USE OF ENTERPRISE REPORTING SYSTEMS AT KISII BOTTLERS (K) LTD

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2011

DECLARATIONS

DECLARATION BY THE CANDIDATE

This thesis is my original work and has not been presented for award of a degree in any other University. No part of this thesis may be reproduced without the prior written permission of the author and/or Moi University.

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DEDICATION

I dedicate this work to my parents especially my mother Mrs. Bonaventure Moraa, my wife Mrs. Angeline Makiya, and my daughter Abisila Makiya, who have all been a constant source of encouragement in my life.

ABSTRACT

Reports have widely indicated the need for organizations to step up utilization of electronic data through use of Enterprise Reporting (ER). In this regard, this study sought to investigate the use of enterprise reporting at Kisii Bottlers (K) Ltd. with a view to developing a solution to enhance the use of enterprise reporting in the company. The objectives of the study were; to assess the extent of use of enterprise reporting systems at Kisii Bottlers (K) Ltd., to identify the challenges experienced in the use of enterprise reporting systems, to determine appropriate Key Performance Indicators and Service Level Agreements that can be tracked to enhance use of enterprise reporting systems, to assess the benefits of systematic tracking of the identified Key Performance Indicators and Service Level Agreements in the use of enterprise reporting systems and to design and develop a systematic supervision reporting system to enhance use of enterprise reporting systems. The research was guided by systems theory, whereby Enterprise Reporting systems were regarded key components of the integrated enterprise information systems of a typical company. Case study method was employed, and data was collected through the use of interviews. Purposive sampling was used to get a total of forty two (42) respondents, drawn from business and IT functions of the organization. Those interviewed included; Two (2) professionals in the IT services provision category, ten (10) business managers and thirty (30) operational level employees. Thematic analysis method was used to analyze responses obtained through interviews. Findings revealed that reports were the most commonly used electronic information resources for management decision-making. However, respondents were dissatisfied with the level of use of reporting in the company but appreciated the role that Enterprise Reporting could have in decision making, underscoring the impact that use of Enterprise Reporting could have on management decision making. The factors that were revealed as being influential in the overall status of the use of ER systems include; report design and development, report generation, report distribution, report review and revision. It was concluded that utilization of electronic data through Enterprise Reporting could be improved through systematic tracking of the measures related to the influential factors in the use of Enterprise Reporting systems, to help relevant persons take appropriate and timely steps to deal with challenges. A supervision reporting system was designed and developed to track the use of reporting systems in the company.

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ABBREVIATIONS AND ACRONYMS

BI: Business Intelligence

BPM: Business Process Management

BPR: Business Process Re-engineering

DDL: Data Definition Language

DML: Data Manipulation Language

ER: Enterprise Reporting

ERP: Enterprise Resource Planning

ERS: Enterprise Reporting System

ETL: Extract Transform and Load

KPI: Key Performance Indicator

OLAP: Online Analytical processing

PI: Performance Indicator

RDBMS: Relational Database Management System

SDI : Selective Dissemination of Information

SLA: Service Level Agreement

SQL: Standard Query Language

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CHAPTER ONE

1 INTRODUCTION

1.1 BUSINESS INTELLIGENCE

Hans Peter Luhn (1958) defines the term business intelligence as the ability to apprehend the interrelationships of presented facts in such a way as to guide action towards a desired goal. Howard Dresner (later a Gartner Group analyst) in 1989 proposed Business Intelligence as an umbrella term to describe concepts and methods to improve business decision making by using fact-based support systems. According to Gibson, Arnott & Jagielska, (2004), the term refers to technologies, applications and practices for the collection, integration, analysis, and presentation of business information. Vitt et al (2002) describe BI as a relatively new area in computing but do acknowledge however that the term is multifaceted and is used by different pundits and software vendors to characterize a broad range of technologies, software platforms, specific applications, and processes.

BI encompasses a range of business applications such as data mining, querying, analysis, and management reporting. Business Intelligence software is therefore software that enables users to obtain enterprise-wide information more easily. Such products are considered a step up from the typical decision support tools because they more tightly integrate querying, reporting, OLAP, data mining and data warehousing functions (TechWeb encyclopedia, 2008). The purpose of BI is to improve the effectiveness of business decision making through provision of historical, current, and predictive views of business operations, most often using data that has been gathered into a data warehouse or a data mart, and occasionally working from operational data. (Information Builders, 2007).

Business Intelligence 2.0 (BI 2.0) refers to the new generation of Business Intelligence software that is more proactive than the earlier generation of BI in the sense that it helps make decisions as or before events happen rather than mere analysis of data after events happen (Raden Neil, 2007).

1.2 ENTERPRISE REPORTING

Whereas BI encompasses the whole range of technologies, applications and practices for the collection, integration, analysis, and presentation of business information, Enterprise reporting (ER) forms just part of it (Gibson, Arnott & Jagielska, 2004). Enterprise reporting is a means by which companies attempt to sift the vast amounts of electronic data collected to glean insights that are handy in management decision making (Information Builders, 2007). The recent wide-use of computer-based information systems to convert, store, protect, process, transmit and retrieve information in this digital age is growing rapidly and is widely being used by businesses to gain an edge on competition. This has lead to companies continuously collecting large amounts of electronic data, and in various formats, through ERPs and/or other computer-based information systems. The intricately growing voluminous electronic data possessed by companies has called for systematic implementation of appropriate mechanisms to facilitate derivation of meaningful information for management decision making out of the large amounts of electronic data.

Implementation of ER involves the activities of extracting data, transforming it and loading it into a reporting data warehouse, before using one or more reporting tools to obtain well presented reports (Gregory Hill, 2008). ER delivers information to decision-makers within an organization and provides them with business intelligence that supports them in their work. It allows companies and organizations to gain a better understanding of all of their businesses by putting critical information in the hands of all

those who need it – employees, managers, stakeholders, and customers (Information Builders, 2007). The reports can take the form of graphs, text and tables and, typically, are disseminated through an intranet as a set of regularly updated web pages. Alternatively, the reports may be emailed directly to users or simply printed out and handed around, in the time-honored fashion (Gregory hill, 2008). Examples of reporting tools currently in the market include; Actuate, Crystal reports, Oracle Reports, and Business Intelligence Reporting Tool (BIRT).

The important characteristics of enterprise reporting tools include; Data source connection capabilities, Scheduling and distribution capabilities, Security Features, Customization capabilities, Export capabilities, Integration with the common software environment (1keydata.com, 2008). These functionalities make it possible for an organization to utilize all of its information assets appropriately in decision making.

1.3 SOFT DRINKS BOTTLING INDUSTRY

The soft drinks industry comprises companies that manufacture nonalcoholic beverages and carbonated mineral waters or concentrates and syrups for the manufacture of carbonated beverages (Robert F. Barratt, 2007). The soft drinks industry may also be regarded as the non-alcoholic beverages industry. The name "soft drink" specifies a lack of alcohol by way of contrast to the term "hard drink". (Robert F. Barratt, 2007).

The Soft drinks industry can trace its history back to the mineral water found in natural springs before scientists soon discovered that gas carbonium or carbon dioxide was behind the bubbles in natural mineral water (Angua, 2009). Naturally occurring bubbling or sparkling mineral waters have been popular for thousands of years. Development of the first man-made sparkling or carbonated water is credited to Joseph Priestley who invented a method of "pushing" carbon dioxide into water by dissolving it

under pressure, thus creating fairly long-lasting bubbles. The technique led to development of the soft-drink industry (Robert F. Barratt, 2007). Most soft drinks are still carbonated to give drinks a "tangy bite" and to stimulate the tongue. Furthermore, because scent is an important part of taste, the flavors carried as vapors in the bubbles enhance taste (Robert F. Barratt, 2007).

1.4 SOFT DRINKS INDUSTRY IN KENYA

The soft drinks bottling industry in Kenya consists of a number of players, and Coca-Cola is the most dominant of all the local and international companies in the soft drinks bottling industry currently operating in Kenya (Euromonitor, 2008). Other main active companies in the soft drinks bottling industry include; East African Breweries Limited (EABL), Softa bottling company Ltd. (SBCL) a subsidiary of Kuguru Food Complex Ltd. (KFCL) and Milly Fruits Processors (MFP). The Coca-cola multinational soft drinks bottling company comprises the following franchise firms within in the country; Mt. Kenya bottlers, Nairobi Bottlers, Coastal Bottlers, Kisii Bottlers, Equator Bottlers and Rift Valley Bottlers (Business Daily, 2008). These firms are run independently and have specific areas where they distribute their products and therefore the companies do not compete with one another in the distribution of their products. The products distributed by the Coca-Cola Company include; Coke, Sprite, Fanta, Stoney, Ginger Ale. Other products sold by this company except sodas include; Dasani water and Sunflower juice (Company profile- Kisii Bottlers (K) Ltd., 2008).

East African Breweries Limited (EABL), which is a the main player in the hard drinks industry, is another player in this industry that has continued its onslaught on the soft drinks market with the launch of a second soft drink brand, Alvaro, on March 2008 (Euromonitor, 2008). The move, follows its launch of non-alcoholic Malta Guinness a few years back, and sets the stage for an aggressive numbers war with the global soft

drinks giant, Coca-Cola, and the locally owned Softa Bottling Company Limited and Milly Fruits Processors (Euromonitor, 2008).

Kuguru Food Complex Ltd. (KFCL) is the manufacturer of Softa and is the first indigenous Kenyan company to make carbonated soft drinks. The company's product, Softa, was launched in August 1998 to rival products of the then already well established soft drinks company Coca-Cola. The most popular products of this company are Softa Orange and Babito Blackcurrant (Softa, 2008).

Milly Fruits Processors (MFP) producing juice from raw materials that are easily available is located near the main Mombasa-Malindi highway in Kilifi District. Local farmers supply the raw materials needed in the processing of products that are manufactured at the factory. Milly Fruit Processors are the manufacturers of pure fruit Products like Picana Mango, Picana Passion, Picana Orange, Picana Mango Passion, Picana Mango Orange and Pineapple Squashes (Milly Fruit Processors, 2001).

1.5 KISII BOTTLERS (K) COMPANY LIMITED

Kisii Bottlers (K) Ltd. is one of the Coca Cola Company’s franchise companies in the larger Coca – Cola Africa and it specifically lies under the Coca – Cola East Africa administrative region (Appendix 11). It is one of the currently existing six bottling companies in Kenya and is situated in the western region of the country. Others include; Nairobi Bottlers (K) Ltd. located in Nairobi, Equator Bottlers (K) located in Kisumu, Rift Valley Bottlers (K) Ltd. Located in Eldoret, Mount Kenya bottlers (K) Ltd. Located in Nyeri and Coastal Bottlers located in Mombasa. The company’s initial capital base was obtained from the Industrial Commercial Development Corporation (ICDC), which owns the majority of the shares (Kisii Bottlers (K) Ltd., 2008).

