STRATEGIC VALUE OF BUSINESS INTELLIGENCE SYSTEMS, A CASE STUDY OF EQUITY BANK LIMITED

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DECLARATION

This project is my original work and has not been presented for the award of a degree in this or any other university.

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DEDICATION

I dedicate this work to entire banking fraternity, my family members for great support and encouragement.

May God Bless you all.

ABSTRACT

The intent of any business intelligence System is simply to provide a system for developing or improving processes through a structured approach, effective deployment and better control. The objectives of this study were to identify the strategic value of Business Intelligence (BI) system, the extent of use of BI system and the challenges in the use of BI at Equity Bank. The study adopted a descriptive design. The target population for the survey was 500 members of staff from various departments in Equity Bank Head Office. Using a sample of 50 employees, the study had 88.5% response rate. The primary data for the study was collected using a structured questionnaire. Questionnaires collected were edited, coded and data entered into Microsoft excel and Google Docs analytics which were used to analyse the data.

The study established that Equity bank gains strategic value from BI systems through provision of information that facilitate handling of customer issues, predict their likes and preferences, improve decision making and come up with innovative products and services. On the usage of BI, the study found variation in the use and tools used. The study found that management should provide full support of the business intelligence system by ensuring that all the required resources are availed for the sustainability of the business intelligence system. New employees should be inducted into the business intelligence system in order to understand how to use the system and its benefits. All employees should also be trained on BI and be incorporated into the team that is in direct touch with the business intelligence systems. The researcher recommended further research on cost benefit analysis of Business Intelligence (BI) systems since the study focused on the strategy value of BI approach only.

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ABBREVIATIONS

BI   -   Business Intelligence

CBK   -   Central Bank of Kenya

CDR   -   Call Detail Record

CIO   -   Chief Information Officer

CRM   -   Consumer Relationship Management

DW   -   Data Warehouse

EDI   -   Electronic Data Interchange

ERP   -   Enterprise Resource Planning

ETL   -   Extract, Transform and Load

HRM   -   Human Resource Management

ICT   -   Information and Communication Technology

IT   -   Information Technology

MDM   -   Master Data Management

OLAP   -   Online Analytical Processing

SCM   -   Supply Chain Management

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Central Bank of Kenya has regulations that require banks to use computerized information system, for internal or external application database validations to check for any inconsistencies in the information provided particularly those containing known fictitious application/ fraud information (CBK, 2013). An information system (IS) is a formal network using computers to provide management information for decision making with the main goal of providing the correct information to the appropriate manager at the right time, in a useful form (Laudon & Laudon, 2009). An information system (IS) can also generally be described as a collection of computer hardware, software, people, procedures and communication devices used to capture business data, process it and disseminate information for the purposes of decision making within a business enterprise (University of Cape Town, 2014).

Developments in technology are changing the banking industry from paper, brick and mortar banking, to digitized and networked banking services. Gachara (2012) found that 83% commercial banks have increased new products over the recent past while a majority 53% agrees that the electronic business processes have also increased. The increased number of products and innovation is as a result of information systems facilitation in doing business. Commercial banks needs a business Intelligence system that can serve as an early-warning system for bank disruptive changes in the competitive landscape from rival's new products or pricing strategy or the entrance of an unexpected player into the financial market.

1.1.1 Business Intelligence

Nemati (2005) defines Business Intelligence (BI) as a suite of tools and technologies that enhance the decision making process by transforming data into valuable and actionable knowledge to gain a competitive advantage. According to Hannula & Pirttimaki (2003), BI can broadly be defined as an organized and systematic process which is used to acquire, analyse and disseminate information which is significant to their business activities. BI is also defined as a set of technologies that gather and analyse data to improve decision-making Herschel et al, (2005). Several characteristics of BI emerge from these definitions, that is, it refers to both internal and external information gathering, analysis and dissemination of valuable information for decision making.

According to Olszak and Ziemba (2006) beneficiaries of Business Intelligence (BI) systems include a wide group of user such as insurance companies, oil and mining industry, security systems, banks and supermarkets. Banks are amongst the most common sectors that use BI systems, BI systems also assist in determining the profitability of individual customers who are current and long term. This provide the basis for high profit sales and relationship banking, thus maximizing sales to high value customers, reducing costs to low value customers. This provides a means to maximise profitability of new innovative products and services therefore promoting value creation in banks.

1.1.2 Strategic Value of Business Intelligence

Business intelligence (BI) empowers organizations with business insights that lead to better, faster, more relevant decisions. This ensures the right information is gotten at

the right time, and in the right format. According to Ubiparipović and Đurković (2011) BI systems enable banks to anticipate future behaviour of the customers and most of their business indicators. They also enable modelling client behaviour not only in terms of using new services but also from the perspective of potential risks. Some of the notable areas where BI is applied in banks are analytical customer relationship management, bank performance management, enterprise risk management, asset and liability management and compliance.

Commercial banks in developing countries offer financial services through relying on information gathered to provide superior value for the banks customers and improve their satisfaction. According to (Porter, 1998) Technology intelligence exerts a significant influence on the ability to innovate and is viewed both as a major source of competitive advantage and of new product innovation. This strategy enables the banks to provide considerable insulation from competition. It also forms a basis of measuring the strategic value.

Organisations put in place a set of activities, methods, best practices, policies, and automated tools that stakeholders use to develop and continuously improve information systems and software. Business Intelligence (BI) maturity model describes the stages that most organizations follow when evolving their BI infrastructure from a low value, cost-centre operation, to a high value, strategic function that drives market share. Examples of maturity models are Gartner's Maturity Model for Business Intelligence (BI) and Performance Management (PM) which recognizes five levels of maturity: unaware, tactical, focused, strategic, and pervasive. It is used for the assessment of the input effort, BI and PM maturity .The other maturity model is AMR Research's Business Intelligence/Performance

Management Maturity Model, the key characteristics of this model are reacting, anticipating, collaborating and orchestrating (Rajteric, 2010).

Some models focus on the technical aspect and others on the business point of view. Business Intelligence (BI) models help in identifying the existing problems of BI implementation and provide symmetric guidelines (Chuah et al, 2013). Most Information Technology (IT) driven BI and data warehousing initiatives tend to focus on the technical aspects, therefore the technical challenges and trade-offs are at least well understood, attention now shifts towards the ways in which BI can be used to deliver business value McIntyre (2009).

Whilst Business Intelligence (BI) remains one of the top technology issues for Chief Information Officers (CIOs), little research has been done regarding the actual business value realized as a result of BI investment (Negash & Gray, 2003). Apart from operational and efficiency benefits, IT can offer payback on a strategic level, making the prospect of clearly identifying the benefits an even more difficult challenge (Gibson et al 2004). The strategic value of BI solutions is depicted by the ability to manage and exploit the information potential of multitude of internal and external data from sales, demographics, economic trends, competitive data, consumer behavior, efficiency measures, financial calculations, and more (Ubiparipović & Đurković, 2011).

1.1.3 Equity Bank Limited

The banking industry in Kenya is governed by the Companies Act, banking Act and various prudential guidelines issued by the Central Bank of Kenya (CBK, 2014). The industry has grown in double digits percentages over the last 5 years (CBK, 2013).

The Kenyan Banking Sector recorded improved performance with the size of net assets standing at Ksh. 2.97 trillion, loans & advances worth Ksh. 1.78 trillion, while the deposit base was Ksh. 2.15 trillion and profit before tax of Ksh. 71.03 billion as at 30th June 2014. However in spite of this rapid growth in the banking sector, competition has been a major concern making it more and more challenging for banks to keep up with the changes and with the competition . This calls for change of tactics by the industry.

