ADOPTION OF BUSINESS INTELLIGENT DASHBOARD AND DECISION MAKING AT KENYA POWER

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D61/63070/2011

A RESEARCH PROPOSAL SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR AWARD OF MASTER OF BUSINESS ADMINISTRATION DEGREE, SCHOOL OF BUSINESS, UNIVERSITY OF NAIROBI

NOVEMBER 2013

DECLARATION

I Jane Wakonyo Njuguna, declare that this is my original work and has never been submitted by anyone to any examination body for grading.

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SUPERVISOR: Dr K. Litondo

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DEDICATION

This thesis is dedicated to my parents, who taught me that the best kind of knowledge to have is that which is learned for its own sake.To my husband for the support and encouragement though out my studies To my brothers and sisters for their encouragement,prayers and support.To my supervisor for sacrifice and dedication she made in terms of reviewing my work. Finally to our Almighty Father for his guidance, Grace, Mercy and blessing.

ACKNOWLEDGMENT

I would like to appreciate institutions, groups and individuals that immensely contributed to the success of this research proposal for it were not for their contribution and support the study could not have been successful.Special mention goes to university of Nairobi that offered an opportunity for the course.

More thanks to my University supervisor Dr. Kate Litondo for her academic and professional guidance throughout my research proposal period.

ABSTRACT

Kenya Power has been and continues to be on the front line in embracing ICT and investing heavily in it to ensure that it meets it goals and objectives. Efficient internal process contribute much towards the growth and success of any organization. As an organization grows, the amount of data required in an organization also becomes massive. Collecting and analyzing vast quantities of data can be a tedious process. Lack of availability of data in right form at the right time can result in delayed decision making.

The main objective of the study was to examine the benefits of business intelligence dashboard, challenges of BI dashboard system and performance implications of the new system in Kenya Power. A descriptive survey was carried out with questionnaire being used togather information. Staff from this Kenya Power filled in and returned the questionnaires Qualitative data was received and analyzed using the computer programs and statistical programs.

The finding from the research show that BI dashboard system has had a major impact in the company and it continues to influence the business processes in Kenya Power in a positive way, although there are few serious challenges that need to be addressed.

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LIST OF ABBREVIATIONS

BI	:	Business Intelligence
ICT	:	Information Communication Technology
KPLC:		Kenya Power and Lighting Company
GDP	:	Gross Domestic Product
TAM	:	Technology Acceptance Model
CEO	:	Chief Executive Officer
KPI	:	Key Performance Indicators
IT	:	Information Technology
IS	:	Information Systems
ETL	:	Extraction, Transformation and loading
PU	:	Perceived Usefulness
PEOU	:	Perceived Ease of Use

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

The flow of the information within the organization determines the success of the organization Davenport; Prusak,(1998). Organizations struggle to collect data and retrieve information for making crucial decisions.The large quantities of data collected is very helpful for operations within organizations, but hardly compliant for use in decision making about business strategies and objectives Davenport ; Prusak, (1998).Decisions in organizations are made by human beings and not the system hence presentation of data plays a very important role in any decision making process Malik (2005).

The use of different systems in marketing, finance, customer service, design and construction, store, etc have made the decision making process easy to a certain extent but cannot be effectively used for overall decision making. Another problem is existence of operational data which is readily available but cannot quickly be used to spot trends in the organization. For proper decision making on overall organization strategies and objectives, the organization has to integrate information from all the systems in various departments. This is because managers should be in a position to review new customer connection per branch, per region and the overall connection Malik (2005).Due to the wide spread of data in different incompatible format and structures the use of dashboard becomes useful.

1.1.1 Business Intelligence Dashboard

A business intelligence (BI) dashboard is a data visualization tool that displays the current status of metrics and key performance indicators (KPIs) for an enterprise. Dashboards consolidate and arrange numbers, metrics and sometimes performance scorecards on a single screen. They may be tailored for a specific role and display metrics targeted for a single point of view or department. The essential features of a BI dashboard product include a customizable interface and the ability to pull real-time data from multiple sources.Stacey Barr,(2010).

Business intelligence(BI)is the process of taking large amounts of data, analyzing that data, and presenting in a high level set of reports that condense the essence of that data into the basis of business actions, enabling management to make fundamental daily business decisions Stackowiak et al (2007). BI as way and method of improving business performance by providing powerful assists for executive decision maker to enable them to have actionable information at hand Cui et

al, (2007). BI tools are seen as technology that enables the efficiency of business operation by providing an increased value to the enterprise information and hence the way this information is utilized.

In business, dashboards are the emerging new face of business intelligence. Dashboard helps an organization to consolidate information about the strength of a business, department, branches, and individual, in a graphical format that is concise and easy to read. Dashboard comes with different colors and shape, it contain names like performance dashboard, executive dashboard, balanced score card, KPL metric summary or corporate dashboard. The goal will showcase the fact in a way that empowers the user to make a more intelligent decision based on better information Lamantia (2011).

Dashboard can be individualized, that is be specific to one person and focus on the individual pieces of data that their need to do their job Kianoff (2010).Dashboards are interactive, easier to set up and update to changing business needs, and much more flexible to use. This, plus their ability to present data and information at both a summary and detailed level, makes them one of the most powerful tools in the business user's kit. Dashboard should be implemented so that it gets used and so that the decision makers employing it can act on the information the Dashboard presents. Data that becomes information in concepts is a powerful force to align people in terms of what you want to achieve, keep track of what the organization is performing and how you can collect the bad trends in an organization. BI is required to encompass analytics as well as the processes and technologies used for collecting managing and reporting decision oriented data and information Davenport; Harris (2007). BI as the act of capturing raw data then transforming and combining that data into information that can be proactively be used to improve an organization Steadman (2003).

Intelligence is explained as the actionable information about customers, competition, market situation or any other factor in the external environment. Using the right analysis techniques and interpretation information can be turned into actionable intelligence Sawka (1996). Business intelligence supports defining of the fundamental direction of the organization by analyzing and reporting data Kroenke (2006). BI applications running on large databases might cause difficulties while reading directly from the operational database and it can cause slowing down of the

application, errors might occur due to missing or wrong format of data. This call for a different database that will be an extraction from the operational database used in preparation for the BI this leads to the introduction of data warehousing that is done in three steps that is the extraction, transformation and loading ETL Kroenke (2006).Extraction program will be used to retrieve data from a variety of heterogeneous operational databases, transformation of the data that is needed for providing the inconsistency of all data in the data warehouse. The process of extraction, transformation and loading is important for the BI processes as they are used to link to the source data Kroenke (2006).The use of the data warehouse can only be beneficial to the computer literate users. The main problem that the organization faces is decision making while navigating though the huge data warehouse and correlating the information. For this to happen, the organization has to depend on the IT specialists to give the information price (2006).

BI dashboard will solve this problem by consolidating and making information available on a single screen. BI dashboard enables business users to have complete control over how they manage the data while at the same time IT can be involved in technology integration, maintenance and support. This will results in faster and better decisions price(2006) the quality of decision made depend on the quality of data. Data from dashboard comes from multiple source including data warehouse, spreadsheet, internal application and stand alone application (Farcot, Kades). According to Hurwitz;associates, (2005), organizations that depend on the data ware and standalone database meet less than 50 percent of the business requirement and most companies that incorporate data warehouse and the external application to the database achieve better results. About 95 percent of the IT executive's surveys have recommended dashboard as a tool to offer consistency, reliability and accuracy important for decision making capability Hurwitz (2005)

Dashboards help organizations make better business decisions. The way in which they are created is not trivial and attention must be paid to the details. Employing visual design standards and principles are important, but are only part of the journey it requires proper planning to address what users need to see, where the data is coming from, how soon it can be delivered, and ensuring that it is accurate and consistent. O Velcu-Laitinen (2012). Lack of a clear and focused vision regarding which metrics such as Key Performance Indicators (KPIs) are important enough to be displayed in the dashboard, which means users ultimately do not find the dashboard useful from a

practical standpoint Valerie Logan.The problems associated with accessing, transforming, aggregating, and delivering data from transactional databases, multiple sources or non structured sources often result in incomplete or inaccurate dashboard metrics John Kitchen. Lack of collect and timely information can be a pitfall for dashboards Ken Kaufman June 14, (2010).

1.1.2 Kenya Power

Kenya Power is a limited liability company which transmits, distributes and retails electricity to customers throughout Kenya. Kenya Power is a public company and is listed at the Nairobi Stock Exchange (NSE). Kenya Power was incorporated in 1922 as East Africa Power And Lighting Company (EAP&L) and was later rename Kenya Power &Lighting Company Ltd in 1983 after the dissolution of the East African community. During the Re branding exercise done recently the name changed to Kenya Power. Kenya Power has been and continues to be on the front line in embracing ICT and investing heavily in IT to ensure that it meets its goals and objectives of providing first class world power that delights its customers. ICT innovations have helped the company greatly in its endeavor to reduce cost and increase efficiency. Kenya power has 58 branches and eleven divisions that use different systems to perform their duties. This has lead to massive increase in data thus becoming difficult for the executive to go through all the data to make quick decisions and be able to monitor the changing trend in the organization. Due to these factors Kenya Power has opted to the implementation the business intelligence dashboard system to help the executive make use of the growing data for easy analysis and quick decision making.