The buildings at Kisii Bottlers (K) Ltd. were completed in 1988 and production started on 18th June 1989, serving market regions that were initially served by Equator Bottlers Ltd., another Coca-Cola franchise company. The region was big for the Equator Bottlers, and thus the product was not penetrating to interior areas and the Coca-Cola Africa Company proposed the location of another plant so as to reach all customers. Industrial and Commercial Development Corporation (I.C.D.C.) took up the offer of establishing Kisii Bottlers (K) Ltd. (Kisii Bottlers (K) Ltd., 2008)..

The current market regions of Kisii Bottlers (K) Ltd. cover the following areas; the larger Kisii, Homa Bay, Rachuonyo, Transmara, and Migori. For administrative purposes, these districts have been divided into five market regions namely: - Central, Northern, Southern, Western, and Transmara (Kisii Bottlers (K) Ltd., 2008).

The workforce was comprised of 188 permanent employees as at August 30, 2006 and 28 contract employees and an average of 50 daily-rated casuals every month structured as shown in the summarized organizational structure in Appendix 12 (Kisii Bottlers (K) Ltd., 2008). For administrative purposes, the workforce is divided into two major categories namely; Management Cadre and Unionisable Cadre. The management cadre consists of the Managing Director down to the supervisory level and the Unionisable cadre consists of the Charge hands to the cleaners/Turn boys (Kisii Bottlers (K) Ltd., 2008).

1.6 STATEMENT OF THE PROBLEM

The Coca-Cola multinational soft drinks Company, which is a leader in the soft drinks industry worldwide and locally, has a wide market base with many outlets. The Coca-Cola Kisii Bottlers (K) Ltd. like other Coca-Cola franchise companies has a heavy distribution channel, intended to get as much of her products as possible to customers,

resulting in the collection of a lot of relevant electronic data that is a key resource for decision making.

Computer based information systems exist in the company to gather, store, process, evaluate, and distribute needed, timely, and accurate information to management decision makers through reports but the level of use of reports is not satisfactory. Reports have widely indicated that there is need for all organizations to step up utilization of the voluminous electronic data collected to aid in management decision making through effective use of enterprise reporting systems. The recent high rates of investment on business intelligence by world leaders in information technology such as IBM and Microsoft also suggest that business intelligence in general and enterprise reporting specifically has an indispensable role to play in supporting management decision making in organizations.

Underutilization of enterprise reporting to support management decision making at Kisii Bottlers (K) Ltd. manifested in the wastage of paper through unnecessarily lengthy reports printed in the company only for a few pages of the reports to be utilized, inaccessibility of reports to some reports users in spite of the availability of report information in systems and dissatisfaction of report information by report users, among others. This underutilization of enterprise reporting to support management decision making may be associated with some limiting factors in the processes of the use of the enterprise reporting systems (Darrow, 2003).

A study into use of ER systems in the Coca-Cola Company is essential to guarantee effective and sustainable use of enterprise reporting in the company under study through systematic tracking of Key Performance Indicators and Service Level Agreements.

1.7 AIM

The aim of the research was to investigate the use of enterprise reporting at Kisii Bottlers (K) Ltd. with a view to developing a solution to enhance the use of enterprise reporting in the company.

1.8 OBJECTIVES

The objectives of the study were:

1. To assess the extent of use of enterprise reporting systems at Kisii Bottlers (K) Ltd..
2. To identify the challenges experienced in the use of enterprise reporting systems.
3. To determine appropriate Key Performance Indicators and Service Level Agreements that can be tracked to enhance use of enterprise reporting systems.
4. To assess the benefits of systematic tracking of the identified Key Performance Indicators and Service Level Agreements in the use of enterprise reporting systems.
5. To design and develop a systematic supervision reporting system to enhance use of enterprise reporting systems.

1.9 RESEARCH QUESTIONS

The research questions that the study sought to answer were:

1. What is the current situation in the utilization of enterprise reports, and other electronic data resources?
2. What are the factors determining the current status in the use of enterprise reporting systems?

3. What are the challenges facing use of enterprise reporting systems?
4. Which Service Level Agreements and Key Performance Indicators related to enterprise reporting systems, are important to track?
5. How is a reporting system a practical solution to the identified factors limiting use of enterprise reporting systems?
6. How can a supervision reporting system promote the use of enterprise reporting systems?

1.10 ASSUMPTIONS

The assumptions of the study were:

1. That Kisii Bottlers (K) Ltd. had electronic data in formats that could allow enterprise reporting.
2. That use of enterprise reporting at Kisii Bottlers Ltd. could be enhanced through systematic means.

1.11 RATIONALE AND SIGNIFICANCE OF THE STUDY

While this study was confined to Kisii Bottlers (K) Ltd., its findings can be of relevance to a wider group of related organizations. Thus this study hopes to create an in-depth understanding of the issues related to use of ER systems and make a contribution to the existing knowledge on ER and BI in business. The study also hopes to reveal useful information that is handy in shaping policies of IT management in order to facilitate better use of ER for realization of organizational goals.

The study hopes to instigate interest in other people into advancing ER through endeavoring to design and develop projects related to ER as expressed in the suggestions for further research. The research also hopes that the implemented model

could be further extended to form a customizable supervision reporting solution platform to the practical challenges facing application of IT at large in organizations.

1.12 SCOPE

The research was limited to Coca-Cola Kisii Bottlers Kenya Ltd. and was conducted between September 2008 and January 2009. The findings of the research could however be applied to other related companies in the soft drinks industry with due caution.

1.13 LIMITATIONS

The researcher relied on information obtained from informants in the selected functions of the organization, without carrying out a personal assessment of the company's reporting systems which could provide more information relevant to the research. The inability to access these sources of information was due to the confidentiality associated with them. This, however, did not greatly affect the research as probing was used during interviews to get most of the information that would have been got more easily and accurately through personal assessment of the company's reporting systems.

1.14 OPERATIONAL DEFINITION OF TERMS

Business Intelligence

Business Intelligence is the technologies, applications and practices for the collection, integration, analysis, and presentation of business information to aid in decision making.

Enterprise reporting

Enterprise reporting is the process of extracting data, transforming it and loading it into a reporting data warehouse and using a re reporting tool to obtain well presented reports for decision making.

Report design and development

Report design and development is the process of creation of conceptual report solutions and transformation of the conceptual solutions into executable reports

Report generation

Report generation is the process of production of viewable reports from stored electronic data at a particular time.

Report distribution

Report distribution is the process of delivering generated reports to the intended users in the right form using a specific medium.

Report review and revision

Report review and revision is the process of identifying possible modifications that can be incorporated to improve the quality of reports and the incorporation of those modifications.

CHAPTER TWO

2 LITERATURE REVIEW

2.1 INTRODUCTION

This chapter contains two sections. The first section covers the theoretical framework upon which the study is based and the second section covers reviews of studies and other literature related to the research and their findings.

2.2 THEORETICAL FRAMEWORK

A number of theories were considered in this study; among them is the Vroom and Yetton's decision participation contingency theory or the Normative decision theory. This theory is among the popular theories in decision making and according to this theory, the effectiveness of a decision procedure depends upon a number of aspects of the situation including: the importance of the decision quality and acceptance; the amount of relevant information possessed by the leader and subordinates; the likelihood that subordinates will accept an autocratic decision or cooperate in trying to make a good decision if allowed to participate; the amount of disagreement among subordinates with respect to their preferred alternatives. This model recognizes the amount of relevant information possessed as a factor in management decision making, however, the model considers other aspects of decision making that were not captured in this study such as; the importance of the decision quality and acceptance, the likelihood that subordinates will accept an autocratic decision or cooperate in trying to make a good decision if allowed to participate and the amount of disagreement among subordinates with respect to their preferred alternatives. Since the study focused on stored electronic data which is a source of information for decision making through enterprise reporting,

and did not dwell on the other aspects of the model. The model was found unsuitable and Systems theory was chosen to inform the study.

2.2.1 SYSTEMS THEORY

The research is guided by systems theory. Systems theory is a framework by which one can analyze and/or describe any group of objects that work in concert to produce some result. This could be a single organism, organization or society, or electro-mechanical or informational artifact (Klein, Julie Thompson, 1990).

The main argument behind systems theory is that a system consists of various components or sub systems that must function together for the systems to deliver the anticipated result. If a sub system fails, the whole system is put in jeopardy. A system is therefore a group of cooperating components that must work harmoniously to accomplish an intended purpose (Klein, Julie Thompson, 1990). In the context of this research, the systems are the integrated computer based management information systems in organizations that gather, store, process, evaluate, and distribute needed, timely, and accurate information to management decision makers. This timely distribution of accurate and needed information to decision makers described above forms part of the ultimate purpose of the computer based management information systems in organizations, called reporting. Reporting is therefore a fundamental component of computer based information management systems and without which the whole management information system is put at jeopardy and will fail to deliver on its purpose. In this regard, reporting is viewed as a key component of an entire information system and under utilization of it will cause a gap in the whole management information system, causing the whole system to fall short of its realization of delivering information to decision makers and denying an organization an edge in the realization of its organizational objectives.

The reporting components of management information systems also consist of units that must work cooperatively to achieve the intended purpose of delivering timely and needed information to decision makers. In the context of this study, the components are based on data transformation from when it is captured, as raw data, until when it is useful information for decision making.

2.2.2 GENERAL REPORTING SYSTEM MODEL

An Enterprise Reporting System (ERS) consists of components that together make up the reporting system and a generic pattern common across all organizations and technology architectures looks like the one shown in Fig. 2.1.