Central Bank of Kenya (CBK) revised risk management guidelines for institutions licensed under the banking Act. CBK has been regulating bank under Base I Capital adequacy accord and though the sector has not fully adopted Base II, it is encouraging to note that the new guidelines are features of Base III measures in capital adequacy requirements (Think Business, 2013). The changes in regulatory frame and increased competition led to banking industry in Kenya being shaky considering the major failures that occurred between 1998 and 2005. Banks need to use all the tools at their disposal to manage the many industry challenges and ensure their own financial stability through intelligent business solutions (Microstrategy, 2008). One of the tools at their disposal is Business Intelligence system.

Equity Bank started as a building society on registration in 1984 and converted to a commercial bank 2004. With over 8 million accounts, accounting for over 50% of all bank accounts in Kenya, Equity Bank is the largest bank in Africa in terms of customer base and operates in Kenya, Uganda, South Sudan, Rwanda and Tanzania. Its model of growth which includes rural banking orientation and promotion of agribusiness is a significant and strategic intervention and contribution by Equity Bank in Kenyans economic growth.

Equity bank is one of the commercial banks in Kenya, as of 2013 it had over 6000 employees in Kenya. It enjoys the largest customer base mainly because of offering products suited to low income areas, promotion of agribusiness and focusing on rural banking. The company has attracted a lot of global accolades and recognition and developing countries learn from the banks low margin high volumes model.

Equity Bank's main strategy aims at maximizing the value of information technology by aligning Information Technology (IT) investments with business objectives. To achieve these strategies, there is need to review customer needs to identify unmet demand, development of new cost effective online initiative and achieve the vision of the business and review opportunities and challenges where Information Technology (IT) can be leveraged. Amongst the major Information Technology (IT) investment that Equity bank has made is the acquisition of a data center. This has helped identified ways to incorporate an intelligent service platform to manage and map the storage of data. The Business Intelligence (BI) system feeds on the data warehouse, enabling it to fast-track decision making.

Equity Bank implemented Oracle Business Intelligence Enterprise (OBIE) in 2009, which has worked well in functional decision making. However it seems not to effectively support top level decision making, hence reducing the strategic value of Business Intelligence. Once OBIE is properly deployed at the strategic level, capability of solving past customer complaints and predicting competitiveness of the industry will be improved. Other systems facing similar challenges include solarwinds, Thomson Reuters/Bloomberg, Finonne and Siebel/ avaya call system.

1.2 Statement of the Problem

Different departments in an organization use Business Intelligence (BI) systems differently to serve their unique needs. Any employee in charge of making a decision has to deal with a large amount of data, dashboards BI make it easier to comprehend large amounts of data. In the scenario of business activity that lacks a dashboard, if an executive wants to compare data and make any decision based on it, he or she needs to go through a lengthy process to get the relevant data for comparison. Several times the data is presented in different formats, which creates issues of compatibility. BI helps in capitalizing the revenue and optimizing the business processes.

A decision-making process is an important process for any organization; decisions made by managers or executives are very crucial for the success of any organization. According to Venter and Tustin, (2009), in South Africa, whereas most people understood how BI systems work in organizations, it is not readily available, when they need it and in the format they require. Any large or small organization today must optimize its strategic decision making process. With a sharp increase in data collection due to the growing global market and customization, the decision making process needs to be fast and more accurate.

Decision-making must be well supported by information about events within the organization and in its environment. Organizations need reliable information systems that enable analysts and managers access to the information required for quality and effective decision-making (Puklavec, 2001).

Equity bank relies almost entirely on applications and databases, causing data and storage needs to increase at astounding rates. It is therefore imperative for Equity to optimize and simplify the complexity of managing its data resources. The challenge

remains to proactively manage this data storage to the benefit of various departments, divisions, geographical locations and business processes to achieve improved efficiency and profitability.

The study sought answers on what is the extent of use of Business Intelligence (BI) system in Equity Bank is, established the ways in which Equity Bank uses BI to gain Strategic Value and the challenges in the application of BI system in Equity Bank?

1.3 Research Objectives

The main objective of the study was to identify the strategic value of Business Intelligence (BI) system in Equity Bank. Specific objectives of the research were

1. To determine the extent to which BI system has been used by Equity Bank.

2. To establish the ways in which Equity Bank uses BI system to gain Strategic Value.
3. To determine the challenges of using BI systems in Equity Bank.

1.4 Value of study

This study sought to determine the strategic value of Business Intelligence (BI) system in Equity Bank. This research adds knowledge to the existing information about the strategic value of Business Intelligence (BI) system. Academics (Students and instructors) would benefit from the results of the research objectives so that they can use the findings for further research on BI. It is a source of information and a point of reference for future research. The research therefore is applied by researchers all over the world. The study contributes to the body of knowledge on business intelligence systems by outlining the effects of integrating it as a core business

concept and that the findings will be used for further research on improving quality systems as a strategic tool and recommendations that will be drawn will be used by other organizations when developing and designing their frameworks related to business intelligence systems.

In practice, the study is useful to different groups of people in different ways. Regulators like Central Bank of Kenya will find this report useful in formulation of policies and coming up with new prudential guidelines on BI. Business Intelligence (BI) vendors and service providers could use this report to evaluate customers concerns and satisfaction so that they can come up with ways to address the customer concerns. Organizations will use the report to determine on how to leverage on BI for improved financial performance, innovation and decision making.

Policy makers in the various organizations will gain useful information on the values of BI in Kenya. They will also benefit from the findings of this study by adopting findings of the study which will help them enhance responsible policy making and governance which lead to sustained productivity and better organizational performance.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter discusses the theoretical framework pertaining to strategic value of business intelligence systems. This chapter also defines BI, BI tools and technologies and describes the process of unlocking the power of data to impact on building customer and business knowledge, identify new opportunities and manage and mitigate risks facing the organization.

2.2 Theoretical Orientation

Emerging information technology cannot deliver improved organizational effectiveness if it is not accepted and used by potential users. Technology Acceptance Model (TAM) is one of the most successful measurements for information systems usage among practitioners and academics. TAM is consistent with the theory on diffusion of innovation where technology adoption is a function of a variety of factors including relative advantage and ease of use. According to Kim et al (2009) TAM explores the level of motivation and user attitude that determines whether the user will actually use or reject the system.

TAM is widely used by researchers to provide explanations of usage behavior in relation to adoption of information technology. TAM is implemented and tested in online banking, online shopping, e-government, immigration, e-commerce. In TAM, user's beliefs determine the attitudes toward using the system. Behavioral intention, in turn, is determined by these attitudes toward using the system. The concepts of perceived usefulness and perceived ease of use are individual subjective judgments

about the usefulness and ease toward specific system. Perceived usefulness and perceived ease of use are distinct but related constructs. In TAM, perceived usefulness is a major belief factor, and perceived ease of use is a secondary belief factor in determining behavioral intentions toward using information technology.

TAM is determined by external variables which are effective technology and ease of use for daily work and daily life, attitude toward using includes human attitudes towards the use of either technology effectively in their daily lives and actual system use which is the perceived usefulness and usage intentions in terms of social influence and cognitive instrumental processes. In order to reduce cost benefit ratio, we must examine the gap between system design and system acceptance. So the model of the technology acceptance becomes very important and critical in relation to business intelligence system.

