed to other factors outside the scope of this study.

The findings revealed that 78% of the respondents had a Bachelor’s degree qualification and above. Therefore, it is important for future researchers to determine the relationship between a higher level of education and the utilization of ERP systems.

The findings indicated that 22.67% of the respondents did not indicate their role in the ERP Implementation. This provides an opportunity for future researchers to determine the significance of role-assignment in ERP Transformation and its effect on the usage of the ERP system.
REFERENCES


Murphy, E. (1994). Cultural values, workplace democracy and organizational change: emerging issues in European businesses.


APPENDIX I: Introductory Letter for the Administration of the Questionnaire

Jane Muli,
School of Business,
Kenyatta University,
P.O. Box 43844 – 00100,
Nairobi.
27th October, 2016.
Geothermal Development Company,
P.O Box 100746 – 00100,
Nairobi.

Dear Respondent,

REF: RESEARCH ON ENTERPRISE RESOURCE PLANNING TRANSFORMATION AND EMPLOYEE PRODUCTIVITY IN GEOTHERMAL DEVELOPMENT COMPANY

I am a post-graduate student at the Kenyatta University pursuing a Masters’ Degree in Business Administration – Project Management. In partial fulfillment of this course, I am undertaking a research on the relationship between ERP Transformation and Employee Productivity in Geothermal Development Company, Nairobi City County, Kenya.

Please find enclosed herewith a survey questionnaire for your completion and submission back to me. The information on this questionnaire will be treated with utmost confidentiality and will only be used for academic purposes.

Kindly contact me for any clarification or additional information that you may require.

Yours Faithfully,

Jane Muli.
APPENDIX II: Questionnaire

SECTION A: GENERAL INFORMATION

a) Gender: Male [ ] Female [ ]
b) What is your age group?
18 – 25 years [ ] 26 – 30 years [ ] 31 - 35 years [ ] 36 – 40 years [ ] 41 – 45 years [ ]
46 – 50 years [ ] over 50 years [ ]
c) What is your area of specialization?
HR [ ] Finance [ ] ICT [ ] Engineering [ ] Procurement[ ]
Any Other (Please specify) ________________________________
d) What is your highest level of education?
High School [ ] College [ ] Bachelor Degree [ ] Post graduate Degree [ ]
PHD [ ]
e) How long have you been working with your organization?
0 – 2 years [ ] 3 – 5 years [ ] 6 – 10 years [ ] 11-15 years [ ] Over 15 years [ ]
f) Which of the cadres below best describe your job level:
Executive management (Level 1) [ ] Middle management (Level 3) [ ]
Senior management (Level 2) [ ] Lower management (Level 4) [ ]
g) Years of experience with ERP systems and projects prior to your organization's ERP
project implementation (Choose only one)
None [ ] Less than 3 years [ ] 3 - 5 years [ ] 5 - 10 years [ ] 10 - 15 years [ ]
h) What was your role in your organization's ERP project? (Choose one).
Consultant ( )
Business Process Owner ( )
SECTION B: BUSINESS PROCESS RE-ENGINEERING AND EMPLOYEE PRODUCTIVITY

This section assesses the effect of BPR on Employee Productivity within the organization. Kindly answer all questions by ticking in the appropriate box or provide your opinion in the space below each question.

a) What were the reasons for the Business Process Re-engineering within your organization?

<table>
<thead>
<tr>
<th>Reasons</th>
<th>YES</th>
<th>NO</th>
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<tbody>
<tr>
<td>Changes in the business environment</td>
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<td>Competition in business environment</td>
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<tr>
<td>Active pursuit of strategic benefits</td>
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<tr>
<td>Problems recognized in business process</td>
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<td>Opportunities offered by new technologies</td>
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If other, please specify:

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b) To what extent were the following performance improvements realized from the business process re-engineering?

(Please note 1 = Very high, 2 = High, 3 = Fair Improvement, 4 = Slight Improvement, while 5 = No improvement)

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<thead>
<tr>
<th>Performance Improvement</th>
<th>1 (Very High)</th>
<th>2 (High)</th>
<th>3 (Fair Improvement)</th>
<th>4 (Slight Improvement)</th>
<th>5 (No Improvement)</th>
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<tbody>
<tr>
<td>Reduction in cost within the company</td>
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<td>Reduction in throughput time</td>
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<td>Improvement in quality</td>
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<td>Enhanced skills and value of workers</td>
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<tr>
<td>Customer satisfaction</td>
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<td>Improved organization working methods</td>
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If other, please specify?