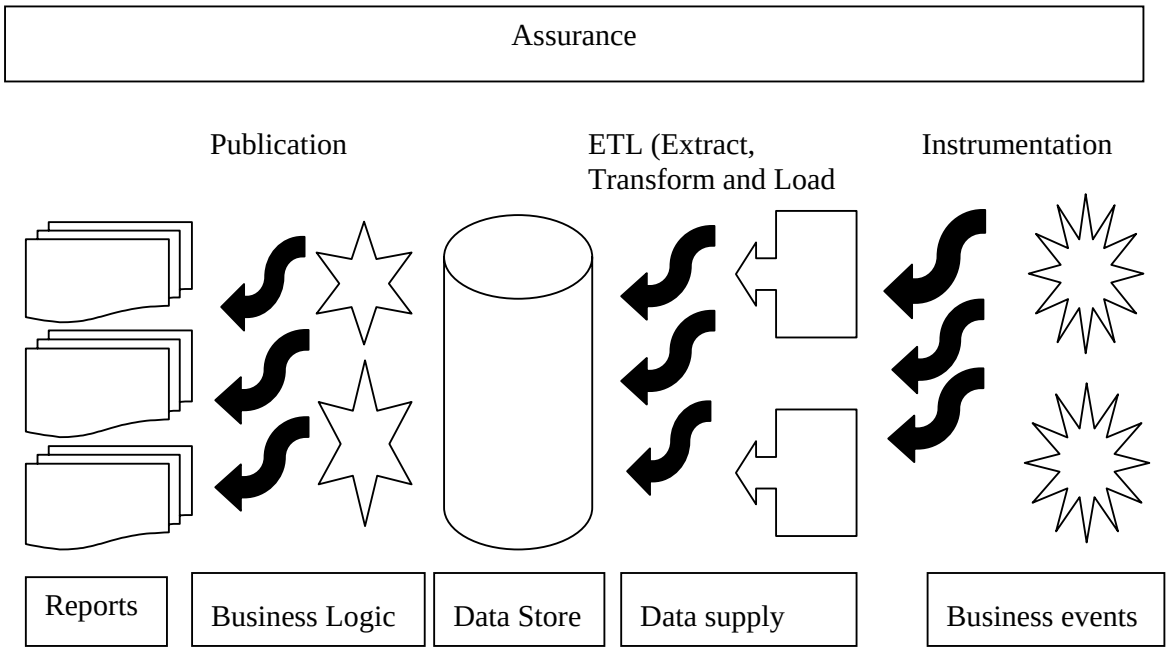

Fig. 2.1: A graphical modification of Gregory Hill's Enterprise Reporting Model (Gregory Hill, 2008).

2.2.2.1 Definition of terms in the Gregory Hill's ER Model

Instrumentation

This includes devices that measure some aspects of the real-world as events and record those aspects.

Data Supply

This includes systems that take the recorded events and deliver them reliably to another system for storage.

ETL (Extract, Transform and Load)

This is the process where the recorded events are checked for quality, put into the appropriate format (transform) and inserted into the data store (load).

Data Store

This is a repository for the data and metadata. It can be a flat file or spreadsheet, but usually a relational database management system (RDBMS) setup as a data mart, data warehouse, and operational data store (ODS).

Business Logic

These are the explicit steps for how the recorded events are to be converted into metrics, often implemented in a script query.

Publication

This is a system that builds the various reports and hosts them or disseminates them.

Assurance

Any ER system must offer a quality service to its user base. This includes determining if and when the right information is delivered to the right people in the right way.

2.3 REVIEW OF RELATED LITERATURE

2.3.1 THE NEED FOR FASTER ACCESS TO BUSINESS INFORMATION

A lot of money has been spent on enterprise applications such as Oracle and Siebel to replace legacy applications, improve efficiencies and gain greater competitive advantage and a lot more have been spent installing and customizing these applications to meet each company's unique business requirements (Butler Group, 2001). Above and beyond the improved efficiencies, a much greater potential lies within this substantial investment and remains largely untapped. (Forrester, 1999). According to Forrester Research, the next wave of competitive advantage will come from empowering front line decision makers with the information that lives within these powerful systems.

Similarly, Butler Group believes that business intelligence (BI) arises from the synergy between decision makers and the tools they employ. True BI systems include not just the tools and technologies that support quality decision-making, but also the decision makers themselves. Once data is obtained from a variety of sources and integrated with other relevant data the derived information must be delivered to the decision maker in a way that can be meaningfully used and analyzed and when business users can begin to obtain rapid answers to their questions, business intelligence becomes a strategic weapon (Butler Group, 2001).

A faster-paced market, a shifting business model, and an investor community that demands timely information on a company's status are only a few of the concerns faced by today's executives and managers. With mergers, acquisitions and new business initiatives, the need for access to vital information only increases. The amount of data stored will continue to escalate, along with the number of users and their increased requirements for the use of that data. According to a META Group analyst, "Enterprises having difficulty coping with three terabytes of data today need to quickly find solutions

for dealing with 300 terabytes of data tomorrow." (Clements, David, 2001). To optimally guide the corporate ship on the right direction, one factor will remain paramount: the need for data. Users will always overwhelm the IT department in their search for answers to business questions unless a cost-effective solution which enables users to help themselves is present.

2.3.2 PURPOSE OF ELECTRONIC REPORTS IN ORGANIZATIONS

Enterprise reporting is generally categorized under three main categories based on the level of detail of the information the reports display and how much integrated the information is with other information. The main categories include; Metric Management, Dashboards, and Balanced Scorecards (Gregory Hill, 2008).

2.3.2.1 Metric Management Reports

Metric Management reporting is the kind of reporting that focuses on business performance management through outcome-oriented metrics. These can be Service Level Agreements (SLAs) for external management and Key Performance Indicators (KPIs) for internal management (Gregory Hill, 2008). These KPIs are financial and non-financial metrics used to help an organization define and measure progress toward organizational goals (Gibson, Arnott & Jagielska, 2004). SLAs on the other hand are formally negotiated agreements between two parties. SLAs serve as a contract between customers, or between service providers. They record the common understanding about services, priorities, responsibilities, guarantee, and depending on the organization, those metrics may include cost, time, requirements, risk, customer satisfaction, or other measures critical to the management team (Carl Pritchard, 2004). Typically, these KPIs and SLAs are agreed targets to be tracked against over a period of time (Gregory Hill, 2006). The tracking reflects the business performance based on the set goals, targets,

checks, and balances that continuously determine decision-making (Carl Pritchard, 2004).

2.3.2.2 Dashboard Reports

Dashboard reports are reports to senior management that provide an at-a-glance perspective on the current status of an undertaking in the context of predetermined metrics for that undertaking (Joel Litherald, 2007). Dashboards provide management with a quick understanding of the current posture of an undertaking, without a detailed explanation of the causes or solutions. A popular idea is to present a range of different indicators on the one page but this approach should allow managers to customize their dashboard view, and set targets for various metrics (Gregory Hill, 2006). It's common to have visible signals, sometimes using colors such as Red or green, to draw management attention to particular areas regarding goals, targets, checks, and balances defined for performance (Gregory Hill, 2008). A dashboard is operational and reports information typically more frequently and usually with measures. Each dashboard measure is reported with little regard to its relationship to other dashboard measures (Business Technology Group, 2008). Dashboard measures do not directly reflect the context of strategic objectives. This information can be more real-time in nature, like an automobile dashboard that lets drivers check their current speed, fuel level and engine temperature at a glance (Business Technology Group, 2008). It follows that a dashboard should ideally be linked directly to systems that capture events as they happen, and it should warn users through alerts or exception notifications when performance against any number of metrics deviates from the norm or what is expected.

2.3.2.3 Scorecard Reports

Scorecards on the other hand present an integrated view of success in an organization. They chart progress toward strategic objectives. A scorecard displays periodic snapshots of performance associated with an organization's strategic objectives and plans measures (Business Technology Group, 2008). It measures organizational activity at a summary level against pre-defined targets to see if performance is within acceptable ranges. Its selection of KPIs helps executives communicate strategy to employees and focuses users on the highest priority projects, initiatives, actions and tasks required to execute plans (Business Technology Group, 2008). Scorecard KPIs ideally should be derived from a strategy map rather than just a list of important measures that the executives have requested to be reported. Scorecard KPIs should have cause-and-effect linkages like statistical correlations. Directionally the employee-centric innovation, learning and growth perspectives, the KPIs should reveal the cumulative build of potential to realized economic value (Gregory Hill, 2008).

2.3.3 USE OF ENTERPRISE REPORTING IN ORGANIZATIONS

ER that is viewed as a part of BI is an important growth area in information technology, and as such, warrants academic attention. Despite the current IT slowdown in industry, ER software vendors continue to report substantial profits (Chen 2002; Lei 2002; Whiting 2003).

Enterprise Reporting is designed to support the process of decision-making and is not a new technology but a natural outgrowth of a series of previous systems designed to support decision making (Gray, 2003, p. 10). After spending years and possibly millions of investment money in ERP-style systems, many companies now store vast amounts of transactional data. The role of ER is to extract the information deemed central to the

business, and to present or manipulate that data into information that is useful for managerial decision support (Business Objects, 2007). In their simplest form, these tools permit a decision maker to access an up-to-date, often consolidated, view of business performance (Business Technology Group, 2006).

The unmet needs that dashboards and scorecards are created to address often serve as the catalyst for line-of-business managers asking for them to be created in their organizations. Yet to get a report created, line-of-business managers nearly always must rely on their Information Technologies department to analyze the underlying processes that the dashboard will be used to provide information for, then a systems analysis and development plan must be created to integrate systems that may not be interlinked or integrated today (Hedgebeth, 2007). This second step is essential for getting the necessary data into a single system of record (Pestorius, 2007) so that the necessary metrics and KPIs can be calculated and then published into the reports. Software companies that produce BI applications and tools have continually been adding to the feature set of integration utilities, beginning to offer Business Process Management (BPM) and Business Process Re-engineering (BPR) workflow tools that are used to streamline the underlying processes dashboards and scorecards are used for reporting from (Burns, 2005).

As a result of these developments in integration functionality, feature sets, and the use of BI applications to streamline processes through BPM and BPR functions, the costs of BI applications that are used for creating reports has dropped significantly in the last three years (Gantovich, 2007) and this has made it possible to create reports relatively quickly. The integration of BPM, BPR and BI, including the ability to quantify the pay-off of redefining key processes that accounting, financial, operations, marketing, sales

and service departments of an organization rely on is becoming the new standard by which companies measure their dashboard and scorecard projects (Floyd, 2003).

The underlying platforms used for supporting BPM and BI integration also include portal-based technologies at the presentation layers of their architectures, which also minimizes the time required on the part of IT management staffs to implement dashboards and scorecards on the part of line-of-business managers (Politiano, 2007). Examples of these platforms includes Microsoft's SharePoint Services platform, oracle's Fusion platform that incorporates that company's acquisition of Hyperion BI applications, and SAP's NetWeaver Service-Oriented Architecture (SOA), all of which support analytics functionality as a foundational part of their architectures (Howson, 2007).