2.3 The Origins of Business Intelligence Systems

Computer-based business intelligence systems go back a long way, in one case or another, for close to forty years (Thomsen 2003). According to Thomsen (2003) BI as a term replaced decision support, executive information systems, and management information systems. With each new iteration, capabilities increased as enterprises grew ever-more sophisticated in their computational and analytical needs and as computer hardware and software matured. According to Hannula & Pirttimaki (2003), in the 1980's the term was identified with its emphasis on the need for continuous monitoring of customers, competitors, suppliers, and other fields. Business Intelligence systems therefore comprises a variety of intelligence information such as

customer intelligence, competitor intelligence, market intelligence, technological intelligence, product intelligence and environmental intelligence.

In the 1990s, much investment in Information Technology (IT) was focused on enterprise applications such as Enterprise Resource Planning (ERP), Supply Chain Management (SCM), and Consumer Relationship Management (CRM) and on connectivity between trading partners via the Internet and more traditional means such as Electronic Data Interchange (EDI). The business benefits of these investments included transactional efficiency, internal process integration, back-office process automation, transactional status visibility, and reduced information sharing costs (Williams & Williams, 2003).

By the late nineties and early 2000, Data Warehousing (DW) was accepted in the business arena. Although early justifications for data warehousing were primarily driven by the needs to provide integrated reporting functionality, the value of data warehousing became clear for carrying out large analysis tasks to assist data-driven decision making both for tactical and strategic management decisions. As the role of analysis expanded rapidly within an enterprise, teams of business analysts within an enterprise were involved in extracting interesting patterns from enterprise wide data. This notion of extracting and unlocking useful information from raw data is termed as business intelligence.

2.4 Components of Business Intelligence

A business intelligence (BI) system does not exist as a final product, its producers offer technological platforms and knowledge for their implementation (Ubiparipović

& Đurković, 2011). BI environment therefore often consists of many different components, such as data integration, operational data stores, data warehouses, data marts, cubes, reports, dashboards, alerts. This makes BI heavily dependent on and has to be tightly integrated with other key platforms and applications such as data quality, master data management (MDM), portals, security, mobile delivery and others.

According to Dayal, Castellanos, Simitsis, & Wilkinson (2009), BI architecture typically consists of a data warehouse (or one or more data marts), which consolidates data from several operational databases, and serves a variety of front-end querying, reporting, and analytic tools. A data warehouse (DW) is a special type of database where data is organized in a manner convenient for conducting analytical processes on large data sets. It contains a copy of data isolated from operational databases and structured specifically for reports and analyses. DW and On-line analytical processing (OLAP) form the information basis for applying BI (Ubiparipović & Đurković, 2011).

On-line analytical processing (OLAP) refers to the way in which business users can slice and dice their way through data using sophisticated tools that allow for the navigation of dimensions such as time or hierarchies. These systems process queries required to discover trends and analyze critical factors. Advanced analytics is referred to as data mining, forecasting or predictive analytics, this takes advantage of statistical analysis techniques to predict or provide certainty measures on facts (Ranjan, 2009).

2.5 Business Intelligence Process

Business Intelligence (BI) enables the business to make intelligent, fact-based decisions. The most cogent argument for establishing a new roadmap to business Intelligence (BI) excellence is to rid the organization of the technology scramble and

cobbled together solutions that Information Technology (IT) has had to deal with as it struggled to meet business requirements. According to Ranjan (2009) a BI organization fully exploits data at every phase of the BI architecture as it progresses through various levels of informational metamorphosis.

Data is first collected including metadata, such as the creator or creating system, the time of creation, the channel on which it was delivered, sentiment contained in plain text, and so on. According to Olszak & Ziemba (2006) metadata facilitate the process of extracting, transforming and loading data through presenting sources of data in the layout of data warehouses. Metadata are also used to automate summary data creation and queries management

For data to be used, it is important to ensure it is clean. Venter & Tustin (2009) depicts that the purpose of a data warehouse is to provide rich, timely, clean and well-structured information to BI analysis tools. Once that is done, the organization can take advantage of the vast amounts of information, give it to users in a way they can understand. Deliver predictive scores to the customer service representatives, so they know which offers are most likely to result in a positive outcome. Provide sophisticated visualization tools to analysts who can see patterns in millions of data points. Deliver a dashboard to the Vice President (VP) of marketing with social media sentiment scores about that new product.

2.6 Strategic Value and Benefits of Business Intelligence

English (2005) ascertains that the essential element of BI is the understanding of what is happening within an organization and its business environment, as well as appropriate action-taking for achieving organizational goals. From this, derives the

importance of the human factor within BI. There is no such thing as business intelligence without the people to interpret the meaning and significance of information and to act on their knowledge gained (English, 2005). This is also consistent with the findings from Finnish research (Hannula & Pirttimäki, 2003) where around 75% of interviewees felt content and humane approaches are the key aspects in success application of BI. BI provides employees with information to make better business decisions, and can be used in environments ranging from workgroups of 20 users to enterprise deployments exceeding 20,000 users.

In an extranet environment, BI is deployed in applications that allow organizations to deliver new services and build stronger relationships with customers, partners, and suppliers via the internet. Hence, English (2005) defines BI as "the ability of an enterprise to act effectively through the exploitation of its human and information resources." Technology is the component that adds to quality information with which business users can analyze business operations: what has happened, what is happening, and what will happen in the future.

In enterprise performance management (EPM), organizations must understand and have constant visibility into their key performance indicators and metrics that span across their organizations. By doing this, organizations ensure their strategy is aligned from top to bottom and across the organization from marketing to sales to manufacturing to human resources. Providing this enterprise insight is a key strength of BI. With business intelligence, users are able to turn this information into knowledge, and knowledge into profit. BI enables the organization to track, understand, and manage your business in order to maximize enterprise performance.

With BI, organizations are able to improve operational efficiency, build profitable customer relationships, and develop differentiated product offerings.

As Jaklič & Popovič (2009) state, various recent international studies show a high level of awareness by professionals about the potential benefits of business intelligence in their business operations. For the fourth consecutive year, business intelligence remains a top IT priority of major international companies, while improved efficiency and operational performance are a key business priority for the fifth year in a row (Jaklič & Popovič 2009). Many companies have positioned business intelligence and business performance management ('BPM') as their top strategic priority for 2009 and 2010.

Strategic value can be measured by various aspects including increased turnover, an improvement of customer satisfaction as a consequence of the faster response times to their requests and expectations, a cost reduction due to time saving and reduced work tasks, an expansion of market share due to the possibility of the transparent monitoring of sales volumes, structures and trends, as well as the easier detection of areas with poor sales, deviations from past trends, an increase in profit due to better support for decision-making and due to time-saving, and faster decision-making which may be critical to the survival of the company in a strong competitive environment.

According to Porter (1990) Strategic value is about competitive pricing, cost, product or market differentiation. Thus this research will focus on ways in which Equity Bank uses Business Intelligence (BI) system to facilitate decision making, respond to customer issues, innovate and improve quality of products and services.

Cui et al (2007) view 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. 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.

Tvrdíková (2007) describes the basic characteristic of BI tool as the ability to collect data from heterogeneous source, to possess advance analytical methods, and the ability to support multi users' demands. Zeng et al. (2006) categorized BI technology based on the method of information delivery; reporting, statistical analysis, ad-hoc analysis and predicative analysis.