Dashboard have triggered the whole organization to start thinking and living a performance culture.BI Dashboard has helped Kenya power to Create awareness of business driver and progress towards set goals though the mission analysis readership meeting (MSR). Matters arising are opened up to the core and the teams seeking lasting solutions together. Alignment accountability top down, across functions and roles through the mission analysis alignment process are achieved. This has led to team work positively and interdependences becoming clearer. Due to mission planning operational level in the regions has released tangible gains and this has led to empowerment of teams to move fast and focus on the right thing. Reporting and data mining are the main components of BI operational business application such us customer information, meter information, new connection, power interruptions and payment of electricity bills read from and write data to the operational database. Adding of customer details in the

database does not need high level decisions to achieve. Management in the tactical and strategic level makes use of the BI application to improve the decision making Kroenke(2006). Kenya Power is motivated by strategic and economic growth for it to opt for the introduction of the business intelligence dashboard for easy and quick decision making. Due to availability massive data which cannot be easily accessed and quickly analyzed during decision making, the use of different systems which are in different platforms and formats has lead Kenya Power management to be faced with a problem of determining the performance of each branch and identifying the trends in the market.

1.2 Statement of the Problem

Implementation of new innovations has become an important part of doing business in order to take advantage of the new and improved way of doing things and bring about required change in order to remain competitive in the market. The implementation of new innovation will only be successful if it has been accepted and gets the approval of entire organization Dawson (1994).Change can sometimes cause a lot of upheaval and stress. In situations where an ICT Innovation is to be implemented, an overhaul of how processes are undertaken and a staff restructuring maybe required. This may affect all the dynamics of the organization. Implementation of any new innovation has a percentage risk of failure Lau Kuang (1998). The change in technology will change the socio-cultural and technical dimensions of the organization Lau don Lau don(1998).

Business intelligence dashboard is one such innovation however no known study to the researcher has so far been done to evaluate the system at Kenya Power. Studies that have been done on the use of ICT at Kenya power include: A study to investigate the effects of the perceived ICT service quality and its effects on customer satisfaction at the Kenya Power and Lighting Company (KPLC), which is now Kenya power done by Audit Report No. 6/(2005- 6), on Customer creation Nairobi. This implies that increase in the ICT service delivery lead to improvement of customer satisfaction. To enhance customer satisfaction, there is need to increase ICT service delivery at KPLC. The study was done to determine use of an appropriate ICT which will be of great value because it will help the KPLC to improve their services and also the ICT service providers to re evaluate the suitability of their ICT systems to users. The study recommended that KPLC to put

more emphasis on perceived service quality in order to enhance customer satisfaction.The study is related to the study as it show the impotance of ICT to the success of the organisation.

Study done by Antti Pasanen (2009) on factors influencing implementation of ICT system in energy sector, the study focused on KPLC and Ken gen. Implementation of ICT results to a major change for the organization Antti Pasanen (2009). The findings of the study serve to provide insights into why some of the ICT projects succeed and others fail Pasanen A (2009).The study sought to determine the major factors that influence the implementation of ICT projects in the Kenya's energy sector Parastatol in Nairobi factors cited that should have been included in the implementation of ICT projects in The Energy State parastatals based on the opinion of the respondent included, inadequate training,skills of the implementers, expert consultant's selection and post implementation of reviews support. Similarly the perceived lack of confidence in the workability of the technology, saboteurs of the project development process and external natural disasters were factor cited affecting the success of ICT project implementation. This study shows that ICT innovation is continuously being adopted in Kenya. Many companies like Kenya Power have adopted new innovation in order to improve their business processes. BI dashboard system is one such innovation.The study is trying to answer the following two main questions, firstly has KenyaPower met it intended goals of improving the decision making in kenya power? Secondly to what extent has Kenya power adopted BI Dashboard system?

1.3 Objective of the Study

The general objective of the study is to evaluate the BI dashboard at Kenya Power specifically to:
Determine extent to which Kenya power has adopted BI Dashboard system.
Determine the effect of Business Intelligence dashboard system for decision making in Kenya Power.
Determine the benefits of adoption of Business Intelligence Dashboard system in Kenya Power.
Establish challenges of Business Intelligence Dashboard system adoption at Kenya Power.

1.4 Important of the Study

Dashboard provides an interface that aids managers and executives in getting data immediately from various divisions and branches, in a similar format and makes it more accessible. Due to the application ease of use and availability of different capabilities like customization, graphs presentation and color display. This will help facilitate the decision making process. Owing to these findings Kenya Power can guide the entire energy sectors in Kenya in adopting the BI systems for easy decision making. The study will be useful as a reference point for future implementation of other ICT systems in Kenya power.This study is the first of its kind in Kenya. There are no studies that have investigated use of business intelligence in Kenya Power. The findings will therefore advance knowledge on the benefits, challenges of BI for decision making. The study can be used by researchers, academicians, and students to advance further research on the topic.

CHAPTER TWO: LITERATURE REVIEW

2.0 INTRODUCTION

The literature review surveys past studies that have been done on Business Intelligence Dashboard and established the theoretical foundations of the issues to be investigated by the study. The literature review mainly captures the theoretical framework surrounding the concept, concept of business intelligence dashboard system, implementing a BI dashboard system, and critical review of the benefits and challenges affecting the adoption of BI dashboard system.

2.1 ICT Adoption

ICT is the Information and Communication Technology network. ICT is today used to carry information at phenomenal speeds Wong(2001). Operation of an organization and Society in recent years has been based on the use of computers and technology.Computers and technology has become fundamental to most function Kroeker;Yonck (2010).The use of these great speeds has enabled people to transfer massive quantities of data in a very short time hence encouraging advancement in a number of ways. These advancements in information transfer through use of computers will increase communication and transactions within business cycles and this has helped eliminate regional boundaries Jalava; Pohjola, (2001). The use of ICT in many diverse sectors of the society has lead to growth of production and revenue Basu; Ferald (2008). The increase of this infiltration of ICT in the business world has further been enabled by the internet Chinn ;Fairlie (2007).

Studies show that ICT has brought significant change and has impacted the world in a number of ways, i.e. poverty alleviation, economic productivity and sustainable development Madon,(2000),Pur(2007),Walsham(2001). The cost of doing business has been reduced by ICT in the international and transnational arena Rangan ,Sengul, (2009). While the use of computers and their connections is necessary for socio-economic development, Hinson and Sorensen, (2006) a more comprehensive or inclusive use of ICT have been necessary in most parts of the world Price (2006). The reason being more than just for development issues, ICT has also enabled multinational corporations to transfer knowledge with greater ease Rangan ; Sengu(2009). This ease in communication has contributed to increased GDP growth Altig ; Rupert (1999). This has

also been seen as the ability to multitask Aral;Brynjoltsson; Van Alstyne(2006). Organizations can be reshaped and reformulated internally, as well as reorganized the interrelations within the companies and also with other organization in the same network Burt ; Taylor(2000).Corporation can use networks to disseminate information and convey important management information Castells(1996);Quinn(1992). The ability to reformat information, calculate, store, retrieve essential data is also enabled by ICT Mcloughlin (1999). ICT is being used in all sectors of the economy including the non profit organization Burt; Taylor(2006) this utilization of ICT was displayed in the 2008 US presidential campaign Cardoso; Cunha;Nascimento (2004).

2.2 ICT Adoption and challenges of implementing a new system

Information System implementation in an organization can be unsuccessful if the process is not approached properly Lyytinen ; Hirschheim (1987). Implementation of a system is the sum total of activities that are required to make a new technology operational and assist in its smooth adoption Laudon;Laudon(1988). Changes are inevitable while implementation of new ICT systems Davis ; Olson (1985). This results to a complete change in the staffing structures in some organizations Robey (1996),Eason(1988),Sahay.Resistance to change has been experienced in some cases and this has led to problems in the implementation process of a new innovation. Innovations in organization can be rejected or lead to job related stress (Lorenzi ; Riley(2003). There are factors to consider when determining the success or failure of a IS innovation (Lucas 1981).

There are some issues that come up to prevent successful implementation. Issues like company's internal socio-cultural dynamics, the interrelationship of the members of the organization and how receptive they are to the new innovation form part of the concerns. The lack of proper information flow or communication leads to prevention of successful implementation because some people may not appreciate the new innovation. The implementation process should be undertaken as a team effort in order to create ownership of the new innovation, lack of this leads to failure. The key stakeholders of the new innovation should be involved in the whole process so they can give their input, exclusion can lead to implementation problems. Managerial inadequacies or incapability have been shown to lead to new innovation failure. Resistance to change is another

key factor leading to failure of implementation of new systems. Lack of ownership of the new system has led to the system being ignored or rejected completely Davies (2002).