Dashboards are proliferating throughout organizations globally due to the economies of BI applications and the opportunity IT departments see for being able to re-define processes that have been in need of improvement (Williams, 2007). The impact of this proliferation of dashboards within many organizations is an accentuated level of accountability and performance measurement, in addition to urgency around tactics that increase the KPIs performance of interest in the short term (Dover, 2004). The competitive advantage that emanates from the rapid ROI which is attainable through the development, deployment and use of dashboards are discussed in the following section of this paper, yet the immediate gain is averting risks from making decisions based on incomplete or inaccurate information versus the use of real-time data.

Increasingly organizations are realizing that they key to remaining competitive in the modern marketplace includes maximizing one's internal resources. More and more organizations are adopting more diverse work populations offering a comprehensive resource of knowledge and data that may ultimately improve organizational efficiency

and growth. What better way to track internal resources than through comprehensive ER that enable quick reports of key business units. Business Intelligence is modernizing the way that people not only share information within the organization but also the way that managers are "managing" their human capital and resources (Academon, 2006).

Enterprise reporting applications have the potential to dramatically improve productivity, reduce costs, and increase efficiencies in both front- and back-office business units, including sales, customer service, marketing, manufacturing, engineering/design, accounting, and human-resource organizations. But to be truly effective, these applications need to present users with key information from their own data sources, as well as from related internal and external applications (MicroStrategy, 2008).

2.3.4 USE OF BUSINESS INTELLIGENCE IN ORGANIZATIONS

As business profits decline, organizations are recognizing that the provision of quality information is a key to gaining competitive advantage. Supported by increasing improvements in storage, data warehousing and OLAP solutions, the BI market is expected to continue to rise into the coming years and forecasts predict the BI field will grow at 23% annually (Darrow, 2003).

BI is an approach to management that allows an organization to define what information is useful and relevant to its corporate decision making. (Vitt, 2002, p.13). According to Whitehorn there is little consensus on a definition for BI; often it depends on who is defining it, and frequently, what they are selling. For instance, ‘Business Intelligence: The IBM Way’ has a very specific focus on data warehousing and on-line analytical processing (OLAP) (Whitehorn & Whitehorn, 1999). Not surprisingly, IBM’s product suite (IBM Visual warehouse and DB2 OLAP server) fits in perfectly with their BI

focus. Whilst acknowledged that there is little academic research on BI (Grey, 2003; Jagielska et al 2003), there is a growing body of literature, largely vendor and industry focused. This literature tends to centre BI as the query, reporting and analysis functions of decision support systems, although these vendor definitions sometimes include analytical applications. This view is also supported by a number of the top BI vendors (Business Objects, 2003; Cognos, 2003; MicroStrategy, 2003; SAS, 2004).

There has been an overwhelming interest over the last year (2007) on providers of IT services. IBM has acquired its longtime business partner and business intelligence (BI) software pioneer Cognos for $5 billion in cash. This was followed by Oracle's $3.3 billion buyout of Hyperion in February the same year and SAP's acquisition of Business Objects for $6.8 billion in October the same year. Also, Cognos had acquired privately held Celequest Corporation, a provider of operational business intelligence solutions based in Redwood City, California earlier. These deals leave MicroStrategy and SAS as the last remaining standalone BI players. These business activities surrounding BI indicate the world’s recent interest in this area of computing (Times online, 2007).

Bill Inmon, sometimes called the father of the data warehouse concept, defined it as follows: "A data warehouses organizes and stores the data needed for informational, analytical processing over a long time perspective. A data warehouse is a subject-oriented, integrated, time-variant, non-volatile collection of data supporting management's decision-making process (Business Objects, 2007).

2.3.5 USE OF INFORMATION TECHNOLOGY

Improved information technology is critical to the success of any company. Information technology growth over the last two decades has grown in many sectors and industries which deal with the economy and infrastructure, and is affecting many areas of

decision- making and organizational development. Information and communication technologies are now the building blocks for socioeconomic development, and therefore nations around the world are attempting to capitalize on the capabilities of this technology to support planning, development, and growth processes (Wachira, 2008). Developing nations have tried to invest in its information infrastructure with a focus on developing information and management support systems for the decision-making process in both the government and the private sector with emphasis on using management support systems such as decision support systems and executive information systems to meet socioeconomic development objectives.

Information technology provides companies with the ability to process large amounts of information and do so in a way which presents the information in a clear and concise manner to employees (Business Objects, 2005). Anticipated benefits of implementing an information technology system include improvements in productivity, better profit performance, and a higher degree of accuracy among information within the firm. The ability to share information among employees is also enhanced (IBM, 2005). Most information systems allow multiple users to access information at the same time, and with flexibility. So employees can write reports and make modifications to their portions of the system quickly and easily. When this is the case, the benefit to organizations can include higher morale as well as higher productivity (Business Objects, 2007).

Information Technology has emerged as a basic fact of life in the business strategies of major corporations (iTechs, 2006). Information Technology facilitates the convergence of communications, computers, and information. Although Information Technology has traditionally been focused on internal operations (e.g., administrative and backroom functions), its emphasis is increasingly shifting to external operations and creating

connections that benefit the customer. No industrial sector will be more profoundly affected by this trend than the financial industry. Business analysts agree that Information Technology is much more important today than it was in the past. At present, companies typically spend about 6 percent of their total revenue on Information Technology (Haapaniemi, 1996, p. 24). Technology now allows information handling to be decentralized via the use of networks and personal computers. Thus the location of the hardware itself is no longer critical. This trend is criticized by some information specialists, who fear that too much control is being given to end users and other specialists regard decentralization as an opportunity, partly because it makes end users more accountable. A new era of participation has dawned for specialists in the Information Technology field.

It is largely assumed that the advances in information technology realized in the latter half of the 1900s resulted in productivity gains in the workplace. Computers were able to perform millions of calculations far faster and with greater accuracy than their human counterparts, and the World Wide Web makes it possible to communicate with individuals throughout the world. There have, in fact, been significant increases in productivity in various work functions, but there are also disadvantages in relying too heavily on technology.

CHAPTER THREE

3 RESEARCH DESIGN AND METHODOLOGY

3.1 INTRODUCTION

This chapter details the methodology that was used in the research. It discusses the study population, sampling techniques, procedures used in data collection, data processing and analysis, dissemination of research findings and ethical consideration in the research.

3.2 RESEARCH DESIGN

Qualitative case study method was used in the research. Case study method was preferred in the research in order to have a more in depth understanding of the subject area under study in the selected organization. The study followed a multi-informant design. These designs are proposed as a source of research triangulation for extracting improved contextual information (Earl, 1993). The multi-informant design is used to highlight perceptual differences between key participants across different areas within an organization (Tai and Phelps, 2000; Pervan, 1998). Within this IT research, Multi-informant design was used to obtain varying opinions amongst IT professionals and business management persons in the company under study about use of ER systems.

3.3 STUDY POPULATION AND SETTING

The target population comprised of soft drink companies in Kenya. The study drew upon three constituencies: Business management, IT management and operational level of the Kisii Bottlers Kenya Ltd., which is one of the six Bottling companies under the Coca-Cola umbrella company in Kenya. Obtaining data from key participants from both

business and IT functions enabled an analysis of any difference in perceptions across roles. The participants targeted were considered key to the function under examination.

Respondents comprised the following; two (2) professionals in the IT services provision category, which was different from the proposed five (5). Ten (10) business managers and thirty (30) operational level employees as proposed in the proposal. The total number of respondents was forty two (42) in number.

3.4 SAMPLE SELECTION AND PROCEDURES

The business demographic consisted of Managing Directors, Human Resource Managers, Chief Financial Officers, Production Managers, Sales Managers and other employees. The IT sample was made up of System Administrators and other IT decision-makers.

The operational level employees sample consisted of sales persons, clerks, accountants, stores personnel, secretaries, among other employees who directly or indirectly worked with the enterprise's information systems. Purposive sampling method was used to obtain the study sample. Respondents from the business demographic were purposively selected to include only the business managers who worked within the company's premises and who were available to provide the required information. This excluded business managers who worked away from the company's premises in the field. The IT sample included all the persons in the IT management level who were on duty during the time of the research. Respondents from the operational level were selected purposively to include the employees who were available to provide the required information.

3.5 DATA COLLECTION PROCEDURES AND INSTRUMENTS

3.5.1 DATA COLLECTION INSTRUMENTS

Interviews were used by the researcher to collect data from the different categories of respondents in the study. Interviews were most appropriate in this research as they helped the researcher get more useful information in the entire process of data collection through probing. Also it allowed the researcher to clarify unfamiliar terminology to respondents to ensure that the respondents understand well what is asked of them.

3.5.2 PRE TESTING OF THE INSTRUMENTS

Pre-testing was done three weeks before the actual data collection exercise on the following respondents from Equator bottlers Ltd.: two (2) professional in IT department three (3) business managers and three (3) operational level employees. These respondents are assumed to have similar characteristics as the selected respondents in the company under study. Pre-testing sought to assess the validity and reliability of the research instruments and to assess the possible length of time required to conduct the interviews.

The researcher first wrote a letter to Equator Bottlers (K) Ltd. requesting for permission to carry out a pilot study in order to revise the designed interview schedules before collecting data from the selected respondents (Appendix 10).

3, 10, 11, 18, 20, 21, 22, 23 from the original interview schedule for Business managers (Appendix 01). These questions were eliminated from the original interview schedule because they proved too technical for that category of respondents during pilot study. Question 19 in that interview schedule was also rephrased to read better and to derive the right information from that category of respondents. All these changes were

reflected in the actual interview schedule that was used to collect information from the company under study (Appendix 02).

3.5.3 DATA COLLECTION PROCEDURES

The researcher first obtained a letter from the department of Information Technology on 23rd October 2008 (Appendix 4) and used it to apply for a research clearance permit from the ministry of science and technology on 27th October 2008 (Appendix 06). The researcher then wrote a letter on 28th October 2008 to Kisii Bottlers (K) Ltd. seeking permission from the human resource manager for authority to conduct the research in the company (Appendix 07). The researcher obtained a letter of authorization from Kisii Bottlers (K) Ltd. On 31st October 2008 (Appendix 08) and booked an appointment with the respondents a week in advance through the relevant authorities in their areas of work. The interviewees were reminded a day before the interview to ensure their availability for the scheduled interviews. The researcher commenced data collection on 1st October 2008 and collected information from the respondents by taking notes on the responses of the interviewees. An authorization letter was obtained on 20th November 2008 from the National Council for Science and Technology (appendix 05) and the Research Clearance Permit on 27th November 2008. Both documents were made available to the Human Resource Office and data collection continued up to 1st January 2009 before being issued with a letter of completion of research on 5th January 2009 by the Human Resource Manager (Appendix 09).