The concept of Business Intelligence (BI) was brought up by Gartner Group since 1996. It is defined as the application of a set of methodologies and technologies, such as J2EE, DOTNET, Web Services, XML, data warehouse, OLAP, Data Mining, representation technologies, etc, to improve enterprise operation effectiveness, support management/decision to achieve competitive advantages. Business Intelligence by today is never a new technology instead of an integrated solution for companies, within which the business requirement is definitely the key factor that drives technology innovation. How to identify and creatively address key business issues is therefore always the major challenge of a BI application to achieve real business impact. (Golfarelli et.al, 2004) defined BI that includes effective data warehouse and also a reactive component capable of monitoring the time-critical operational processes to allow tactical and operational decision-makers to tune their actions according to the company strategy.

Gangadharan and Swamy (2004) widen the definition of BI as technically much broader tools that include potentially encompassing knowledge management, enterprise resource planning, decision support systems and data mining. BI includes several software for Extraction, Transformation and Loading (ETL), data warehousing, database query and reporting, (Berson et.al, 2002; Curt Hall, 1999) multidimensional/on-line analytical processing (OLAP) data analysis, data mining and visualization.

Banks must manage large volumes of data in the repositories; this data comes from many sources, including a diverse customer base, extensive branch networks, and shareholders. Banks needs to carry out an analysis to chart way for future action. To derive real business value from this data, the right tools are needed to capture and organize a wide variety of data types from different sources, and to be able to easily analyse it within the context of all enterprise data (Dijicks, 2012). The tool required for this job is Business intelligence. Stackowiaket al (2007) defines Business intelligence (BI) is the process of taking large amounts of data, analysing 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.

The benefits of business intelligence, along with information systems, in general, can be divided into various categories (Carver & Ritacco, 2006). Measurable or quantifiable benefits are those that can be clearly measured, for example, reducing the time needed to carry out certain tasks, savings achieved by purchasing one software solution instead of another, an increase in revenue and profit.

Indirectly quantifiable benefits are usually related to customer satisfaction. Introducing new technology can improve customer service, which has a positive impact on their satisfaction, resulting in larger sales volumes, the increased loyalty of customers returning to purchase again, the winning of new customers. According to (Olszak & Ziemba, 2006) Business Intelligence (BI) systems enable both descriptive and predictive segmentation of customer based on grouping customers in homogenous segments. Banks are therefore able to assess the needs of each profile easily. Customer satisfaction is typically assessed by surveys, by monitoring the volume of business, the re-order ratio as well as other, less formal ways for example by visits and dialogue with customers.

Non-measurable benefits include a higher quality of work, the better motivation of employees, the effects of IT on an improvement of communication in the organization, higher quality knowledge sharing between employees. These intangibles benefits are difficult, sometimes impossible to quantify (Gibson et al 2004). The main problem in assessing these benefits is that they may only be assessed in a subjective way, which does not provide reliable information about their real value. Unpredictable benefits can, for example, be new solutions and the ideas of creative individuals.

Most Business Intelligence (BI) benefits are intangible. An empirical study for 50 Finnish companies found most companies do not consider cost or time savings as primary benefit when investing in BI systems (Hannula & Pirttimaki, 2003). The hope is that a good BI system will lead to a big return at some time in the future, this research seeks to relate BI with improved organization performance, smarter decision making and success of innovative products.

Organizations that are interested to improve quality of decision-making, image or quality of partner services should incline towards the development of information technology infrastructure that will represent a holistic approach to business operations, customers, suppliers (Wells & Hess, 2004). Theory and practice show that the above-mentioned requirements are largely met by Business Intelligence (BI) systems (Gray, 2003; Liautaud, & Hammond, (2002); Olszak, & Ziemba, (2004); Turban, & Aronson, (1998). Decision making therefore is one of the biggest advantages of having BI in an organization.

2.7 Challenges of Business Intelligence

According to Chuah & Wong, (2013) Business Intelligence (BI) applications have appeared the top spending priority for many Chief Information Officers (CIO) and it remain the most important technologies to be purchased for past five years (Gartner Research 2007; 2008; 2009). Although there has been a growing interest in BI area, success for implementing BI is still questionable (Ang & Teo 2000; Lupu et.al (1997); Computerworld (2003)). Lupu et.al (1997) reported that about 60% - 70% of business intelligence applications fail due to the technology, organizational, cultural and infrastructure issues. Furthermore, EMC Corporation argued that many BI initiatives have failed because tools were not accessible through to end users and the result of not meeting the end users' need effectively.

The first challenge facing BI system is the cost. BI has evolved and everybody has some form of BI in place now, as it is becoming a fairly substantial cost item. The overall cost of BI – the cost of technology, upkeep and implementation – is certainly one of the challenges that implementers are facing.

The second challenge is the number of users. The number of business users now tapping into BI is increasing dramatically, especially as we begin to move into operational intelligence. We're seeing more naïve users – not the traditional analysts or data scientists – so it is not only the number of users but an increase in support for these users from an implementation standpoint.

The third challenge is in the area of operational BI and the new sources of data available. We are seeing a tremendous increase in the volumes of data (big data) being analyzed and stored in data warehouses and experimental areas. This data is used for complex advanced, embedded and streaming analytics. There are now very interesting sets of data in BI, which is certainly different from the traditional, more strategic or tactical forms of BI. This doesn't diminish the need for traditional BI; it just means we must expand our BI architectures to embrace these new areas.

These big challenges lead to the fourth, which is the performance and scalability of the environment. Obviously, if we are starting to bring in operational people, operational BI, streaming analytics, big data applications, etc., it means that the performance has to be a major focus of the BI implementers – sub-second response time for many operational intelligence queries while simultaneously supporting the more strategic or long running queries as well. It's a mixed workload environment, and that can cause a performance issue. So our technology also has to scale up to handle it. A terabyte used to seem like a lot of data, but not anymore.

Computerworld (2003) stated that BI projects collapse because of failure to recognize BI projects as cross organizational business initiatives, unengaged business sponsors, unavailable or unwilling business representatives, lack of skilled and available staff,

no business analysis activities, no appreciation of the impact of dirty data on business profitability and no understanding of the necessity for and the use of meta-data.

In the banking industry data sources can be from operational databases, historical data, and external data for example, from market research companies or from the Internet, or information from the already existing data warehouse environment. The data sources can be relational databases or any other data structure that supports the line of business applications. Data can also reside on many different platforms and can contain structured information, such as tables or spreadsheets, or unstructured information, such as plaintext files or pictures and other multimedia information. Big data refers to large datasets that are challenging to store, search, share, visualize, and analyze (Dijicks, 2012)

Banks are challenged by big data and require them to be proactive in managing and utilizing corporate it if they want to keep up with or stay ahead of the competition. Business intelligence (BI) gives enterprises the capability to analyze the vast amounts of information they already have to make the best business decisions. Banks are able to tap into their huge databases and deliver easy-to-comprehend insight to improve business performance and maintain regulatory compliance (Nemati, 2005). The applications of business intelligence in the banking are therefore far-reaching.

While the Business Intelligence (BI) solution typically contains the necessary data that are required for identifying opportunities for improvement, significant effort is often required to get to these insights. Often, the level of effort required to find valuable data points exceed the cost of finding it. Moldovan (2011) studied the

financial industry and found that mining financial data presents some challenges, difficulties and sources of confusion, especially when determining short term trends and validating them.

Business Intelligence (BI) solutions require data from many different, and often disparate, data sources. The unique aspects of each organization require significant time and effort to get them up and running. At the end of the day, there is considerable effort required to stand up and run these solutions. The most common challenge companies are facing in the current competitive business environment is management of its own data (Ponomarjovs, 2013). Once insight has been gained from the Business Intelligence (BI) solution, there is no clear path to action, and often no link to the underlying detailed data. Acting on the findings is limited, and is especially challenging from the BI solution itself.