It is therefore necessary that the above obstacles and pre-existing conditions are clearly understood, this will go a long way in overcoming them Bodtker, Jameson (2001). In addition to this, the state of mind of the participants should be understood and taken into consideration in order to overcome these obstacles Barki,Hartwick (2001). There should be a discussion to analyze managerial and interpersonal conflicts that can affect the result of the project. There are five models that help to combat such conflicts. They are asserting, compromise, accommodating, avoiding and problem solving. They help in working through the social dynamics that can be there in system development Newman, Robey (1992). The causes of stress should be identified in order to resolve problems that come up when dealing with the participants Mumford (2003). It is useless working on the conflicts without first getting to know what could be the root cause. If proper information is lacking at the very start it will hinder any progress in solving the conflicts Ljungström , Klefsjö (2002). In order for the organization to achieve ultimate goal of self improvement, barriers that can stop the new system processes and change in the way jobs are undertaken must be identified and removed Ciborra , Andreu (2001).

2.3 Theoretical Framework

There are various theories in IT/IS. However, only one is applicable to the concept of business intelligence dashboard under study. The Technology Acceptance Model (TAM) is an information systems (IS) theory adapted from the Theory of Reasoned Action (TRA).The Theory of Acceptance Model (TAM) is one of the most widely applied Information Systems (IS) theories that is grounded in the psychological theory, the Theory of Reasoned Action, which explains the users' intention to perform a behavior Davis et al., (1989). Davis, (1996) TAM is the users' behavioral intention to use an IT. The behavioral intention is influenced by Perceived Usefulness (PU), the degree to which users using a system believe that it would improve their performance, and Perceived Ease of Use (PEOU), the degree to which users of a system perceive it to be effortless. PEOU influences PU. Some researchers argue that the influence of PEOU on behavioral intention is task related and have suggested careful task specifications as additions to TAM

As a result, there are numerous expansions to TAM that can be investigated. For example, the role of individual characteristics that influence cognition, such as affect, computer playfulness and personal willingness to try out a new IS Djamasbi et al (2010).There is evidence that affect is a necessary component of rational decision making Damasio, (1994), Slovic et al.,(2007). Affect helps individuals to eliminate the alternative solutions that don't feel right, so that it remains a manageable subset of possible solutions. Therefore, a rational decision maker goes through a combined sequence of cognitive and affective processes. However, other studies showed the independence of affect from cognition, indicating that there may be situations of affective stimulus that do not require cognitive appraisal Slovic et al., (2007). Affect is defined as an individual's moods and emotions George,(1989).Unlike volatile emotions; moods are more pervasive and enduring. These characteristics make moods more suitable affective framework for studying cognitive processes in organizational context, such is the use of IS innovations. There are different mood categories, such as positive, neutral and negative.

The theory show how positive mood theory has effects on positive mood on use of dashboards. According to this theory, being in a positive mood influences how the thoughts are organized and accessed. Being in a positive mood, it enables decision makers to be more flexible in their cognitive process PU and PEOU and may be more inclined to use decision support systems to make informative decisions. The study will use the TAM theory this is because of its ability to explain how Personality traits as an effect on use of technology hence the acceptance of the system of technology.

2.4 Business Intelligence Dashboard System

As company gain a strong global presence, information utilized by different groups of people that included stakeholders, managers, customers and several others. Executives and managers spend a large amount of time scanning for information and making decisions Vedder, Vanecek, Guynes, & Cappel, (1999). There are several variables involved that affect the human decision making process. Some of the variables that significantly influence the decisions made by humans are race, religion, personality, age and education Ford,Richardson, (1994).Depending upon the area of work, decisions made by managers may vary. This led to the evolution of the data centralization phase Hoffmann, (2007).Data warehouses and data marts first appeared to provide a centralized

system for accessing data and making tactical decisions. The main goal of a business intelligence system is to support the decision making process.

Fig 1. Components of a Data Warehouse adopted from Kroenke, (2006)

A	**B**	**C**	**D**
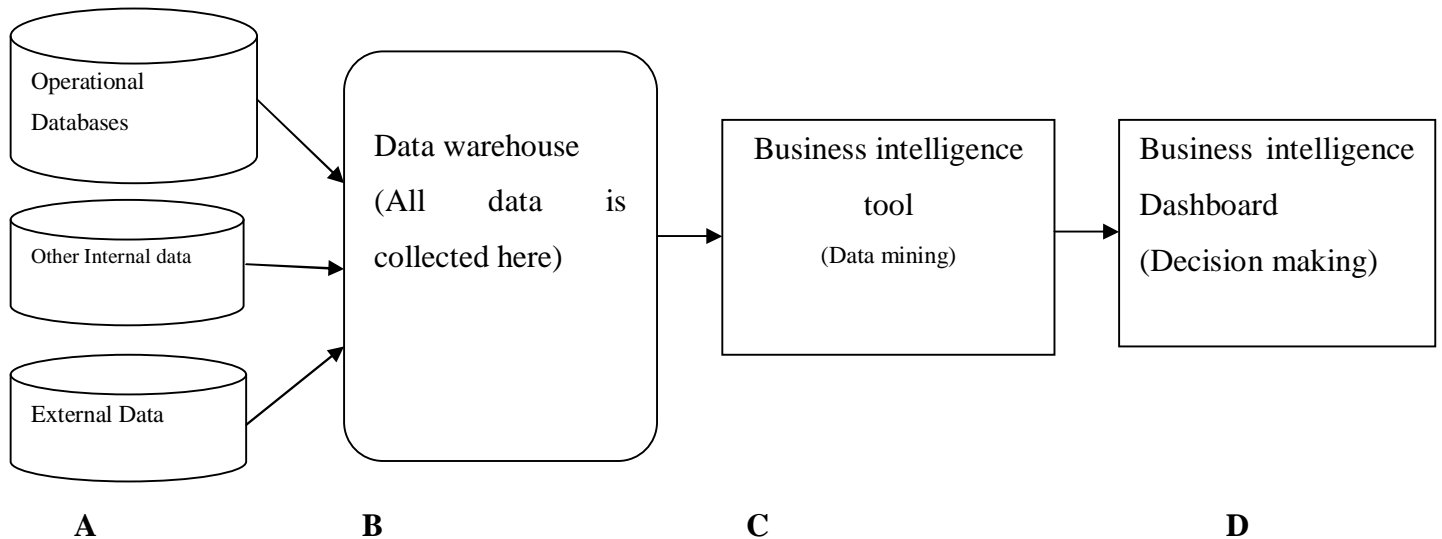
 The above diagram explain the process of BI dashboard system. Component A explain the different source of data from the different systems used in kenya power,B explain the collection point where all the data is stored.Data in the warehouse is of different format that calls for data mining where the use of Analysis tools is applied,after the analysis data is displayed in a format that a busy manager can analyse and help to alignment the KPI of the organisation.

Increasing globalization and rapid decentralization of organisations have created the need to recognize market trends and collect information about competitors Hsu,Jeffrey (2004). This allows the company to swiftly react to change in market conditions due internet age. Efficient information processing is a decisive factor in maintaining an advantage over the competitors. Due to continuous innovations in data processing, more and more information is stored in a more detailed format. As a result there is a need to both reduce and structures this data so it can be analyzed meaningfully Vedder, Vanecek, Guynes, , Cappel.

Decision makers in modern, globally operating enterprises frequently realized that their survival needs on the effectiveness use of the information Miller, Thomas D. Queisser,(2009). Unfortunately the information is often spread across many systems and sometime many countries, thus making effective use of the information is extremely difficult. This is the challenge that a modern BI is trying to address P Suchánek,(2010). Extensive solutions are required to cover the entire process, from retrieval of the source data to its analysis. Organisations are concerned with the Meta data across the organisation M Soderlund, (1990). In addition, there is a need to consolidate and create homogenous global master data, as well as massive amount of transaction data in differing degree of aggregation KX Gou, (2007). In a heterogeneous system landscape, the challenge lies in the extraction and preparation of consolidated transaction data and master data from different source systems. The increasing demand for high quality business information means that in addition to integrated data collection process, detailed data analysis and multimedia presentation options are required J.E. Boritz, (2007).BI relies on data that comes from the source systems, but this information cannot be easily used for targeted analysis. This means that data must first be homogenized Bannan , Karen, (2005).The data is then stored in a data warehouse component of the BI. Analyzing this information require a strong and flexible reporting tools that helps to better understanding the organisation information and create knowledge. The knowledge helps the organisation to define /redefine its business strategy and support the business processes derived from it Steve Williams and Nancy Williams.