3.6 DATA PROCESSING, PRESENTATION AND ANALYSIS

The researcher ensured that data processing was done before its analysis so as to correct possible errors such as eliminating unusable data, interpretation of ambiguous answers and verifying contradictory data from related questions. Data acceptability was first

verified and data organized appropriately, before analysis of the collected data was done. Data analysis was based on the objectives of the study and thematic analysis method was employed in analyzing the responses obtained through interviews, to make inferences from the responses of the forty two (42) respondents by objectively and systematically identifying specific characteristics of messages. Presentation of data was achieved through the use of frequency and percentage tables.

3.7 DESIGN & DEVELOPMENT PROCEDURES OF THE ENTERPRISE REPORTING SOLUTION

The researcher conceptualized finite stages that were used in the design and development of the enterprise reporting solution according to the Fig. 3.1.

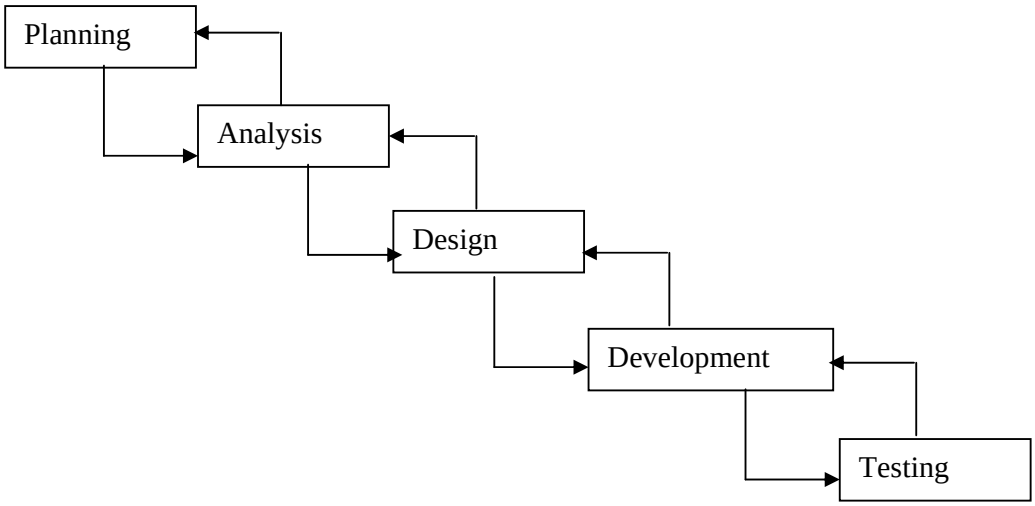

Fig. 3.1: A graphical model of the design and development stages of the ER solution.

3.7.1 PLANNING

This stage involved establishing the plans for creating the reporting system. The system properties of the supervision reporting system as per the research findings were conceptualized and the project scope was identified considering the resources available and limited time for the project. All details from tasks to be completed and when they

would be completed were formalized to set deadlines for the milestones in the general work plan document (Appendix 13).

3.7.2 ANALYSIS

This stage involved Collecting, comprehending, and logistically formalizing requirements. Formulation of requirements was done based on research findings and determination of which tasks to undertake to make the system most successful were identified.

3.7.3 DESIGN

This stage involved creation of the technical blueprint of the ER supervision system. Designing the systems model was done which included; graphical model of the report requester (Appendix 14) and the actual QA_report (Appendix 15) was constructed.

3.7.4 DEVELOPMENT

This involved execution of the design into a physical reporting system solution. Resources for building the system were acquired and set up. Data storage and access mechanisms were built and the actual reporting system solution constructed.

3.7.5 TESTING

This stage involved testing of the system using the established test scripts – test conditions were conducted by comparing expected outcomes to actual outcomes.

3.8 ETHICAL CONSIDERATIONS

The researcher took into account ethical considerations while carrying out the study. The following aspects were considered key in observing ethics in the research.

3.8.1 CONFIDENTIALITY

All confidential information of the studied company that could portray the company negatively or be used maliciously by others directly or indirectly to the disadvantage of

the studied company was not published in the thesis.

3.8.2 CONSENT

Consent was sought from management to get information from key informants before any information was solicited from respondents. All key informants were also well informed about the research and consented in giving the required information.

3.8.3 RISKS

The research did not in any way expose respondents to physical, psychosocial or other risks associated with participation in the study.

3.8.4 BENEFIT

There were no direct individual participant benefits from the study. The researcher did not also carry out the research in a manner that could lead to undue financial or non financial benefits. The company under study and the soft drinks industry at large and academia stand to benefit from the results of the research through the means of dissemination highlighted hereunder.

3.9 DISSEMINATION OF RESEARCH FINDINGS

The research findings shall be disseminated through the complete thesis which shall be made available at Moi University and at the ministry of science and technology for perusal by interested persons in academia and industry. Sections of the thesis that are relevant to the studied company shall also be made available to the company to necessitate any progressive actions by the company.

Sections of this thesis shall also be translated into publications and conference papers that shall hopefully be presented in relevant conferences at the School of Information Sciences, Moi University, and in other conferences after defence of the thesis.

CHAPTER FOUR

4 DATA PRESENTATION, ANALYSIS & INTERPRETATION

4.1 INTRODUCTION

The researcher ensured that processing of data was done before its analysis so as to correct possible errors such as eliminating unusable data, ambiguous answers and verifying contradictory data from related questions. Data acceptability was verified and data organized appropriately, before the analysis. Data analysis was based on the objectives of the study, and content analysis method was employed in analyzing the questions in the interviews, to make inferences from the responses of the forty two (42) respondents by objectively and systematically identifying specific characteristics of messages.

4.2 CURRENT STATUS IN THE USE OF ENTERPRISE REPORTING SYSTEMS IN THE COMPANY

Objective one (1) of the study sought to assess the extent of use of enterprise reporting systems at Kisii Bottlers (K) Ltd.. To meet this objective, the following research questions were used;

i) What is the current situation in the utilization of enterprise reports, and other electronic data resources?

ii) What are the factors determining the current status in the use of enterprise reporting systems?

Appendix 02, questions one (1) to five (5) and Appendix 03, question one (1) to question six (6) represent the questions used to collect information to meet the above mentioned objective.

4.2.1 CURRENT SITUATION IN THE UTILIZATION OF ELECTRONIC DATA RESOURCES

Respondents gave information relating to the electronic information resources that aided decision-making processes in the company and the following were identified as the main electronic information resources; Enterprise reports, spreadsheets, word documents and web documents. The research findings indicated that the respondents that constituted the IT management staff, Business managers and operational level employees category utilized all the varied forms of electronic sources of information for decision-making in the company albeit different frequency.

The information collected from respondents was summarized as shown in table 4.1;

Table 4.1: Electronic information resources of the company

Information resources	IT management staff (N 2)		Business Managers (N 10)		Other employees (N 30)		Total (N 42)	
Enterprise reports	2	100%	10	100%	24	80%	36	86%
Spreadsheets	2	100%	10	100%	20	67%	32	76%
Word documents	2	100%	6	60%	18	60%	26	62%
Web documents	2	100%	7	70%	10	33%	19	45%

4.2.1.1 Enterprise reports

Respondents reported that they relied on enterprise reports more as compared to the other electronic information resources because enterprise reports were easy to use and provided more accurate information since they depended on databases that were

systematically populated with relevant data about key functions of the company using reliable means. Some respondents however reported that identification of the appropriate reports for particular needs was sometimes a problem. They reported that training of report users was useful and informing the users of the various reports available, and the reports' possible purposes and areas of application was necessary.

4.2.1.2 Spreadsheets

Respondents utilized spreadsheets as electronic information resources for providing information for decision making in the company. Spreadsheets were reported to be preferred because they were the best in providing decision-making information from ad hoc analyses of manually collected data from the field. The outputs of these analyses were well presented summary information that managers utilized in decision making. Spreadsheets were reported to have a limitation of persistence in that information on spreadsheets was rarely re-used since spreadsheets were mostly constructed to derive particular information for a particular purpose or timeline.

4.2.1.3 Word documents

Respondents also utilized word documents as electronic information resources for decision making in the company. The main such documents cited by respondents included word document reports produced for management on particular issues, prepared and presented by hand or via email to the relevant persons. Other such documents cited were guidelines from the authorities on how certain things were to be done such as soft copy letters sent detailing issues arising and possible remedies.

4.2.1.4 Web documents

Respondents also utilized web documents as electronic information resources. Such documents included informative web pages from the World Wide Web which that were

useful in aiding in decision making in the company. The respondents in this category however reported that this was the least commonly used electronic information resource among all the information resources.

4.2.2 THE FACTORS DETERMINING THE STATUS OF USE OF ENTERPRISE REPORTING SYSTEMS

Respondents were asked to give information relating to the factors that determined the current situation in the use of the ER systems in the company from the time of adoption of the ER systems up to date. The collected information was analyzed under the following key stages of the reporting cycle that were identified by the respondents to have an overall influence on reporting in the company; Report design and development, report generation, report distribution and report revision.

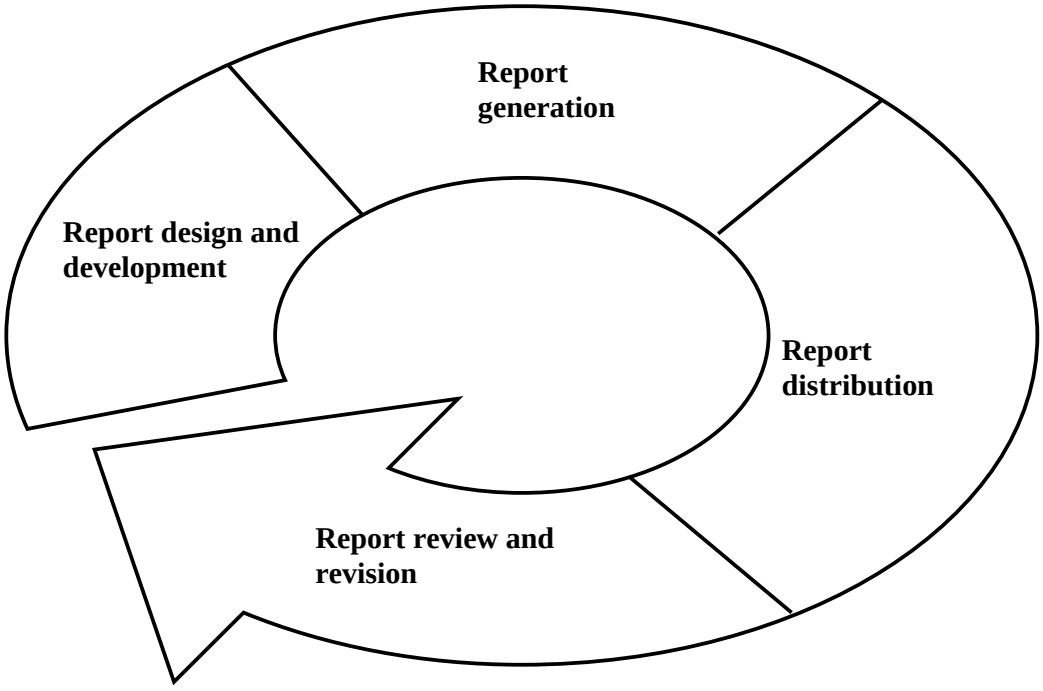

Fig. 4.1: A graphical model of the report cycle: Researcher's conceptualization

4.2.3 FACTORS INFLUENCING DESIGN AND DEVELOPMENT OF ENTERPRISE REPORTING SYSTEMS

Findings revealed that the design and development processes of ER systems in the company had an influence on the overall status in the use of ER systems. Report design and development of ER systems was understood by majority of respondents to mean the creation of conceptual reporting solutions and transformation of the conceptual solutions into executable reports.