2.8 Summary

The empirical review above indicates that strategic value of business intelligence determine the performance of commercial banks both in in improving their competitiveness and handling customers issues and innovation. Both Dijicks (2012) and (Ponomarjovs, 2013) indicated that its challenging for banks to manage the data. This data according to (Moldovan, 2011) may cause confusion and difficulties. However (Olszak and Ziemba, 2006) Business Intelligence (BI) enables organizations to analyze and get insights from this data. Most studies on this subject were done in different regions, on different Business intelligence systems with scanty studies done in developing countries and particularly in Kenya. Kangogo (2013) indicates that dynamism of the banking environment is posing a lot of challenges to all banks .BI

helps in anticipating future behavior and predicting most business indicators (Ubiparipović & Đurković, 2011). There is therefore a gap in literature in regard to strategic value of Business Intelligence in commercial banks in Kenya. The current study sought to bridge this gap by focusing on Equity Bank Kenya.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes the research design and sampling design used in the survey and also highlights on the population of study, data collection methods as well as data analysis and presentation methods to be employed.

3.2 Research Design

This research employed descriptive survey method that helped in gathering information about the strategic value of business intelligence system in Equity Bank. This design was preferred because the study was concerned with answering questions such as who, how, what, which, when and how much (Cooper & Schindler, 2003).

3.3 Target Population

The target population for the survey was 500 members of staff from various departments in Equity Bank Head Office. These were the main users of Business Intelligence (BI) systems at Equity Bank.

3.4 Sampling Design

Stratified random sampling was employed to identify respondents from the various departments. Each stratum was composed of a department and levels within each of these departments, employees were selected at random from the strategic, tactical and operational levels. The sample size was drawn from the target population based on the principle of 10% rule according to Mugenda and Mugenda (2003).

3.5 Data Collection

The data required for the study was obtained from primary sources. The researcher collected primary data using a questionnaire. The questions were both open ended and closed ended to give respondents enough space to express their views on Business Intelligence use. Questionnaire was issued as follows: 15 from the IT Department, 7 from the Finance, 5 from Customer Service, 6 from Credit, 6 from Treasury and 7 from Marketing departments.

The researcher mailed the questionnaire with a personalized message. Additionally, an introductory letter explaining the purpose of the study was also attached. A follow up call was made to some of the respondents.

3.6 Data Analysis

The data was analyzed through descriptive statistics, this enabled the researcher to organize data in an effective and meaningful way. The data generated by the study after fieldwork was edited, coded then entered into a computer for processing using Microsoft excel and Google doc analytics. By use of percentages, frequency distributions, tables, charts, the researcher categorized the variables.

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

This chapter describes the analysis of data followed by a discussion of the research findings. The findings relate to the research questions that guided the study. Data were analyzed to identify, describe and explore the Strategic Value of Business Intelligence (BI) systems at Equity Bank, extent of use, its benefits and challenges.

4.2 Demographics

The demographic data consisted of department of respondent, position held in the department, years of service in current role and level of education. A sample of 52 respondents from different departments was targeted as respondents for the study, out of which 46 participated. The study therefore had 88.5% response rate.

4.2.1 Distribution of respondents by position

The researcher wanted to find out the positions the respondents were holding in the company. The study findings in table 4.1 indicated that majority of the respondents (28%) held the position of officers in the operational level. Only 22% of the respondents were supervisors in the in the tactical level of management, 20% of the respondents were managers in the tactical level, 17% of the respondents were senior managers in the strategic level and lastly 13% of the respondents were general managers in the strategic level. The results are as shown on Table 4.1.

Table 4.1: Distribution of Respondents by Position

position	Number of Respondents	% of Respondents	Level of Management
General Manager	6	13%	Strategic level
Senior Manager	8	17%	Strategic level
Supervisor	10	22%	Tactical level
Manager	9	20%	Tactical level
Officer	13	28%	Operational level
Total	**46**	**100.00%**	

Source: Researcher (2014)

4.2.2 Distribution of Respondents by Department

The study sought to find out the departments in which the respondents were working.

The findings are as shown on Table 4.2.

Table 4.2: Distribution of Respondents by Department

Department	Number of Respondents	% of Respondents
Customer service	5	**11%**
Credit	6	**13%**
Treasury	6	**13%**
Finance	7	**15%**
Marketing	7	**15%**
ICT	15	**33%**
Total	46	**100%**

Source: Researcher (2014)

The study findings in table 4.2 indicated ICT department who were the majority respondents were that at 33% response rate , followed by 15% of the respondents who were working in the Finance and marketing departments respectively. In addition 13% of the respondents were in the credit department and treasury department respectively. Lastly 11% of the respondents were working in the customer service department.

4.2.3 Years of Experience of the Respondents

The researcher wanted to find out the years of experience of the respondents. The results are as shown on Table 4.3.

Table 4.3: Years of Experience of the Respondents

Years of Experience	Number of Respondents	% of Respondents
<2 Years	17	37%
2-5 Years	18	39%
6-10 Years	8	17%
>10 Years	3	7%
Total	**46**	**100%**

Source: Researcher (2014)

The respondents were required to indicate their years of experience. The study findings in table 4.3 indicated that majority of the respondents were between 2-5 years of experience at 39%. Those with <2 years and 6-10 years followed with 37% and 17% respectively. Those with more than 10 years of experience are at 7%.

4.2.4 Level of Education of the Respondents

The researcher wanted to find out the level of education of the respondents. The respondents were required to indicate their level of education. Data collected was analyzed and is shown in Table 4.4.

Table 4.4: Level of Education of the Respondents

Level of formal of education attained - OTHERS	Number of Respondents	% of Respondents
Certificate	4	9%
Degree	26	57%
Diploma	4	9%
Masters	12	26%
Total	**46**	**100%**

Source: Researcher (2014)

The study findings in table 4.4 Majority of the respondents have degrees and postgraduate level education both at 57% and 26% respectively, whereas 9% have diploma level of education and certificate level of education.

4.2.5 Level of Education - ICT

The researcher sought to find out the level of ICT education attained by the respondents. Respondents were required to indicate their level of education in ICT. Data collected was analyzed and is shown in Table 4.5.

Table 4.5: Education Level – ICT Related

Level of formal education attained - ICT RELATED	Number of Respondents	% of Respondents
Basic IT Training	8	17%
BSc. Degree in IT related area	9	20%
Diploma in IT related area	9	20%
Hands on Training	5	11%
IT Professional Certification	13	28%
Master's Degree in IT related area	2	4%
Total	46	100%

Source: Researcher (2014)

The study findings in table 4.5 indicates that majority of the respondents (28%) had attained IT professional certificate, followed by 20% of the respondents who attained BSc. Degree in IT related area and Diploma in IT related area respectively. In addition, 17% of the respondents had attained Basic IT Training, 11% had attained Hands on Training and lastly 4% of the respondents had attained Master's Degree in IT related area.

4.3   Extent to which Business Intelligence is used In Equity Bank.

The study sought to establish the extent to which Business Intelligence (BI) system is used as contribution to strategic value at Equity Bank. The study had sought to establish the frequency of usage of the BI systems, tools used and whether the users were trained and knowledgeable on the BI systems currently implemented at Equity Bank.