Fig 2. Adopted BI Process Loshin, 2003).
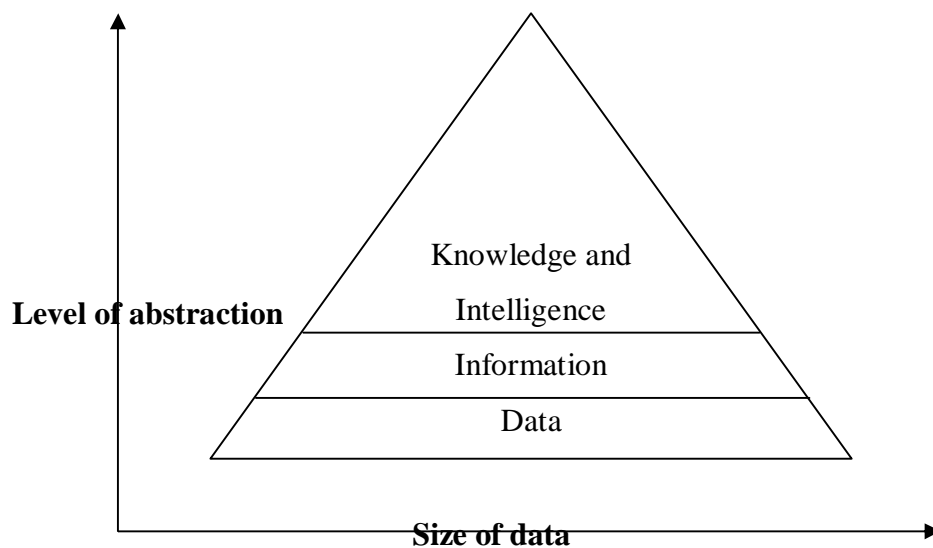
2.5 Benefits of the Business Intelligence System

BI helps in business analysis in that it provides the information that management needs to make sound business decisions, increase company net revenue and decrease of the operating margins Gou KX (2007). These is achieved by lowering of customer service which the BI aids at identifying causes of customer reward programs and identifying causes of customer loss through data analysis. Analysis of markets products and customer demographics data enable more sufficient application of target market programs Eckerson (2006). BI system support the increases in market share by enabling better understanding and execution of the business plan to enable increase on sales. Better operational efficiencies though better understanding of the operational data Chaudhuri , Dayal (1997).Adaptation of business intelligence provide end to end solutions, in that it provide a seamless process that translates vision into action for teams and individuals Hurwitz (2005).

Managing strategic risk is one of the most challenging aspects of an organization. Identifying and mitigating risk from a portfolio perspective is complicated and often resource intensive. As a result, companies have opted to use of dashboard to provide a useful way to view data and information.The outcome display includes single metric, graphical trend analysis, capacity gauges, geographical maps, percentage share, Stoplights and variance comparisons. Dashboard design allows presentation of complex relationships and performance metrics in a format that is easily understandable and digestible by time pressured managers Ballou,Heitger,Laura Donnell.

Collaboration and information sharing become easy this is due to the commenting feature for indicators that enables quick communication Chowdhary P. The alerting feature of the Dashboard makes it easy for business users to monitor the key performance areas and to be proactively notified of conditions that require follow up Pauwels K (2008). Data can be viewed in multiple ways without rebuilding the dashboard this is provided by the interactions and prompts features that provide the support K Pauwels (2008). Completion of task can be achieved with minimum number of click, if one needs more information the user can prompt selections in Dashboards to provide additional information that enables users to decide which item to click in the user interface before they actually click. This information includes KPI gauges and range colors that appear for each selection M Elias (2011).Dashboards can display key performance indicators in one place to help users monitor information throughout an enterprise Dolan JG (2013).

Coordinating the look and feel of your dashboard and indicators is easier than ever Ryan Goodman.

Though dashboard the executive are enable to outline a clear vision, purposes and values of the whole company that is tricked down to the most junior staff in the company. Through the implementation of dashboard, CEO objectives and the KPIs set by the board then cascaded to the organization which leads to the alignment with those of the regions, functions and individual's objectives and KPIs. Individual performance planning and development is possible though the performance reviews conducted by managers which include values, development plans, careers aspirations, career and success Njoroge, (2012).Dashboards enable talents reviews, by panels which both rate and calibrate individual performance and potentials. Successions plan can be established and the key roles for each individual. Action plans is easy to establish and addressing of the talent gaps, this function help the human resource identify the gaps and enable the department to coming up with the best candidate suited without going through a demanding exercise. Dashboard will help the company in agreement on the key measures of success and enable tracking of the business progress and trends.

(http://www.kplc.co.ke).

2.6 Challenges Facing the Business Intelligence Dashboard

Technical skills and training can be limited. The majority decision makers are not power users. Redesigning and streamlining functionality over different sets of tools to make the features more obvious is neither cost effective nor an efficient use of skilled IT resources Wind (2005). Pauwels et al (2009). The degree of needed interaction can vary. Because the roles and the skills of decision makers can cover such a wide range, some are comfortable using and working with BI tools independently, while others require significantly more initial and on-going support Debus et al (2003) (Pauwels et al (2009)

Getting BI in the hands of all users is difficult there are concerns over whether current BI tools could be tailored to meet the needs of all the different types of users and divisions Information overload Cleverley (2001), DeBusk , Brown, & Killough (2003). Too much information can make the dashboard look cluttered and can easily distract the users and the Complex user interface Collier, Marini & Minsker (2008). Dashboards are generally meant for executives and managers who normally have no time to learn a new Technology Eshraghi (2008). Security is also an

essential element while implementing a dashboard. Viewers target and role based security should be provided to ensure data integrity Kaplan , Norton (1992).

2.7 The Conceptual Framework

To clarify the concept of the fundamental effects of business intelligence dashboard implementation in Kenya Power, it is essential to understand the conceptual framework, show the interplay between the independent variables and the dependent variables Eckerson, (2006).The independent variable is a property of an observable fact, which in turn affects others i.e. the dependent variables Mugendi, (2003).

Fig 3. Conceptual Framework (as cited by Ford and Richardson 1994)

Independent variables   **Dependent variables**

Complex user interface
Information overload
Availability of the system
Data accurancy

Decision making as a result of BI Dashboard.

Personal characteristics
Age
Education
Gender
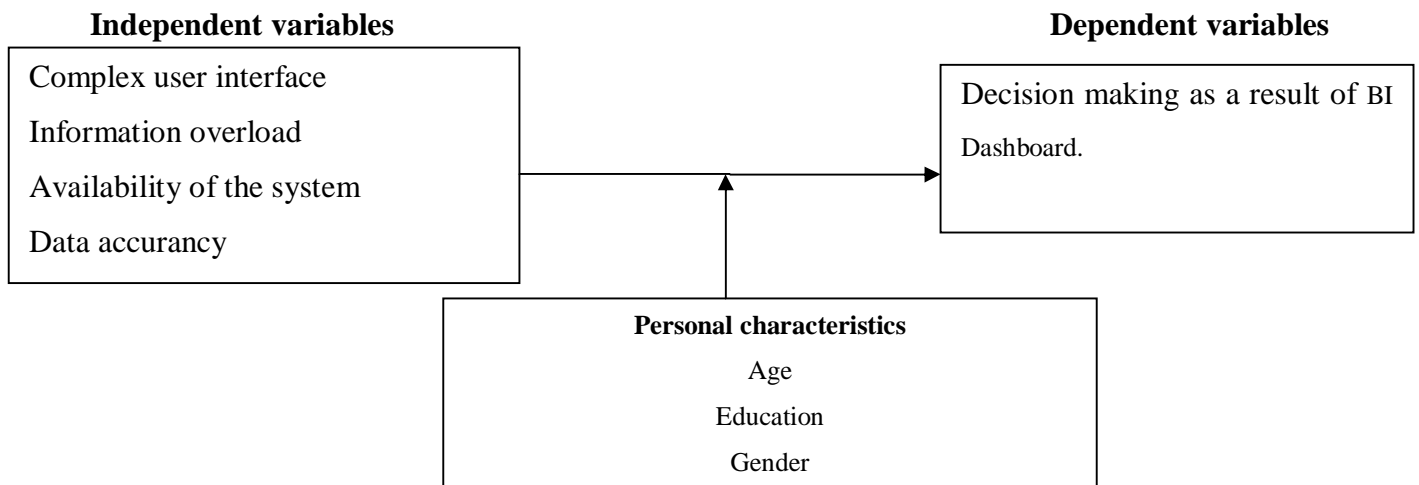
The independent variables which are the challenges of Dashboard have a effect on dependent variable that is the decision making process and the personal characters can contribute or affect the decision making process.

CHAPTER THREE: RESEARCH METHODOLOGY

3.0 Introduction

This chapter will detail how the research will be undertaken. Research design consists of the master plan that lays out the set of decision which details the methodology of the collection and analysis of data Mathooko (2007).

3.1 Research Design

A descriptive research design will be used. This implies that the study will be descriptive in nature. The data will be collected from the members or the population but use of the survey research to describe existing phenomena through interviews on the individual's attitude, behavior, perception and firsthand experience. The quantitative data will be utilized for this study. The status of various variables will be examined. The reliability of the data from this type of population will be more reliable Mugenda and Mugenda,(2003). This descriptive research will help bring out a more accurate, reliable and increase validity of the systematic description of BI dashboard in Kenya Power.