The design and development of the original reports of the company were based on a borrowed conceptual model from a sister franchise company, but a number of customizations were reported to have been made over time to meet the specific reporting needs of the company's report users. Continuous review and revision of report designs in the company over time was therefore the means by which the company improved the quality of her reports. Quality of the report design and development was reported by respondents to be measured mainly by the relevance of the information displayed on the reports, how well the relevant information was presented on the reports and in what format.

It was reported that the design and development of reports in the company was influenced by a number of factors. These factors identified by respondents include; user involvement, management support and developers' competence. The information collected from the different categories of respondents about these aspects is summarized as shown in table 4.2;

Table 4.2: Factors influencing design and development of reports

Factors	IT management staff (N 2)		Business Managers (N 10)		Other employees (N 30)		Total (N 42)	
User involvement	2	100%	8	80%	25	83%	35	83%
Developers' competence	2	100%	10	100%	28	93%	40	95%
Management support	2	100%	7	70%	22	73%	31	74%

The research findings indicated that the respondents that constituted the IT management staff category, Business Managers category and other employees in the operational level category cited user involvement, competence of developers, and management support as main factors that influenced design and development of ER systems in the company albeit varied frequency. These factors in turn had an influence in the overall status in the use of ER systems.

It was reported that the original reports having been based on an existing conceptual model of another franchise company, user involvement at that initial stage was minimal. User involvement only came in to shape the reports to meet the information needs of report users based on the limitations they faced while using the reports through review and revision of the reports.

Respondents reported that developers' competence determined how well user requirements were captured and met in the developed reports. In this regard developers' competence had a major role to play in determining the quality of the reports.

Respondents reported that management support influenced the amount of financial resources available for the design and development which also determined the level of expertise that was put to use in the design and development of the reports. A part from financial support, the respondents reported that management support extended further to include any other influence that management could exert on the processes of the design and development of company's reports like; tactful supervision of the design and development progress and internal personnel management relevant in the design and development of the reports.

4.2.4 FACTORS INFLUENCING GENERATION OF REPORTS

Findings revealed that the report generation processes of reports in the company had an influence on the overall status in the use of ER systems in the company. Report generation was understood by majority of respondents to mean the production of viewable reports from stored electronic data at a particular time by running the report designs against that data.

It was reported that the generation of reports in the company was influenced by a number of factors. These factors identified by respondents include; frequency of report generation, promptness of report generation, format of generated reports and mode of administration of report generation. The information collected from the different categories of respondents about these aspects was summarized as shown in table 4.3;

Table 4.3: Factors influencing report generation

Factors	IT management staff (N 2)		Business Managers (N 10)		Other employees (N 30)		Total (N 42)	
Frequency	2	100%	8	80%	18	60%	28	67%
Promptness	2	100%	9	90%	20	67%	31	74%
Format of reports	1	50%	6	60%	18	60%	25	60%
Mode of administration	1	50%	7	70%	15	50%	23	55%

The research findings indicated that the respondents that constituted the IT management staff category, Business Managers category and other employees in the operational level category cited frequency of report generation, promptness of report generation, format of generated reports and mode of administration of report generation as the main factors that influenced the overall current status in the generation of reports.

Findings indicated that generation of reports by users in the company was not regular but random instead. The reports in the company were categorized on the basis of how regular they were intended to be generated at design but the actual generation of the reports depended purely on the need of the report users rather than at a routine. The categories of the company's reports according to the designs included; daily, monthly, quarterly and annual. The reason for the irregular generation of reports as reported by respondents was that reports were generated to serve a particular need as opposed to a regular routine thing regardless of whether or not the information would be useful at

that time or not. Respondents reported that a regular pattern of generation of reports would be essential so as to maximize information utilization and not to miss out on any piece of information that would be useful.

Respondents indicated that promptness of the report generation processes was a main factor that influenced the current overall status in the use of ER systems. Findings indicated that a speedy process of generating reports led to timely utilization of information thus better decisions.

Respondents also indicated that the format of generated reports was a main factor that influenced the current overall status in the use of ER systems. Findings showed that the format of the generated reports was report viewer and this was reported to be sufficient. Respondents reported that diversity of report formats was necessary to increase the usability of reports in available diverse report formats like printed reports on paper or on PDAs and other mobile devices were suitable for managers who would work in the field away from company premises in places where computers could not be easy to use.

It was reported that administration of the report generation processes was a main factor that influenced the current overall status in the use of ER systems. The mode of administration of the report generation processes was reported to be self-administration; this was reported by respondents to be suitable as it eliminated involvement of people that would lead to overheads. Self administration was reported to make generation of reports speedy hence better utilization of available information on reports. Report users therefore determined when to generate reports or when reports were to be generated for them. It was also expressed that a different mode of administration where an autonomous party administered report generation could also be advantageous since it could make report generation more organized and lead to better utilization of

infrastructural resources since generation could be done at night when the network infrastructure is not strained.

4.2.5 FACTORS INFLUENCING DISTRIBUTION OF REPORTS

Research findings indicated that report distribution processes influenced the overall status in the use of ER systems. Distribution of reports was understood by majority of respondents to be the process of delivery of the generated reports to the intended users in the right form use by the intended users using a specific medium.

It was reported that the distribution of reports in the company was influenced by a number of factors. These factors identified by respondents include; medium of report distribution, promptness in report distribution and mode of administration of report distribution and output format of distributed reports. The information collected from the different categories of respondents about these aspects was summarized as shown in table 4.4;

Table 4.4: Factors influencing distribution of reports

Factors	IT management staff (N 2)		Business Managers (N 10)		Other employees (N 30)		Total (N 42)	
Medium	2	100%	10	100%	20	67%	32	76%
Promptness	2	100%	6	60%	18	60%	26	62%
Mode of administration	2	100%	7	70%	10	33%	19	45%
Output format	2	100%	7	70%	10	33%	19	45%

The respondents reported that the medium through which reports were distributed was a main factor that influenced the current overall status in the use of ER systems. Research findings indicated that the medium of distribution of reports in the company was a local area network. This medium was reported to be an appropriate medium for report distribution because it enabled all report users anywhere in the company to access reports easily and quickly as long as they had a connection to the server, via the network.

Respondents reported that the level of promptness of the report distribution process was a main factor that influenced the current overall status in the use of ER systems. The current level of promptness of report distribution was reported to be associated with the fact that report users accessed the generated reports by themselves in the company making distribution initiation speedy.

Respondents reported that the mode of administration of distribution of reports was a main factor that influenced the current overall status in the use of ER systems. The mode of administration of the report distribution was reported to be self; this was reported to be suitable as it did not require anyone in between to facilitate distribution of reports. This made distribution of reports a speedy process since reports users obtained reports for themselves from the servers.

It was reported that the output format of the distributed reports was a main factor that influenced the current overall status in the use of ER systems. Findings showed that the format of the generated reports was report viewer and this was reported to be sufficient. Respondents reported that diversity of report formats was necessary to increase the usability of reports in diverse available report formats like printed reports on paper were suitable for managers who would work in the field away from company premises in places where computers could not be easy to use.

4.2.6 FACTORS INFLUENCING REVIEW AND REVISION OF REPORTS

Research findings indicated that report review and revision processes influenced the overall status in the use of ER systems. Review of reports was understood by majority of respondents to mean the assessment of report designs in an effort to identify possible improvements that can be incorporated to improve the reports. Revision of reports on the other hand was understood by respondents to mean modification of the reports to meet the needs of the report users in a better way as per the review of those reports. The continuous review and revision of report designs in the company over time was reported to improve the quality of reports, by modifying the information content of the reports and the way the information was presented.

It was reported that the review and revision of reports of reports in the company was influenced by a number of factors. These factors identified by respondents include; user involvement, management support and developers' competence. The information collected from the different categories of respondents about these aspects was summarized as shown in table 4.5;

Table 4.5: Factors influencing review and revision of reports

Factors	IT management staff (N 2)		Business Managers (N 10)		Other employees (N 30)		Total (N 42)	
User involvement	2	100%	8	80%	25	83%	35	83%
Developers' competence	2	100%	10	100%	28	93%	40	95%
Management support	2	100%	7	70%	22	73%	31	74%

Respondents cited user involvement, competence of developers, and management support as main factors that influenced review and revision of ER systems in the company which in turn had an overall influence in the use of ER systems.

Respondents cited user involvement as a main factor that influenced review and revision of ER systems in the company. User involvement was handy in shaping the reports to meet the information needs of report users based on the limitations that report users faced in the use of the reports. The users' suggestions were collected and implemented to meet their reporting needs.

Respondents cited developers' competence as a main factor that influenced the review and revision of ER systems in the company. Respondents reported that developers' competence determined how well user requirements were captured and met in the developed reports.

Respondents cited management support as a main factor that influenced review and revision of ER systems in the company. Respondents reported that management support determined how much financial assistance report review and revision got and other non financial assistance such as other influence that management could exert on the processes of the review and revision of company's reports like; tactful supervision of the review and revision progress and internal personnel management relevant in the review and revision of the reports.

4.3 CHALLENGES IN THE USE OF ENTERPRISE REPORTING SYSTEMS

Objective two (2) of the study sought to identify the challenges experienced in the use of enterprise reporting systems. To meet this objective, the following research questions were used;

i) What are the challenges facing use of enterprise reporting systems?