Table 4.6: BI System use by Department

BI System	Number of Respondents	% of Respondents
Finnone System	6	13%
Siebel/Avaya System	12	26%
OBIEE System	7	15%
Thomson Reuters/Bloomberg System	6	13%
Solarwinds System	15	33%
Total	**46**	**100%**

Source: Researcher (2014)

The study findings in table 4.6 indicates that majority of the respondents (33%) used Solarwinds, 26% used Siebel/Avaya system, 15% used OBIEE and Thomson Reuter/Bloomberg and Finnone systems each had 13%.

4.3.1 Use of Business Intelligence systems (BI) in decision making

The researcher wanted to find out if the respondents used BI systems in making decisions. The results are as shown on Table 4.7.

Table 4.7: Use of Business Intelligence Systems (BI) in Decision Making

BI system	Department	Do you normally use BI System reports when making decisions?	Number of Respondents	% of Respondents
Finnone System	Credit	Yes	6	13%
OBIEE System	Finance	Yes	7	15%
Siebel/Avaya System	Customer service	Yes	5	11%
	Marketing	No	1	2%
		Yes	6	13%
Solarwinds System	ICT	No	1	2%
		Yes	14	30%
Thomson Reuters/Bloomberg System	Treasury	Yes	6	13%
Total			46	100%

Source: Researcher (2014)

The results in table 4.7 indicated that OBIEE was mainly used by Finance department, 15% of the respondents (represent all Finance department users) used BI reports for decision making, Finonne system was mainly used by credit department representing 13% of which all respondents used BI reports to aid in decision making. Reuters/Bloomberg system was mainly used by treasury department which constitute 13% of respondents.

The highest number of respondents – 32% used solarwinds system, this was mainly ICT department. The only system used by more than one department was Siebel/Avaya call system which was mainly used by Marketing and customer service at 15% and 11% respectively. Only 4% of the respondents, 2% from Marketing and 2% from ICT who dint use BI reports for decision making.

4.3.2 Main areas of applications of Business Intelligence (BI)

The researcher wanted to find out the main areas of applications of business intelligence. Respondents were requested to indicate key areas BI system was applied. The results are as shown on Table 4.8.

Table 4.8: Main Areas of Applications of Business Intelligence

Key areas BI System is applied	% of Respondents
Finnone System	13%
Acquisition	2%
Customer & portfolio management, Bad debt management	2%
Customer & portfolio management, Bad debt management, Targeting & prospecting, Acquisition	7%
Targeting & prospecting, Acquisition	2%
OBIEE System	15%
Drive innovation, Deploy business best practices , Make insights , Provide extreme performance	7%
Drive innovation, Make insights	4%
Drive innovation, Make insights , Provide extreme performance	2%
Make insights	2%
Siebel/Avaya System	26%
agent desktop analytics, agent quality and capability scorecards	2%
agent desktop analytics, agent quality and capability scorecards, benchmarking of contact centre strategy and operations against industry vertical, local geography and global best practice	4%
agent desktop analytics, agent quality and capability scorecards, speech analytics	2%
agent desktop analytics, agent quality and capability scorecards, speech analytics, post-call surveys, benchmarking of contact centre strategy and operations against industry vertical, local geography and global best practice	11%

Key areas BI System is applied	% of Respondents
agent desktop analytics, speech analytics	2%
agent desktop analytics, speech analytics, benchmarking of contact centre strategy and operations against industry vertical, local geography and global best practice	2%
speech analytics, post-call surveys	2%
Solarwinds System	33%
Database performance monitor	2%
Network performance monitor	2%
Network performance monitor, Database performance monitor	2%
Network performance monitor, Database performance monitor, Security and compliance	2%
Network performance monitor, Optimize applications performance	2%
Network performance monitor, Optimize applications performance, Database performance monitor, Security and compliance	17%
Optimize applications performance, Security and compliance	2%
Security and compliance	2%
Thomson Reuters/Bloomberg System	13%
Fx trading, Interest rates trading	11%
Interest rates trading	2%
Total	100%

Source: Researcher (2014)

4.3.3 Knowledge and Training of Business Intelligence (BI) System

Most of the respondents had good knowledge of the OBIEE system. 15% of Finance department respondents had very good knowledge of the BI system. The research shows that the user of OBIEE all had above average knowledge of BI. Only 2% of the 15% of the Finance department users had not received training of the BI system.

Most of the respondents had above average knowledge of the FINONNE system. All the credit department respondents who were users of FINONNE had received training.

Table 4.9: Knowledge and Training of Business Intelligence (BI) System

Knowledge of BI system	Have you ever received training on BI system	What BI system do you use?	% of Respondents
Average	No	OBIEE System	2%
		Solarwinds System	4%
	Yes	Finnone System	4%
		Solarwinds System	2%
		Thomson Reuters/Bloomberg System	2%
Good	No	Siebel/Avaya System	4%
	Yes	Finnone System	4%
		OBIEE System	4%
		Siebel/Avaya System	7%
		Solarwinds System	15%
		Thomson Reuters/Bloomberg System	7%
Poor	No	Siebel/Avaya System	2%
		Solarwinds System	2%
Very Good	Yes	Finnone System	4%
		OBIEE System	9%
		Siebel/Avaya System	13%
		Solarwinds System	9%
		Thomson Reuters/Bloomberg System	4%
Total			**100%**

Source: Researcher (2014)

The study findings in table 4.9 indicated that Most of the respondents had above average knowledge of the Reuters and Bloomberg system. All the treasury department respondents who were users of Reuters/bloomberg had received training. Most of the respondents had above average knowledge of the solarwinds system. Only 2% were below average. 26% of the 33% of ICT respondents had received training, othe remainder 7% hadnt had any training.

Not all the respondents had above average knowledge of the Siebel/avaya system. 2% were below average. 20% of the 26% of marketing/customer service respondents had received training, other remainder of 7% hadnt had any training.

4.4 Strategic Value of Business Intelligence (BI) Systems

The study had sought to establish the Strategic Value of Business Intelligent (BI) systems in the organization. The study also sought to find out whether Business Intelligent (BI) systems facilitated decision making, improving quality of services and encouraging innovations. These were the key measures of strategic value of Business Intelligent (BI) systems. The results were as per below.

4.4.1 Sources of Information in Predicting Customers Issues, Improve Quality of Goods/Services and Innovation

The reports from OBIEE were very useful in predicting customer preferences and like. The credit department mainly used finnone to forecast probability of a loan repayment and monitor usage behavior. The main areas solar winds was used for decision making were speed foresic investigation and route cause analysis and also dashboard alerting and reporting , this was 28% of the respondents each. The main

areas siebel/avaya was used was analysing call drivers,and understanding market threats and opportunities by mining customer interractions , this wa 24% of the respondents and 22% respectiely.

Spotting growth opportunities,monitoring market developments and reseach tied at 11% as areas reuters/bloomberg assisted in making decisions.