3.2 Population

Table 3.1: Population and Samples

Strata	Strata size	Proportion %	Sample size
Manager	3	1%	1
Engineer / Technician	140	42%	15
Customer service/relation officer	100	30%	15
Clerks /accountants	50	15%	10
Other officers	42	12%	9
Total	335	100%	50

The population being targeted is the Nairobi region branches in Kenya Power. The branches are headed by business branch heads. The branches in Nairobi are Nairobi south, Nairobi west

Nairobi north; the branches have different division that is marketing, Transmission, Distribution, Customer Relation, store, Finance, and Security. The branches consist of chief manager, chief Engineer for each division, Engineers, Technicians and Clerks. The target population will be 335 officers. This are the staff direct involved in the new system.

3.3 Sample Design

The researcher will be interested in Nairobi owing the fact that BI dashboard have only been implemented in the major branches in Kenya the study will focus on Nairobi due to the logistical and financial constraints. The sampling method will be the stratified random sampling. A sample of 50 staff members will be used that is 15% of the target population.

3.4 Data Collection

The instrument of data collection will be semi structured questionnaires. The self completing, five stage questionnaire will be used to address the research objectives. Ther first section will be about personal details of the respondents,second section will be about effect of BI Dashboard ,third will be benefits of the BI Dashboard,fouth one will be on the challenges of Dashboard and the fiveth will be on the decision making process.The respondents are staff members from Nairobi region who use the system and make decisions using the system.

3.5 Data Analysis

Data to be collected will be analyzed for both descriptive and inferential statistics. The choice of descriptive statistics will be necessary for systematic summarizing of all the data to be collected and be represented using statistical measures such as central tendency, tables and graphs. SPSS software will be used to compute descriptive statistics for all the questions under investigation and inferential statistics will be used to determine the benefits and challenges affecting the adoption of BI Dashboard for decision making, with specific reference to Kenya Power.

To determine the relationship between adoptions, personal characteristics and determinants of decision making process a simple regression model will be used. The following regression model will be used to determine the effect of BI dashboard on decision making at Kenya power.

$$Y = a_1 + a_2\,x_2 + a_3x_3 + e$$

variable for:

Y= Decision making

$X_2 =$ Business intelligent dashboard

$X_3 =$ Personal characteristic

e = error

CHAPTER FOUR: RESEARCH FINDING

4.0 Introduction

This chapter discusses data analysis process, presents results, discusses the findings of adoption of business intellegence system at Kenya Power. The research also establishes effects of adoption of business intellegence system, discusses benefits of adpotion of the system, challenges facing adpotion of business intelligence dashboard system and closes with an examination of the decision making process.

4.1 Data Analysis

All questionnaires were administered, completed and collected for analysis. Completed questionnaires were entered into an SPSS data frame for processing. Analysis was done by determining the descriptive statistics in terms of frequency and percentages. With regard to the individual characteristics of the respondents such as age, gender, marital status, level of education, employment status and job position. Using SPSS, computations for the responses to the adoption, benefits, challenges and decision making process were also computed. The findings are presented in the form of frequency tables, pie charts and graphs.

4.1 Background Information

Through a follow-up strategy involving telephone calls, reminder e-mails and texts, over a 14 day period, the researcher succeeded in obtaining responses from all the respondents sampled. The response rate was 100% and all questionnaires administered were collected and processed. To establish the personal characteristics of the respondents; age, gender, level of education, organization status, dashboard adoption, benefits of dashboard, challenges of dashboard and decision making process were surveyed.

4.2 General information

4.2.1 Age of respondents

With regard to age, results indicate that a majority of the respondents were over 40 years. The age bracket; 36-40 years accounted for 30% of the sample population and 16% of the employees were

31-35 years. Only 12% of the respondents were below 30 years old. Kenya Power being a public institution, it is evidence that it takes time to grow to the management level.

Table 4.1: Age

	Age Range			
		Frequency	Percent	Cumulative Percent
Valid	Less than 30 yrs	6	12	12
	31-35 yrs	8	16	28
	36-40 yrs	15	30	58
	More than 40 yrs	21	42	100
	Total	**50**	**100**	

4.2.2 Gender

Out of 50 respondents, 30 were men who represented 60% while 20 were women or 40%. More men are in the top management where the system is mostly used.This is also related to the fact that most staff are over 40 years which is the age blacket of the management level.

Table 4.2: Gender

	Frequency	Percent	Cumulative Percent
Male	30	60	60
Female	20	40	100
Total	50	100	

4.2.3 Education level of the respondents

Of the respondents surveyed majority were post graduate and university graduates (36%), 30% had Masters Degrees, while only 22% had M.D/PhD qualifications. Those with high school level of education constituted the lower cadre staff who were 12% of the survey. Dashboard system is mostly used by the top managers of the organization where funds are available to further their studies.

4.2.4 Organization Status

Stratified sampling had been used to create population categories. Executive level represents the Chief Managers and then Managers, Senior Standard level represents the engineers and

technicians, Standard level represent the system and Contract represents the clerks whos work is to enter the data into the system. The research sought to establish the distribution of the respondents with respect to various job positions at Kenya Power. The findings indicate that the majority 54% was in senior standard level, 18% in executive, 16% in standard and 12% in contract. The research was able to establish that decision making in Kenya Power is done by the top management.

Table 4.3 :Organization status

	Frequency	Percent	Cumulative Percent
Executive level	9	18	18
Senior standard level	27	54	72
Standard level	8	16	88
Contract level	6	12	100
Total	50	100	

4.2.5 Integration of BI system within the existing system

Integration with the existing system means the data mining of information from all systems at Kenya Power so that dashboard can achieve 100% real time display.

60% of the population agreed BI dashboard system has intergated well with the existing sytems used by the other department at Kenya Power,while 40% of the staff feel that the system does not integrate well and more needs to be done.

Table 4.4 Integration of BI system with the existing system

	Frequency	Percent	Cumulative Percent
Yes	30	60	60
No	20	40	100
Total	50	100	

4.3 Factors affecting adoption of BI Dashboard system.

The researcher investigated whether the following factors have affected the BI Dashboard adoption. Respondents were supposed to state whether they strongly agree, agree, undecided, disagree or strongly disagree. When the mean is closer to 1 with a small standard deviation this implies that the respondents strongly agree. When the mean is closer to 4 this implies that most respondent disagree. The standard deviation indicates how dispersed the responses were across the different options. The respondents strongly agreed that the dashboard system helps the organization motor its strategic plan. Spotting of the trends is possible with a mean of 1.4 implying that the respondents strongly agreed.

Table 4.5 :Effect of BI dashboard adoption

	MEAN	STD.DEV
Would you use dashboard to motor strategic plan progress	1.32	0.683329185
Does the Dashboard help to spot trends	1.4	0.494871659
Interactive nature of the Dashboards	1.42	0.498569382
Are you able to get Actionable insights	2	0.404061018
Is the dashboard visually appealing	1.5	0.707106781

4 .4 Benefits of Dashboard

To establish the benefits of dashboard, the researcher asked questions pertaining to improvement of data accurancy, increased efficiency in the business process, improved customer service, intergration of the process, alignment of the vision mission and values, performance reviews, goal management, coordinate goal achievement, security of the system, can the system display data in different format and if the system be used to make the development plan by Kenya Power.

The table below tabulates all the responses to the questions

Table 4.6: Benefits of Dashboard

	Strongly agree	Agree	Undecided	Disagree	Strongly disagree
Improve Accuracy of data	30.0	6.0	20.0	40.0	4.0
Increasing efficiency in the business process	28.0	48.0	6.0	14.0	4.0
Improved customer service	36.0	24.0	14.0	20.0	6.0
Integration of seamless process	20.0	44.0	20.0	10.0	6.0
Align vision, purpose and values	60.0	24.0	10.0	2.0	4.0
Performance reviews	36.0	54.0	2.0	4.0	4.0
Goal management	50.0	32.0	12.0	4.0	2.0
Co-ordinate goal achievement	22.0	54.0	18.0	4.0	2.0
The entire new system is secure	42.0	36.0	14.0	4.0	4.0
Dashboard I use can show data in different ways	40.0	42.0	2.0	12.0	4.0
Dashboard allows me to extensively drill down data	34.0	38.0	20.0	6.0	2.0
Dashboard can show data at different granularity of time	28.0	48.0	12.0	10.0	2.0
Does dashboard provides better business development plans	14.0	52.0	22.0	4.0	8.0