Appendix 02, questions six (6) to fourteen (14) and Appendix 03, question seven (7) to question seventeen (17) represent the questions used to collect information to meet the above mentioned objective.

Respondents were asked to give information related to the challenges in the use of reports in the company, and information was collected and discussed.

4.4 CHALLENGES FACING USE OF ENTERPRISE REPORTING SYSTEMS

The collected information was discussed under the aspects of the reporting cycle in the graphical model of reporting in Fig 02. These aspects were; design and development of reports, generation of reports, distribution of reports and review and revision of reports.

4.4.1 THE CHALLENGES IN THE DESIGN AND DEVELOPMENT OF REPORTS

The following factors had been identified as influencing the design and development of reports; user involvement, developers' competence and management support. Based on these factors, respondents were asked to give information about the specific challenges associated with those factors and information collected was as analyzed as follows;

4.4.1.1 User involvement

Research findings indicated that user involvement faced a number of challenges, and the identified main challenges reported by respondents included; inadequate user commitment, developers' negative attitude and inadequate management commitment.

The information collected from respondents was summarized as shown in table 4.6;

Table 4.6: Challenges associated with user involvement

Challenges	IT management staff (N 2)		Business Managers (N 10)		Other employees (N 30)		Total (N 42)	
User commitment	2	100%	8	80%	21	70%	31	74%
Developers' attitude	2	100%	9	90%	21	70%	32	76%
Management commitment	2	100%	5	50%	18	60%	25	60%

Respondents reported that report users lacked motivation in participating in the requirements collection by developers. This exercise was perceived by some report users as not being a priority. Business managers expressed that the stringent procedures and questions used to gather information about their reporting needs was time consuming. Other employees also agreed that the exercise wasn't interesting as it consumed their time that they would rather use to attend to other company tasks. The inability to involve the report users led to design and development of reports that did not accurately meet the actual reporting needs of the actual users.

Findings indicated that developers' negative attitude negatively impacted on user involvement in the design and development of reports. Developers for instance indicated that they found user involvement in the design and development processes time consuming and preferred to formulate user reporting needs without thoroughly involving the users. Respondents indicated that developers thought that the report users

did not understood their needs well or they could not communicate their needs clearly in a time saving manner.

Findings indicated that management's inadequate commitment negatively impacted on user involvement in the design and development of reports. Respondents reported that management needed to do more in facilitating user involvement by creating time for involvement rather letting it up to the report users to create their own time to do a thorough assessment of their reporting needs and communicate them to the developers or IT department.

4.4.1.2 Developers' competence

Research findings indicated that developers' competence faced a number of challenges, and the identified main challenges reported by respondents included; poor choice of software tools for the design and development of reports, limited expertise on design and development of reports and inappropriate design and development procedures.

The information collected from respondents was summarized as shown in table 4.7;

Table 4.7: Challenges associated with developers' competence

Challenges	IT management staff (N 2)		Business Managers (N 10)		Other employees (N 30)		Total (N 42)	
Software choice	2	100%	10	100%	20	67%	32	76%
Skills	2	100%	10	100%	24	80%	36	86%
Procedures	2	100%	6	60%	18	60%	26	62%

Findings indicated that choice of wrong software for design and development of reports was a challenge as it led to inability for the reports to be maintained in case the developers' for one reason or another was not available to maintain them.

Findings indicated that inadequate skills, both technical and non technical, on the part of developers could lead to low quality reports that did not meet the report users' reporting needs.

Findings indicated that ineffective design and development procedures led to low quality reports that did not meet the reporting needs of users. Ineffective procedures would also lead to time wastage and stalled design and development of reporting systems.

4.4.1.3 Management support

Research findings indicated that management support faced a number of challenges, and these identified main challenges reported by respondents included; improper management policy on IT investment, management attitude on reporting and financial limitations. The information collected from respondents was summarized as shown in table 4.8;

Table 4.8: Challenges associated with management support

Challenges	IT management staff (N 2)		Business Managers (N 10)		Other employees (N 30)		Total (N 42)	
IT policy	2	100%	10	100%	24	80%	36	86%
Finance	2	100%	6	60%	18	60%	26	62%
Management attitude	2	100%	10	100%	22	73%	34	81%

Research findings indicated that problems in the policy on IT investment posed a challenge on design and development of ER systems, because policy guided the design and development procedures of ER in the company.

Research findings indicated that inadequate financial support limited design and development of enterprise reports that adequately met the report users' needs.

Management attitude was reported to be a challenge in the design and development of enterprise reports. Managements' understanding of the power of reporting in the company was reported to important in order to facilitate more use of enterprise reports in the company at large.

4.4.2 CHALLENGES IN THE GENERATION OF REPORTS

The following factors had been identified as major factors influencing the generation of reports; frequency of report generation, promptness of report generation, format of generated reports, mode of administration of report generation. Based on these

influential factors, respondents were asked to give information about the specific challenges associated with those factors and information collected was as follows;

4.4.2.1 Frequency of report generation

Research findings indicated that frequency of report generation faced a number of challenges, and these identified main challenges reported by respondents included; users' attitude about the importance of report information, inaccessibility to the reporting system by less privileged employees and infrastructural inadequacies.

Table 4.9: Challenges associated with report generation frequency

Challenges	IT management staff (N 2)		Business Managers (N 10)		Other employees (N 30)		Total (N 42)	
User attitude	2	100%	10	100%	20	67%	32	76%
Access limitations	2	100%	10	100%	21	70%	33	79%
Infrastructure	2	100%	10	100%	17	57%	29	69%

Research findings indicated that user attitude about the importance of report information was a challenge in the generation of reports for use in supporting decision making. Users reported that they were prompted to generated reports if they knew the reports could contain the information they were in need of and their attitude about the usefulness of the reports determined whether or not they would generate reports.

Research findings indicated that access limitation to the reporting systems was a challenge to the generation of reports. All reports users had unequal access to the reporting system and relied to access certain information through other report users.

This delayed the process of generation of reports as the actual reports users had no direct access to the reporting systems.

Research findings indicated that infrastructural limitations were a challenge in the generation of reports. Power outages network failures among others were reported to hamper generation of reports.

4.4.2.2 Promptness of report generation

Research findings indicated that promptness of report generation faced a number of challenges, and these identified main challenges reported by respondents included; users' attitude about the importance of report information, inaccessibility to the reporting system by less privileged employees and infrastructural inadequacies.

Table 4.10: Challenges associated with promptness of report generation

Challenges	IT management staff (N 2)		Business Managers (N 10)		Other employees (N 30)		Total (N 42)	
Access limitations	2	100%	10	100%	20	67%	32	76%
Infrastructural limitations	2	100%	6	60%	18	60%	26	62%

Research findings indicated that access limitation to the reporting systems was a challenge in the generation of reports. Lack of access affected the promptness of report generation and delayed use of required information.

Research findings indicated that infrastructural limitations were a challenge in the generation of reports. Infrastructural limitations influenced the report generation process thus causing lack of promptness in the report generation process.

4.4.2.3 Format of generated reports

Research findings indicated that format of generated reports faced a number of challenges, and these identified main challenge reported by was ease of use and compatibility of format with other data in different format.

Table 4.11: Challenges associated with format of generated reports

Challenges	IT management staff (N 2)		Business Managers (N 10)		Other employees (N 30)		Total (N 42)	
Ease of use	2	100%	10	100%	24	80%	36	86%
Compatibility	2	100%	8	80%	24	80%	34	81%

Research findings indicated that the format of generated reports was a challenge in the generated reports. Inappropriate format affected the usability of the reports by users.

Research findings indicated that compatibility of information outputs was a challenge in integrating report information with other information in different formats. Compatibility was essential and lack of it made reports unusable in some areas where needed.

4.4.2.4 Mode of administration of report generation

Research findings indicated that mode of administration of reports faced a number of challenges, and these identified main challenges reported by respondents was lack of discipline in generating reports.

Table 4.12: Challenges associated with mode of administration of report generation

Challenges	IT management staff (N 2)		Business Managers (N 10)		Other employees (N 30)		Total (N 42)	
Lack of discipline	2	100%	7	70%	24	80%	33	79%

Research findings indicated that lack of discipline in report generation affected the use of reporting information by report users.

4.4.3 CHALLENGES IN REPORT DISTRIBUTION

The following factors had been identified as influencing the distribution of reports; medium and mode of administration of report distribution. Based on these influential factors, respondents were asked to give information about the specific challenges associated with those factors and information collected was as follows;

4.4.3.1 Medium of report distribution

Research findings indicated that the medium of report distribution posed a number of challenges, and the identified main challenge reported by respondents was reliability of the medium.

Table 4.13: Challenges associated with medium of report distribution

Challenges	IT management staff (N 2)		Business Managers (N 10)		Other employees (N 30)		Total (N 42)	
Medium reliability	2	100%	10	100%	20	67%	32	76%

Reliability of medium was reported to be a challenge in realizing effective distribution of reports.

4.4.3.2 Mode of Administration of Report Distribution

Research findings indicated that the administration mode posed a number of challenges, and these identified main challenges reported by respondents included; lack of discipline.

Table 4.14: Challenges associated with mode of administration of report distribution

Factors	IT management staff (N 2)		Business Managers (N 10)		Other employees (N 30)		Total (N 42)	
Lack of discipline	2	100%	10	100%	24	80%	36	86%

Respondents reported that lack of discipline in report generation affected the use of reporting information by report users.

4.4.4 CHALLENGES IN THE REVIEW AND REVISION OF REPORTS

The following factors had been identified as influencing the review and revision of reports; user involvement, developers' competence and management support. Based on these influential factors, respondents were asked to give information about the specific challenges associated with those factors and information collected was as follows;

4.4.4.1 User involvement

Research findings indicated that user involvement faced a number of challenges, and the identified main challenges reported by respondents included; inadequate user commitment, developers' negative attitude and inadequate management commitment.

The information collected from respondents was summarized as shown in table 4.15;

Table 4.15: Challenges associated with user involvement in report review and revision

Challenges	IT management staff (N 2)		Business Managers (N 10)		Other employees (N 30)		Total (N 42)	
Motivation of users	2	100%	8	80%	21	70%	31	74%
Developers' attitude	2	100%	9	90%	21	70%	32	76%
Management commitment	2	100%	5	50%	18	60%	25	60%

Respondents reported that report users lacked motivation in participating in the requirements collection by developers. This exercise was perceived by some report users as not being a priority. Business managers ranking managers particularly expressed that the stringent procedures and questions used to gather information about their reporting needs was time consuming. Other employees also agreed that the exercise wasn't interesting as it consumed their time that they would rather use to attend to other company tasks. The inability to involve the report users led to review and revision of reports that did not accurately meet the actual reporting needs of the actual users.