Table 4.10: Source of Information in Predicting Customers Issues, Improve Quality of Goods/Services and Innovation

Source of information is used by Equity Bank to respond to customer issues and improve the quality of products/services	% of Respondents
Finnone System	13%
Analysis from Business Intelligence (BI) system	2%
Analysis from Business Intelligence (BI) system, Internet searches	2%
Analysis from Business Intelligence (BI) system, Internet searches, Periodic reports from CBK	2%
Internet searches	2%
Media reports and articles, Analysis from Business Intelligence (BI) system	4%
OBIEE System	15%
Analysis from Business Intelligence (BI) system	2%
Analysis from Business Intelligence (BI) system, Internet searches	2%
Analysis from Business Intelligence (BI) system, Internet searches, Periodic reports from CBK	2%
Analysis from Business Intelligence (BI) system, Periodic reports from CBK	4%
Media reports and articles, Analysis from Business Intelligence (BI) system	2%
Media reports and articles, Analysis from Business Intelligence (BI) system, Periodic reports from CBK	2%
Siebel/Avaya System	26%
Analysis from Business Intelligence (BI) system	9%
Analysis from Business Intelligence (BI) system, Internet searches	7%

Source of information is used by Equity Bank to respond to customer issues and improve the quality of products/services	% of Respondents
Analysis from Business Intelligence (BI) system, Periodic reports from CBK	4%
Media reports and articles, Analysis from Business Intelligence (BI) system	4%
Periodic reports from CBK	2%
Solarwinds System	33%
Analysis from Business Intelligence (BI) system	11%
Analysis from Business Intelligence (BI) system, Internet searches	13%
Analysis from Business Intelligence (BI) system, Periodic reports from CBK	4%
Media reports and articles, Analysis from Business Intelligence (BI) system, Internet searches, Periodic reports from CBK	2%
Media reports and articles, Internet searches, Periodic reports from CBK	2%
Thomson Reuters/Bloomberg System	13%
Analysis from Business Intelligence (BI) system	2%
Analysis from Business Intelligence (BI) system, Internet searches	4%
Analysis from Business Intelligence (BI) system, Internet searches, Periodic reports from CBK	2%
Media reports and articles, Analysis from Business Intelligence (BI) system	4%
Total	**100%**

Source: Researcher (2014)

4.4.2 Business Intelligence (BI) System Rating in Improving Quality of Decision Made

The study sought to explore whether business intelligence (BI) system was used to improve quality of decision making. The results are as shown on Table 4.11.

Table 4.11: Business Intelligence system rating in improving quality of decision making

BI system used	Rating of BI system in Improving Quality of decisions made	% of respondents
Finnone System	Average	4%
	Good	4%
	Very Good	4%
OBIEE System	Average	2%
	Good	2%
	Very Good	11%
Siebel/Avaya System	Average	2%
	Good	13%
	Very Good	11%
Solarwinds System	Average	4%
	Good	11%
	Poor	2%
	Very Good	15%
Thomson Reuters/Bloomberg System	Good	7%
	Very Good	7%
Total		**100%**

Source: Researcher (2014)

The study findings in table 4.11 indicated that all users of OBIEE who represent 15% of total respondents used OBIEE. 13% of them of the respondents used OBIEE to facilitate decision making. OBIEE was rated as very good in improving the quality of decisions made.

In developing of new products/services and solving customer issues, all the users of OBIEE used analysis from BI system highly compared to other sources. All users of

Finonne representing 13% of respondents used reports from Finnone when making decisions. Finonne was rated as above average in improving the quality of decisions made. 11% of them of the respondents used Finnone information to quickly to respond to customer issues and improve quality of their services.

All users of reuters/bloomberg representing 13% of respondents used reports from reuters/bloomberg when making decisions. Only 7% of them of the respondents rated Reuters/Bloomberg both as good and very good in improving quality of decisions made. A total of 13% of them of the respondents used Reuters/Bloomberg information to quickly to respond to customer issues and improve quality of their services.

Out of 33% of ICT department respondents, 30% used solarwinds when making decisions. Only 15% and 11% of the respondents rated solarwinds both as very good and good respectively in improving quality of decisions made. A total of 30% of the respondents used solarwinds information to quickly to respond to customer issues and improve quality of their services. Out of 26% of marketing and customer service department respondents, 24% used Siebel/avaya when making decisions, 11% and 13% of the respondents rated Siebel/avaya call both as very good and good respectively in improving quality of decisions made. Only 30% of the respondents used Siebel/avaya information to quickly to respond to customer issues and improve quality of their services. All the systems were equally used in each department.

4.5 Challenges of Business Intelligence (BI) systems

The main challenges were downtime at 43%, trainings needs at 26% and lack of technical support at 30%. This is in line with Lupu et.al (1997) who reported that

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about 60% - 70% of business intelligence applications fail due to the technology, organizational, cultural and infrastructure issues.

Table 4.12: Challenges of Business Intelligence (BI) systems

Challenge	Number of Respondent	%
Downtime	20	43%
Training Needs	12	26%
Lack of technical support	14	30%
	46	100%

Source: Researcher (2014)

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary of the findings from chapter four, and also gives conclusions and recommendations of the study based on the objectives of the study. The researcher evaluates the findings and gives recommendations necessary on the strategic value Business Intelligence (BI) systems at Equity bank.

5.2 Summary of Findings

The summary of findings for this study are divided into demographics information of the respondents, strategic value of Business Intelligence (BI) systems ,extent of use of BI systems and challenges of using them.

A total of 46 respondents out of a targeted 52 participated in the survey. This was an 88% response rate. Respondents were drawn from all levels of management. Most of the respondents, 30% were from strategic level this included General Managers and Senior Managers. A total of 41 % were from tactical level, this included Managers and supervisors and 28% operational level. A total of 63% of the respondents had worked in their current position for more than two years.

The respondents were drawn from different departments as follows 33% from the IT Department, 15% from the Finance, 11% from Customer Service, 13% from Credit, 13% from Treasury and 15% from Marketing departments. Only 57% of the respondents had a degree in other area other than ICT, 26% had masters. All the respondents had at least hands on or basic IT training. The main BI systems used by

Equity Bank were as follows; 15% OBIEE, 13% Finonne, 13% Thomson Reuters/Bloomberg, 33% were solarwinds and 26% was Siebel/avaya call. It is important to note than different departments used the system specific to their area.

The study sought to determine to what extent Business Intelligence (BI) systems were being used at Equity Bank. The study found that the BI systems were mainly used for decision making, 96% of the respondents used BI system when arriving at a decision. All the departments sampled used a BI system custom made to their operations. OBIEE was used in Finance, Finnone in credit, Thomson Reuters/Bloomberg in treasury, solarwinds in ICT and Siebel/avaya call in marketing and customer service departments.

Thomson reuters /Bloomberg were mainly used to make decisions on forex and interest rates trading, spot growth opportunities and monitor market developments, OBIEE provided Finance department drive innovation and make business insights. Finonne was mainly used by credit department for credit scoring, loan portfolio management and acquisition targeting.

Both marketing and customer service used Siebel/avaya call was used to drive intelligent customer interactions with unified view of their customer relationships across the bank, effectively anticipate customer needs, improve customer retention and identify opportunities to cross-sell and up-sell. Solarwinds was mainly used in ICT for real-time predictive intelligence, real-time tactical support to drive enterprise actions that react immediately to events as they occur Obtain broader compliance support, stronger security intelligence, and a faster time-to-respond duration with embedded file integrity monitoring and active response.

The finding of the study shows Equity Bank gained strategic value by using Business Intelligence (BI) systems. Users mainly gained strategic value by using the BI systems for decision making, predict customer's preferences and likes, respond to customer issues and drive innovation.

According to Ubiparipović and Đurković (2011) BI systems enable banks to anticipate future behaviour of the system and most of their business indicators, all systems in the study could predict outcomes .OBIEE was able to manage and exploit the information potential of multitude of internal and external data from sales, demographics, economic trends, competitive data, consumer behavior, efficiency measures, financial calculations. Siebel/avaya call system users were able to build stronger relationships with customers, partners, and suppliers. According to (Olszak & Ziemba, 2006) Business Intelligence (BI) systems enable both descriptive and predictive segmentation of customer based on grouping customers in homogenous segments; this was the case for Finonne which was used for credit scoring.