Figure 4: Benefits of Dashboard
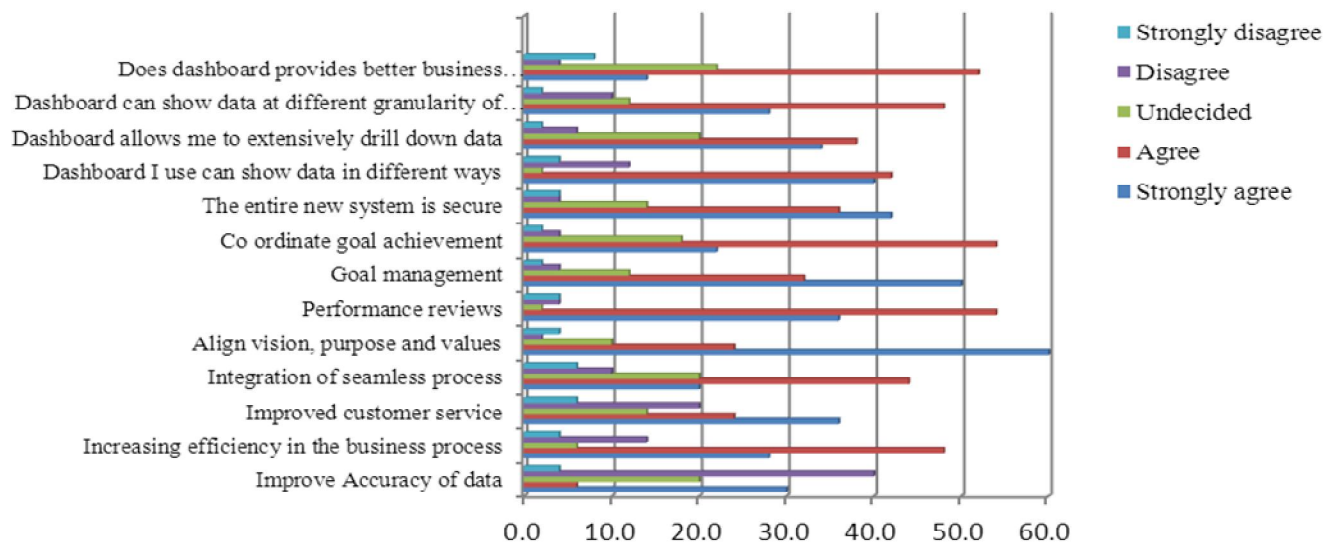
Improved accurancy of data was one of the cited benefits of dashboard system for decision making. According to the finding, majorty of the respondants agreed that the system has lead to data accurancy to some extent with 30% strongly agreeing, 6% agree, 20% not sure and 44% not agreeing that data accurancy is achieved with the system. Dashbaord system improves efficiency in decision making by the management.

According to respondent, users strongly agree that the system efficiency is achieaved with 76% holding this opinion. Kenya Power's core value is customer first and this contributed to the introduction of the dashboard system. The users agreed that the system helps to achieve customer satisfaction. Intergration of a seamless process is one of the advantages of intelligent dashboard.

Out of the respondents 66% agreed that it is possible to intergrate the many systems at Kenya Power,20% were undecided and 16% in disagreement. For Kenya Power to achive its goal, the mission, vision and values must be upheld. The users agree that this have been achieaved with 84% in agreement and 6% not in agreement.

Goal management was one of the benefits of dashboard system, the users believed that with the use of system the company is able to manage its goals with only 6% not in agreement. Coordination of the goal management is among the many advantages of the BI dashboard the users agree with 18% undecided and 76% in agreement. Security of a system is very important for any orgazanition. BI dashboard being a web based system, the users agree that the system is secure with 76% in agreement and 14% of the users not sure if the system is secure.

The users of the system also agree that the dashboard can be used to show data in different formats the feature is most important to managers for decision making. A good number of the staff agreed with 2% not sure and 16% not in agreement.

Respondents agreed BI Dashboard system can be used by managers to drill down the data that is presented in the system with 72% in agreement and 20% not sure. When the users were asked if dashboard can be used to show information at different times, the user agreed with 76% of the user in concurrence.

There was a general agreement that BI dashboard can be a tool for development planning. That is the management is able to come up with a strategic plan for a period of 5 year which is measured every month. 68% of the users agreed, 22% of them were undecided and 12% thought that it not possible to make plan with dashboard system.

The graph below shows the distribution of responses on the benefits of dashboard system.

4 .5 Challenges of BI Dashboard System.

To establish the challenges of dashoard system, the researcher asked questions pertaining to cost effectiveness, security of data displayed, time saving for busy managers, design issues that affect the quality of decision making, system resistance by the users , completeness of data, how easy is it to change the KPI, how well are users trained on the capability of the system and if data displayed on dashboard is complete. The table below tabulates all the responses to the questions.

Table 4.7:Challenges of BI Dashboard system

	Strongly agree	Agree	Undecided	Disagree	Strongly disagree
1. Cost effectiveness	16.0	38.0	20.0	12.0	14.0
2. Security of Data	22.0	40.0	22.0	16.0	0.0
3. Time saving	24.0	36.0	26.0	12.0	2.0
4. Design issues affect the quality of decision making	18.0	46.0	28.0	6.0	2.0
5. system resistance by employees	36.0	46.0	10.0	4.0	4.0
6. Data in the dashboard is complete	32.0	16.0	22.0	20.0	10.0
7. Easily change the key performance indicators	24.0	30.0	26.0	18.0	2.0
8. User Training	18.0	42.0	18.0	6.0	16.0
9. Data in the dashboard is up to date	22.0	20.0	16.0	30.0	12.0

Figure 5:Challenges of BI Dashboard system
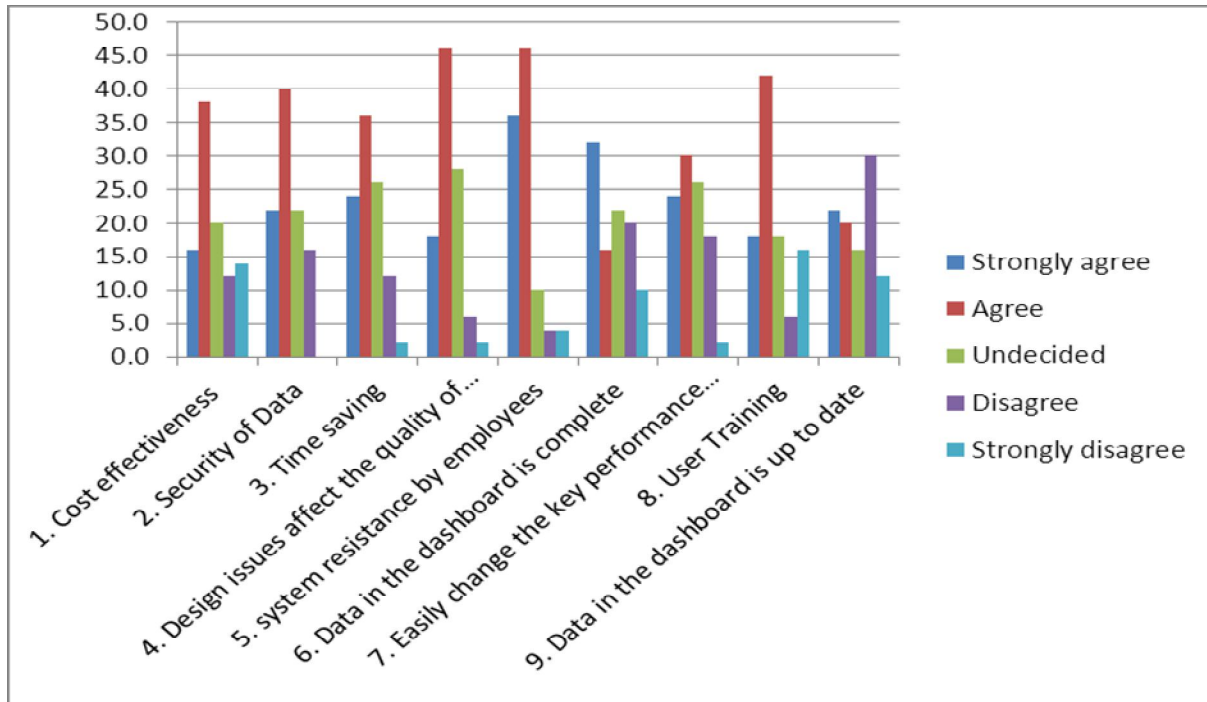
BI dashboard system is a cost effective tool for decision making at Kenya Power, majority of respondents agree that the system is cost effective with 16% strongly agreeing, 38% agree, 20% not sure and 26% think that the system is not cost effective. Concerning data security of the system, users agree it is a challenge. With regard to time saving when using the system the users are in agreement. When the respondent was asked about the design issues if it has affected the decision making of the organization the users agreed that improvement must be done on the system with 64% in agreement while the rest were not aware. The users agreed that there was system resistance and this have affected the adoption of the new system at Kenya Power with 86% in agreement and only 8% not agreeing. Concering the completeness of the information presented in the dashboard system the users disagree with the fact that the data is not complete with 32% strongly agreeing, 16% agree, 22% not sure and 30% not agreeing that it is a challenge. There was a concern about how easily the key performance indicators can be changed. Respondents agreed with 26% not being aware if that was possible and 54% being in agreement that with the use of system KPI can be traced.The results showed that majority of respondents agreed that user training must be done. This is evidence by the so many undecided factors on the respondant meaning that the staff are either ignorant or are resisting the system with total of

undecided and agree being 78%. On the contrary, the respondents disagreed that data in the dashboard is up to date, with 42% not agreeing and 16% not decided.