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c) What type of processes did GDC focus on in reengineering?
   i. Core [   ]
   ii. Secondary [   ]
   iii. Support [   ]

d) Were the targets for ERP realized in GDC?
   i. Yes [   ]
   ii. No [   ]

SECTION C: CRITICAL SUCCESS FACTORS AND EMPLOYEE PRODUCTIVITY

This section will seek to establish the influence of CSFs on Employee Productivity within the organization. Kindly answer all questions by ticking in the appropriate box or provide your opinion in the space below each question.

a) To what extent did each of these factors contribute to successful ERP implementation in the firm? Indicate the extent using the scale.
   (Please note 1 = No extent, 2 = Little extent, 3 = Moderate extent, 4 = Great extent, while 5 = Very great extent)

<table>
<thead>
<tr>
<th>Critical Success Factors</th>
<th>1 (No Extent)</th>
<th>2 (Little Extent)</th>
<th>3 (Moderate Extent)</th>
<th>4 (Great Extent)</th>
<th>5 (Very great extent)</th>
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<tr>
<td>Top management support</td>
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<td>Organizational Resistance</td>
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<td>Change Management</td>
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<tr>
<td>Project Management</td>
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<td>User Engagement</td>
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</table>
Training and Knowledge Transfer

Financial Resources

Vendor Selection and Partnership

If other, please specify?

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SECTION D: ORGANIZATIONAL CHANGE AND EMPLOYEE PRODUCTIVITY

This section will seek to analyze the effect of organizational change factors on Employee Productivity within the organization. Kindly answer all questions by ticking in the appropriate box or provide your opinion in the space below each question.

a) To what extent do the organizational change factors have an impact on the organization. 
   Indicate the extent using the scale.
   (Please note 1 = No extent, 2 = Little extent, 3 = Moderate extent, 4 = Great extent, while 5 = Very great extent)

<table>
<thead>
<tr>
<th>Organizational Change Factors</th>
<th>1 (No Extent)</th>
<th>2 (Little Extent)</th>
<th>3 (Moderate Extent)</th>
<th>4 (Great Extent)</th>
<th>5 (Very great extent)</th>
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<tr>
<td>Organization Culture</td>
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<td>Resistance to Change</td>
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SECTION E: BUSINESS FUNCTIONS AND EMPLOYEE PRODUCTIVITY

This section will seek to find out the impact of business functions on Employee Productivity within the organization. Kindly answer all questions by ticking in the appropriate box or provide your opinion in the space below each question.

a) Rate the extent to which the integration of functions has contributed to the performance of the organization. Indicate the extent of the following indicators of performance using the scale.

(Please note 1 = No extent, 2 = Little extent, 3 = Moderate extent, 4 = Great extent, while 5 = Very great extent)

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<th>2 (Little Extent)</th>
<th>3 (Moderate Extent)</th>
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<td>Improves competitive advantage and lowers operational costs</td>
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<td>Increase in business process</td>
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<td>1 (No Extent)</td>
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<td>3 (Moderate Extent)</td>
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<td>Efficiency and integration</td>
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<td>Improvement in decision making process</td>
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<td>Improved cross functional understanding in an organization</td>
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<td>Allows for integration with other IT systems</td>
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<td>Meets user requirements</td>
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<td>Improves individual productivity</td>
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<td>Beneficial for individual tasks</td>
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<td>Reduces organizational costs</td>
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<td>Improves overall productivity</td>
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Please provide any general comments and suggestions regarding the benefits derived from successful integration of functions in an ERP system

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b) To what extent do you agree with the following statements?

(Please note 1 = No extent, 2 = Little extent, 3 = Moderate extent, 4 = Great extent, while 5 = Very great extent)

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<tr>
<th>Statement</th>
<th>1 (No extent)</th>
<th>2 (Little Extent)</th>
<th>3 (Moderate Extent)</th>
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<tr>
<td>Financial performance leads to employee productivity</td>
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<td>Operating efficiency leads to employee productivity</td>
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<td>Innovation and change leads to employee productivity</td>
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Please provide any general comments and suggestions on ERP transformation factors that contribute to Employee Productivity.
SECTION F: EMPLOYEE PRODUCTIVITY

This section will seek to establish the extent to which measures of productivity contribute to the workforce performance within the organization. Kindly answer all questions by ticking in the appropriate box or provide your opinion in the space below each question.

a) Rate the extent to which the measures of Employee Productivity have contributed to the performance of employees within the organization. Indicate the extent of the following indicators of performance using the scale.
(Please note 1 = No extent, 2 = Little extent, 3 = Moderate extent, 4 = Great extent, while 5 = Very great extent)

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<th>1 (No extent)</th>
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<td>Task innovation and productivity has an effect on employee productivity</td>
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<td>Job satisfaction has an influence on employee productivity</td>
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<td>Productive use of information affects employee productivity</td>
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<td>Motivation contributes to</td>
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<td>employee productivity</td>
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<tr>
<td>Appropriate skillset is a key aspect of employee productivity</td>
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Please provide any general comments and suggestions on the measures of Employee Productivity

Thank you for participating in filling this questionnaire. Your responses are highly appreciated.
APPENDIX III: Letter of Introduction from Kenyatta University
APPENDIX IV: NACOSTI Research Authorization
APPENDIX V: GDC Data Collection Approval