5.3 Conclusion

The findings show that Business Intelligence (BI) systems add strategic value at Equity Bank. The finding of the study also shows that Equity Bank through BI systems is able to improve service delivery by properly managing the organization information and using it in improving decisions made by the organization. Therefore BI systems have strategy value given that it has improved decision making, managing customer's issues and innovation.

The study indicates that Business Intelligence (BI) systems made contribution to value networks and not merely financial benefits, but also knowledge, among other

benefits. The study confirmed that BI systems are important investment that institutions need to consider to remain competitive. It is however important to ensure that institutions that choose to invest in the BI systems consider the challenges involved.

The study also revealed training and education as core to the operation of Business Intelligence (BI) systems and for that reason the study concluded that adequate and relevant training of staff is necessary in running of the BI systems. To address the challenges arising from use of BI systems the study concludes that it is important to consider system integration; it is important to ensure the adopted system is compatible with the existing system and software. Finally the study concludes that it is important to have correct budgetary allocations to overcome the challenges of cost overrun.

5.4 Recommendations for Policy and Practice

The study recommended that there should be more awareness on the use and Business Intelligence (BI) systems in Equity bank. As much as extent of use is concerned, there is need for the Equity Bank to explore what other ways it can leverage more on these systems. There is also need for the organization to train its staff in the best use of Business Intelligence systems in order to ensure that there is proper use for maximum benefit of the concept and to benefit more on the value that the organization may get from Business Intelligence.

Equity Bank needs to evaluate whether there has been proper investment in human resource and systems as an integral part of the different resources that exist in the organization and on whether the organization is maximizing on the benefits that are

associated with the use of BI systems as a strategic plan meant to add value to the operations of the organization

5.5 Limitations of the Study

The study was a case study and was based on only one Bank; the findings of the study may therefore not be fully applicable to other banks and or organizations as they may have different experiences even under the same circumstances. Different banks or organizations may view the strategic value of BI differently and therefore may not approach it in the same way. The study was also online based, most users had to inquire how to go about it, this might have limited the amount of information the respondents gave.

5.6 Suggestions for Further Study

The researcher recommends further research on cost benefit analysis of Business Intelligence (BI) systems since the study focused on the strategy value of BI approach only. The researcher also recommends further research in the area of unutilized modules and resource of BI. This also came up during the interviews hence the need for an in-depth study of the same.

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APPENDICES

APPENDIX I: LETTER OF INTRODUCTION

TO WHOM IT MAY CONCERN

Dear Sir/Madam:

REQUEST FOR COLLECTION OF DATA

My name is **Kamara Daniel M**, a post-graduate student at the school of business, University of Nairobi. I am conducting a research study titled *"strategic value of business intelligence systems"*.

You have been selected to form part of this study. Kindly assist by filling in the attached questionnaire. The information given will be treated in strict confidence and will be purely used for academic purposes.

Your assistance and cooperation will be highly appreciated.

Yours Sincerely,

_____

Kamara Daniel M (Student)

D61/67494/2011

THE STRATEGIC VALUE OF BUSINESS INTELLIGENCE SYSTEMS

This questionnaire is designed to collect information on the strategic value of business intelligence systems in Kenya.

The information obtained will be used for academic purposes only. Confidentiality of the information and the respondents will be highly observed.

This questionnaire will be completed by: 15 managers from the IT Department, 7 from the Finance, 7 from Customer Service, 8 from Credit, 6 from Treasury and 9 from Marketing departments.

Instructions:

1. Kindly respond to the following questions by placing a tick ☐ in front of the most appropriate response.

2. Where explanations are required, use the space below the items.

3. Kindly answer all questions.

SECTION A: PERSONAL INFORMATION

1. What's your role in the company and under which department are you in

ROLE		DEPARTMENT	
☐	Director /CFO/CIO	☐	ICT
☐	General Manager	☐	Finance
☐	Senior Manager	☐	Treasury
☐	Manager	☐	Credit
☐	Supervisor	☐	Marketing
☐	Officer	☐	Customer service

Others (please specify)

_____   _____

2. How long have you been working in the current position?

☐ <2 Years   ☐ 2-5Years   ☐ 6-10 Years ☐ >10 Years

3. What's your highest level of formal of education attained

ICT RELATED   **OTHERS**

☐   Master's Degree in IT related area   ☐ PHD

☐   Diploma in IT related area   ☐ Masters

☐   IT Professional Certification   ☐ Degree

☐   Basic IT Training   ☐ Diploma

☐   Hands on Training   ☐ Certificate

☐   BSc. Degree in IT related area

☐   Other_____   ☐ Other_____

SECTION B: EXTENT TO WHICH BUSINESS INTELLIGENCE IS USED IN EQUITY BANK.

4. What BI system do you use?

☐   OBIEE

☐   Finnone

☐   Thomson Reuters

☐   Bloomberg

☐   Solarwinds

☐   Siebel/Avaya

5. How often do you use Business Intelligence (BI) system?

☐   Rarely

☐   Always

☐   Never

6. Please list areas you use Business Intelligence (BI) system for?

7. Please list features of Business Intelligence (BI) system that you have ever interacted with in your current role?

8. What features do you feel if added to your Business Intelligence, (BI) system will enable you to make better use of the system?

   _____

9. Do you retrieve or receive any reports from the Business Intelligence (BI) system?

   ☐   Yes   ☐   No

10. Have you ever received training on how to use the features provided by the Business Intelligence (BI) system currently implemented by Equity Bank.

   ☐   Yes   ☐   No

11. How do you rate your knowledge of Business Intelligence (BI) system used by Equity Bank

   ☐   Very Good
   ☐   Good
   ☐   Average
   ☐   Poor
   ☐   Very Poor

SECTION C: WAYS IN WHICH EQUITY BANK USES BI SYSTEM TO GAIN STRATEGIC VALUE.

12. Please list Business Intelligence (BI) system tools that you use to help you in decision making?

13. Do you normally use reports provided by Business Intelligence (BI) system when making decisions?

☐   Yes   ☐   No

14. Select at least one way that clearly describes how you arrive at decisions at Equity Bank?

☐   Personal Gut (individual feeling)

☐   Peers group discussions

☐   Using Highly Analyzed reports from BI system

☐   Reports from Application system such ERP, CRM or HRM systems

☐   Other:_____

15. How would you rate the use of Business Intelligence (BI) system in helping you improve the quality of the decision made on day to day basis?

☐   Very Good

☐   Good

☐   Average

☐   Poor

☐   Very Poor

16. What source of information is used by Equity Bank to respond to customer issues and improve the quality of the quality of their services: tick at least one

☐   Media reports and articles

☐   Analysis from Business Intelligence (BI) system

☐   Internet searches

☐   Periodic reports from CBK

☐   Other: _____

17. How do you rate reports from Business Inte1ligence (BI) System in helping predict customer preferences and like?

☐   Very useful

☐   Useful

☐   Average

☐   Not useful at all

☐   I don't use such analysis reports

18. From your opinion what else should done to help realize strategic value of Business Intelligence System at Equity Bank (Be as detailed as possible)?

_____

SECTION D: CHALLENGES AND BENEFITS OF BUSINESS INTELLIGENCE SYSTEM

19. What are the major benefits of using Business intelligence system?

_____

20. What challenges do you face when using Business Intelligence system?

_____