4.6 Decision making process

Dashboard is used more frequently by higher management and non technical people. Dashboard assist in the decision making process it is also a great tool for communication as it keeps information transparent thoughout the organization at all times. Users acknowledged that dashboard keep everyone in the organization constantly informed about the different processes and action plan being understaken in various departments.

However the staff strongly agree that data accurancy act as a major hindrance to decision making process. This is attributed to the fact that data is gethered from different systems in the organization and when the system do not intergrate well with dashboard, the accurancy of the information is complimised**.**

Table4.8 :Decision making process

	Frequency	Percent	Cumulative Percent
Complex user interface	4	8	8
Information overload	6	12	20
Accuracy of the data	36	72	92
Availability of the system	4	8	100
Total	**50**	**100**	

Figure 6: Decision making process

- Complexuserinterface
- Informationoverload
- Accuracyofthedata
- Availabilityofthesystem
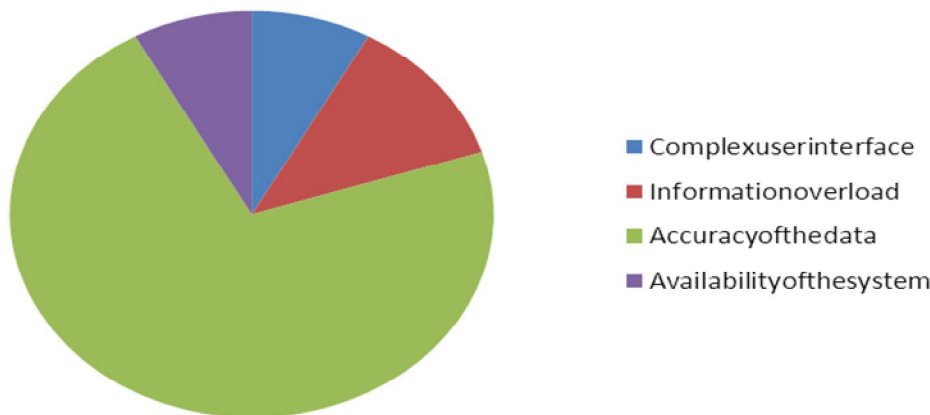
4.6.1 Decision making process improved by use of BI dashboard.

Dashboards are very visual in that you do not need to see the data inside for you to make a decision. To the higher management it is very important. Their prefer to see this as compared to data. For the technical team it does not matter if you give them data or dashboard because they can visualize and analyze the data. If data is moved around in the company from one analyst to manager, its integrity can be lost, this is why the dashboard becomes important in decision making.

Table 4.9 :Decision making process

	Frequency	Percent	Valid Percent
Yes	38	76.0	76.0
No	12	24.0	24.0
Total	50	100.0	100.0

4.6.2 Objectives of Dashboard been accomplished by use of BI dashboard.

The objectives of the implementation was achieved, users deal with humongous amount of data and real time data is needed at every particlar time. 68% of the users agree that the objective was met but 32% of the staff thought that becouse of the huge expenditure for the company and the training involved the objective was not meant.

Table 4.10:Objectives of dashboard have been accomplished

	Frequency	Percent	Cumulative Percent
Yes	34	68	68
No	16	32	100
Total	50	100	

4.7 Regression Analysis

A multivariate regression model was applied to determine the relative importance and the relationship between the independent variables and performance (dependent variable), in regard to the prepaid system in Kenya Power. The regression model was as follows

Model summary

Table 4.11:Regression model summary

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.636	0.4046	0.18906	0.389

Predictors: (Constant), Improve Accuracy of data: Increasing efficiency in the business process: Improved customer service: Integration of seamless process: Align vision, purpose and values: Performance reviews: Goal management: Co-ordinate goal achievement: The entire new system is secure: Dashboard I use can show data in different ways: Dashboard allows me to extensively drill down data: Dashboard can show data at different granularity of time: Does dashboard provides better business development plans

$R^2_{=0.40}$ meaning that 40% of the variations in the dependent variable decision making can be explained by all the dependent variables

Table 4.12: Anova test

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.686	13	.284	1.879	0.068
	Residual	5.434	36	.151		
	Total	9.120	49			

Hypothesis that the independent variable in the model have no effect on decision making is rejected since the p-value <1.

Table 4.13 : Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.872	.387		2.254	.030
	Dashboard improve accuracy	.006	.051	.020	.128	.899
	Increase efficiency in the business process	.070	.064	.183	1.103	.277
	Improve customer service	.098	.052	.301	1.873	.069
	Integration of a seamless process	-.065	.064	-.166	-1.014	.317
	Align vision mission purpose and values	.015	.065	.036	.231	.819
	Performance reviews	.149	.070	.328	2.126	.040
	Goal management	-.110	.073	-.244	-1.506	.141
	Coordinate goal achievement	-.011	.083	-.022	-.131	.897
	Entire new system secure	-.017	.063	-.041	-.268	.790
	Can the system show data in different ways	-.075	.066	-.197	-1.130	.266
	Does it all extensively drill down of data	.149	.063	.342	2.354	.024
	Can u get data in different granularity of time	-.074	.065	-.171	-1.144	.260
	Does it make better business development plans	.027	.062	.065	.435	.666

Improved customer service increases the probability of decision making using the BI dashboard system by 30% (t=1.873). Performance reviews increase the probability of decision making using the BI system by 32% (2.126). The capability of a dashboard to extensively drill down data increases decision making by 34%.

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.0 Introduction

This chapter presents the summary of the paper, conclusions drawn, and the recommendations of the study. The chapter begins with a brief summary of the purpose of the study, research objectives, methodology and a summary of major findings, before presenting the conclusion and recommendations.

5.1 Summary

This study sought to investigate BI adoption at Kenya Power . The exploration was guided by the following objectives,the extent to which Kenya Power has adopted BI Dashboard system, effect of Business Intelligence dashboard system for decision making at Kenya Power, benefits of adoption of Business Intelligence Dashboard system at Kenya Power and the challenges of Business Intelligence Dashboard system adoption at Kenya Power. The study shows that the aims the company was wanted to accomplish have been realized to a large extent and the new BI dashboard system has improved decision making.

The study also clearly indicated that the major challenges the company is urgently required to address are; completeless of the data which means without the complete data the decision made will not be a true reflection of the status of the organization, data accurancy and intergration of the dashboard with the other systems at Kenya Power. The respondents agree that there are quite a number of other challenges in the implementition process although they are of the opinion that these are minor and can easily be resolved if they are addressed promptly.

5.1.1 Conclusion

The findings of the research support the notion that, objective of the company in implementing the new dashbord system have been achieved although a lot more needs to be done. Shifting from manual system of analyzing data to the use of the sytem was well calculated and the benefits are gradually being realized as improvement goes on. There are few challenges but these are minimal considering the larger picture of the benefits and decision making improvement that have so far been achieved. The study has also shown that Kenya Power has successfully implemented the

new system within a short time without the usual adoption problems that come with new innovation. Kenya Power employees who were the focus of the study have accepted the changes though with some users resisting. They agree that more requires to be done, especially the data accurancy improvement and training on the new system to eliminate the undecided factor.

Dashboard assist in the decision making process it is also a great tool for communication as it keeps information transparent thoughout the organization at all times. Users acknowledged that dashboard keep everyone in the organization constantly informed about the different processes and action plan being understaken in various departments.

5.1.2 Recommendations

ICT department is required to create more awareness of the new system especially among the users. Feedback mechanism from the users should be estamblished so as to identify the challenges facing new innovation and rectify them quickly. The challenges should be anticipated and resolved quickly before they become problematic to users. More staff should be introduced and trained on how to use the system to increase the usability and have more people on board to help the company realize it strategic plan.

Kenya power should focus more on improving customer service as the findings clearly indicate that improved customer service increases the probability of decision making using the BI dashboard system. This is because Kenya Power is a customer based and by use of BI system, better and quick decisions are made.

From the findings, performance reviews should be encouraged more often because they have an impact in the success of the system. The MSR that are normally conducted to review the performance should be taken more seriously and all the stake holders should be involved in setting up the missions and measures of the organisation.

From the research, the dashboard system enables the users to extensively drill down the data and this contributes to the overall success of the system and decision making. This means that the organization should intergrate all the systems to the dashboard for the availability of the data. All users should also be encouraged to use the system to increase efficiency.

From the findings individual performance planning and development is possible though the performance reviews conducted by managers which include values, development plans, careers aspirations and career success. Dashboards will enable talents reviews by panels which both rate

and calibrate individual performance and potentials. Succession plans and key roles for each individual can be established.

5.1.3 Limitations

The study had a number of limitations. Respondents were at first fearful about giving out information about the new system since they were unsure where the information was to be used. This contributed to the delay of the research. Majority of the respondents were very busy owing to the facts that most of the users are in the top management who have very tight schedules. This lead to the respondent not been dedicated and taking the questionaire seriously. This had a negative impact on the research since one cannot get the feelings of all the paticipants.

The research had to be undertaken during working hours which caused a lot of inconveniences to the respondents who worked in diffect departments and some even in differnet regions.

Financial constain was another factor that affected my research, since one had to keep on calling the users to remind them and also moving from one region to another inorder to collect the questionnaire.

5.1.4 Recommendation for further research

The challenges like accurancy of data need to be studied more in order to ensure they are resolved. This should be done by intergrating all the processes in Kenya Power into one system . Due to this, measures should be put to enforce data integrity.

Market studies should be carried out to analyze the needs of the staff so as to get a system that best suits them and any upgraded versions available. This will also prevent the users from having so many system where us their can just have one system that perform all the tasks.

Kenya Power should have studies focusing on other countries that have already implemented this system in order to avoid making the same mistakes and have a better system that is up-to-date.this is to avoid the organization from having to implement so many system all a system becoming obsolete after a very short time.

Since BI dashboard can be used as a tool for development planning. This enables the management to come up with a strategic plan for a 5 year period which is measured every month. This means alot of training on perfornace should be done and factory visits should be encouraged so that the organization can compare the challenges and hence identify where they went wrong.

REFERENCES

Adam, F. & Humphreys, P. (2008). *Encyclopedia of Decision Making and Decision Support*. London, Information Science References

Ballou, D. P., & Tayi, G. K. (1999). *Enhancing Data Quality In Data Warehouse Environments*. Communication of the ACM. Vol.42/No.1

Bresnahan, T, Brynjolfsson, E, Hitt L. (2002). *Information Technology, Workplace Organisation and the Demand for Skilled Labour*. Quartely Journal of Economics, Oxford.

Bui T., Sroka H., Stanek S. Goluchowski J., (*Eds*). *Publisher of the Karol Adamiecki University of Economics*, Karol Adamiecki University of Economics, Katowice.

D.L., Thompson R.L.(1995). *Task Technology Fit and Individual Performance*, MIS, vol. 19

Eckerson, W. W. (2005). *Performance dashboards*. DM REVIEW, 15(11), 26

Gartner, Joseph Feiman & Neil, M (2010)

Gray, P. (2003) *Business intelligence a new name or the Future of DSS in DSS in the Uncertainty of the Goodhue*. Utrecht. 21st European Conference on Information Systems.

Herring J. P. (1999). *Key Intelligence Topics, a process to identify and define intelligence needs*, in Competitive Intelligence Review, Vol. 10(2).

http://www.kplc.co.ke).

Judith H, F. Halper. (2005). *Dashboards   Enabling Insight and Action*. Waltham. Hurwitz and Associates.

Kenya Power and Lighting Company. (2006, May). Audit Report No. 6/2005- 6, on *Customer creation*. Nairobi: KPLC publication.

Malik, S, (2005). *Enterprise dashboards design and best practices, Ed.1*. New Jersey. Wiley,

Mugenda, and Mugenda, (2003). *Readings in Research Method Quantitative and Qualitative Approaches*. Nairobi. Africa Centre for Technology Studies.

Mike S, (2003), *Practical Business Intelligence for Associations & Non Profit Organizations*, p. 1-6. Les Silverman. Mikinsey & Company.

Negash S. and Gray P., (2008). *Business Intelligence, Handbook on Decision Support Systems 2*, International Handbooks on Information Systems, Chapter VII, Springer Berlin Heidelberg.

Pitt, L. F., Watson, R. T., & Kavan, C. B. (1995). Service quality: A measure of information systems effectiveness. *MIS Quarterly*, 19(2): 173-188.

Swan, J, Newell, S, Scarbrough, H. and Hislop, D. (1999) *Knowledge Management and Innovation*. Vol. 3 Iss: 4. MCB UP Ltd

Shaft, T. M., & Vessey, I. (2006). The role of cognitive fit in the relationship between software comprehension and modifications. *Management Information Systems Quarterly*, 30(1), 29–55.

Schiff, Craig, (2007), *Fact vs. Fiction in Performance Management, Business Intelligence*.

Stacey B, (2010) *7 Small Business Dashboard Design Dos and Don'ts* Barr. Ayrshire.

Vitt, E., Luckevich, M. et al. (2002). *Business Intelligence Making Better Decisions* viewed on http://www.juiceanalytics.com

White H, M. and White horn, M (1999). *Business Intelligence the IBM Solution, Data ware housing and OLAP*. London, Springer-Verlag.

Whiting, R. (2003). *Business Intelligence Buck IT Spending Slowdown*, Tech Web, viewed on http://business.highbeam.com.

APPENDIX 1

QUESTIONNAIRE

This questionnaire is purely an academic research tool for the completion of the dissertation. It is designed to investigate the Adoption of Business Intelligent Dashboard and Decision Making. There is no correct or incorrect answer for each question. Therefore, please answer as honestly as possible. All information provided will be treated with anonymity and confidentiality. The survey result will strictly be used for academic purposes.

Thank you very much for your cooperation and participation.

Section A: Demographic Information

Age

Less than 30 years [ ]   31-35 years [ ]   36-40 years [ ]   More than 40 years [ ]

Gender

Male [ ]   Female [ ]

Level of Education

High School [ ]   College/Undergraduate (BA/BS) [ ]   Masters Degree [ ]

M.D/PhD [ ]

Organization Status

Executive [ ]   Senior standard [ ]

Standard [ ]   Contract [ ]

1. Has the new system integrated well with the existing system?

Yes [ ]   [ ]

Section B: Has the following affected the BI Dashboard Adoption

How as the following affected the adoption of Dashboard? Tick where appropriate

Strongly agree (1)   Agree (2)   undecided (3)   Disagree (4) Strongly disagree (5)

Effect of Dashboard adoption	1	2	3	4	5
Would you use dashboard to monitor strategic plan progress?					
Does the dashboard help to Spot Trends?					
Interactive nature of the Dashboards					
Are you able to get Actionable Insights?					
Is the dashboard visually appealing?					
Any other factors (list below)					

Section C: Benefits of Dashboard

Has the Dashboard accomplished its goals? Tick where appropriate.

Strongly agree (1)   Agree (2)   undecided (3)   Disagree (4) Strongly disagree (5)

Benefits	1	2	3	4	5
Improve Accuracy of data					
Increasing efficiency in the business process					
Improved customer service					
Integration of seamless process					
Align vision, purpose and values					
Performance reviews					

Goal management					
Co ordinate goal achievement					
The entire new system is secure					
Dashboard I use can show data in different ways					
Dashboard allows me to extensively drill down data					
Dashboard can show data at different granularity of time					
The use of dashboard provides more time to make better business development plans					
Any other benefits (list below)					

Section D: Challenges of Dashboard

What are the challenges of Dashboard? Tick where appropriate

Strongly agree (1)   Agree (2)   undecided (3)   Disagree (4) Strongly disagree (5)

Challenges of Dashboard	1	2	3	4	5
Cost effectiveness					
Security of Data					
Time saving					
Design issues affect the quality of decision making					
system resistance by employees					
Data in the dashboard is complete					
Easily change the key performance indicators					
User Training					
Data in the dashboard is up to date					
Any other Challenge (list below)					

APPENDIX 2: SCHEDULE AND BUDGET

SCHEDULE OF WORK

EVENT	TIMELINE
Preparation of proposal	To March 5th 2013
Correction of the proposal	March 10th to July 15th
Seeking necessary authorization	July 15th to July 23rd
Proposal presentation	26th July 2013
Correction on proposal	1st August to 22nd August
Approval of proposal for data collection	22nd August 2013
Data collection	September 1st 10th
Data analysis	September 11th to 15th
Writing and submission of report	September 16th to 20th

BUDGET

A. STATIONERY

ITEM DESCRIPTION	COST	QUANTITY	TOTAL COST (Kshs)
Duplicating paper	350	5 Reams	1750
Ink	450	2 tubes	900
Photocopying	500	4 reams	2000
Printer ribbon	2000	1	2000
Pens	20	10	200
Pencils	10	1 dozen	120
Computer CD roms	150	5	750
Spring files	50	3	150
Duplicating paper	3	700 pages	2100

SUB-TOTAL   9,970

B: REPORT PREPARATION

Laser printing of report (150 pages) @ 50/=	7500
Photocopying 3 copies of the report (450 pages) @ 5/=	2250
Binding of the first 6 copies of report @ 200/=	1200
Laser printing of the final copy (150 pages0 @ 50/=	7500
Photocopying 5 copies final report 750 pages @5/=	3750

SUB-TOTAL   22,200

GRAND TOTAL   32,170