Respondents reported that developers found user involvement in the review and revision processes time consuming and preferred to formulate user reporting needs without thoroughly involving the users. Respondents indicated that developers thought that the

report users did not understood their needs well or they could not communicate their needs clearly in a time saving manner.

Respondents reported that management needed to do more in facilitating user involvement by creating time for involvement rather letting it up to the report users to create their own time to do a thorough assessment of their reporting needs and communicate them to the developers or IT department.

4.4.4.2 Developers' competence

Research findings indicated that developers' competence faced a number of challenges, and the identified main challenges reported by respondents included; limited expertise on review and revision of reports, inappropriate review and revision procedures.

The information collected from respondents was summarized as shown in table 4.16;

Table 4.16: Challenges associated with developers' competence in report review and revision

Challenges	IT management staff (N 2)		Business Managers (N 10)		Other employees (N 30)		Total (N 42)	
Skills	2	100%	10	100%	24	80%	36	86%
Procedures	2	100%	6	60%	18	60%	26	62%

Respondents reported that inadequate skills on the part of developers could lead to low quality reports that did not meet the report users' reporting needs.

Respondents reported that ineffective procedures led to low quality reports that did not meet the reporting needs of users.

4.4.4.3 Management support

Research findings indicated that management support faced a number of challenges, and these identified main challenges reported by respondents included; improper management policy on IT investment, management attitude on the essence of reporting and financial limitations. The information collected from respondents was summarized as shown in table 4.17;

Table 4.17: Challenges associated with management support in report review and revision

Challenges	IT management staff (N 2)		Business Managers (N 10)		Other employees (N 30)		Total (N 42)	
IT policy	2	100%	10	100%	24	80%	36	86%
Management attitude	2	100%	10	100%	22	73%	34	81%
Finance	2	100%	6	60%	18	60%	26	62%

Respondents reported that problems in the policy on IT investment posed a challenge on review and revision of ER systems because policy guided the review and revision procedures of ER in the company.

Management attitude was reported to be a challenge. Managements' understanding of the power of reporting in the company was reported to facilitate more use of ER in the company.

Respondents reported that inadequate financial support limited use of ER systems that met the report users' needs.

4.5 KPIs AND SLAs IN THE USE OF ENTERPRISE REPORTING SYSTEMS

Objective three (3) of the study sought to determine appropriate Key Performance Indicators and Service Level Agreements that can be tracked to enhance use of enterprise reporting systems. To meet this objective, the following research question was used;

i) Which Service Level Agreements and Key Performance Indicators related to enterprise reporting systems, are important to track?

Appendix 02, questions fifteen (15) to twenty four (24) and Appendix 03, questions eighteen (18) to question thirty one (31) represent the questions used to collect information to meet the above mentioned objective.

Under report design and development, findings indicated that the percentage number of relevant report users consulted during the design and development stage of the reporting system was identified as a performance indicator of the level of user involvement in the design and development of reports. Report findings also indicated that the level of satisfaction of the IT department or any other relevant authority on the competence of the developers of reports and the management support in the design and development of reports was a useful performance measure of the management support in the design and development of reports.

Under report generation, findings indicated that the level of satisfaction of the IT department or other relevant authority on the frequency of report generation, promptness of report generation, format of generated reports, and mode of

administration of report generation are useful performance indicators of the overall performance of report generation.

Under report distribution, report findings indicated that the level of satisfaction of the IT department or other relevant authority on the medium of report distribution, the mode of report distribution are a useful performance indicators of the overall performance of report distribution.

Under report review and revision, findings indicated that the percentage number of relevant report users consulted during the review and revision stage of the reporting system was identified as a performance indicator of the level of user involvement in the review and revision of reports. Report findings also indicated that the level of satisfaction of the IT department or any other relevant authority on the competence of the developers of reports and the management support in the review and revision of reports was a useful performance measure of the management support in the review and revision of reports.

4.6 POSSIBLE BENEFITS OF SYSTEMATIC SUPERVISION REPORTING

Objective four (4) of the study sought to assess the benefits of systematic tracking of the identified Key Performance Indicators and Service Level Agreements in the use of enterprise reporting systems. To meet this objective, the following research question was used;

i) How is a reporting system a practical solution to the identified factors limiting use of enterprise reporting systems?

Appendix 02, questions twenty five (25) to twenty seven (27) and Appendix 03, question thirty two (32) to question thirty four (34) represent the questions used to collect information to meet the above mentioned objective.

Under design and development of reports, findings indicated that tracking the number of report users consulted during design and development of the reports could assist in making decisions about possible adjustments to involve more and relevant report users to facilitate better design and development of reports. Report findings also indicated that tracking the level of relevant competence of the developers in design and development of the report could assist in taking appropriate actions in the involvement of the right persons in the design and development of reports. Report findings also indicated that tracking the level of management support in design and development of reports could assist in sensitizing the management on what could be done to support the processes of design and development of reports among others.

Under report generation, report findings indicated that tracking the frequency aspects of report generation by report users would enable make statistical assessment of report utilization and make appropriate decisions that could encourage report utilization. It was also found that tracking the level of satisfaction of the aspects of the mode of administration of report generation in the company would also enable management to make appropriate decisions about the mode of administration of report generation so as to counter any report administration challenges.

Under report distribution, findings indicated that tracking the level of satisfaction of the medium of distribution of reports could enable management and make appropriate decisions about the medium so as to have in place the most reliable medium for report distribution that will encourage use of enterprise reports. Tracking the level of satisfaction of the mode of administration of report distribution in the company would

also enable management make appropriate decisions about the mode of administration of report distribution to encourage the use of reports in the company.

Under review and revision of reports, findings indicated that tracking the number of report users consulted during review and revision of the reports could assist in making decisions about possible adjustments to involve more and relevant report users to facilitate better review and revision of reports. Report findings also indicated that tracking the level of relevant competence of the developers in review and revision of the report could assist in taking appropriate actions in the involvement of the right persons in the review and revision of reports. Report findings also indicated that tracking the level of management support in review and revision of reports could assist in sensitizing the management on what could be done to support the processes of review and revision of reports among others.

4.7 REPORTING SYSTEM TO ENHANCE USE OF ENTERPRISE REPORTING SYSTEMS

Objective five (5) of the study sought to design and develop a systematic supervision reporting system to enhance use of enterprise reporting systems. To accomplish this objective, the following research question was used;

i) How can a supervision reporting system promote the use of enterprise reporting systems?

This objective was achieved through systematic design and development of a supervision reporting system for tracking KPIs and SLAs discussed under objective four (4) above. Chapter 5 – Design and Development of the ER solution details the entire design and development of the ER solution.

CHAPTER FIVE

5 DESIGN AND DEVELOPMENT OF THE ENTERPRISE REPORTING SOLUTION

5.1 INTRODUCTION

This chapter details the processes of design and development of the ER supervision system from the conception stage of the system to completion of the system as well as the features of the completed ER solution. This chapter carries details of the various interrelationships that exist between the sections of code that make up the ER solution.

5.1.1 OVERVIEW OF THE ER SUPERVISION REPORTING SYSTEM

The reporting system was designed to implement the solutions to the challenges facing ER as revealed in the findings of the research. Since the research was about ER, the research implemented the solutions in form of an ER system. This reporting system was to offer systematic tracking of quality assurance on the critical deliverables of the key processes in the use of ER systems. The deliverables included; reports/documentations of the KPIs and SLAs that were revealed by the research as useful in informing the management of what to be keen on so as to enhance use of enterprise reporting in the company.

The ER supervision reporting system was designed according to the Gregory Hill's generic hypothetical description provided in chapter two of this thesis. The instrumentation part of the model was however simulated through creation of actual files of abstractly conceived systems which were loaded into a data warehouse.

The project was divided into two (2) design and development sections;

1. A Report that displays information about quality assessment on deliverables namely; Quality_Assurance report.
2. Requester Report to facilitate user filtering of report selection criteria namely; Quality_Assurance requester.

These two reports were separately designed and developed but worked together to accomplish the intended common purpose of tracking quality assurance on the selected report deliverables.

5.1.2 PLATFORM REQUIREMENTS

At least two networked Pentium IV machines running MS Windows with RAM of at least 512 Mb, processing speed of at least 1.0 GHz and at optimal working condition.

5.1.3 SOFTWARE REQUIREMENTS

5.1.3.1 Reporting Tool

Actuate e.Report Designer Professional was used in the design of the reports. Actuate e.Report Designer Professional is an application that builds Actuate Basic report designs and reusable components. Such designs can be used to distribute structured content over the web.

5.1.3.2 Report Server

Actuate Iserver System was used as the report server. Actuate Iserver System is a set of cooperating processes functioning as a stand-alone report server or a cluster of report servers that manage information and service requests from users.

Actuate iServer provides scheduling, report generation of Actuate and third-party reports, printing, notification, security management, and version control.

5.1.3.3 Relational Database Management System (RDBMS)

DB2 was used as the relational database management system; DB2 is one of the world's most popular RDMSs and a product of IBM.

5.1.3.4 Database administration tool

WinSQL was used as the database administration tool. WINSQL is a universal database management tool that can be used with any relational database to perform administrative tasks such as importing/exporting data, generating test data, reverse engineering an existing database, comparing schema and data between databases or simply running SQL queries.

5.1.3.5 Text editor

UltraEdit is a text editor for Microsoft Windows and contains tools for programmers, including macros, configurable syntax highlighting, code folding, file type conversions, project management, regular expressions for search-and-replace, a column-edit mode and more. UltraEdit was used by the researcher to produce simulated operational files.

5.1.3.6 Web browser

A web browser was required in enabling the users to interact with the encyclopedia volume transformed into a dynamic, secure web site for viewing reports in the server. This was so because the reports were web based. Internet Explorer was the web browser used in this project.

5.2 QUALITY_ASSURANCE REPORT

5.2.1 OVERVIEW OF THE REPORT DESIGN

The report is designed to execute from parameters passed to it from the requester. The parameters are used to determine the filtering of data in the report. The report receives the parameters from the requester and filters data via an SQL statement that uses those parameters to fetch the desired data only. The base query is used to fetch data without any filtering.

5.2.2 FIELDS AND DATA TYPES IN THE QUALITY_ASSURANCE REPORT

The Corresponding Fields generated include:

Table 5.17: Fields and Datatypes for the Quality_Assurance Report

Field	Description	Data Type
QAI_ID	ID of the QA item	String(12)
QAI_Name	Name of the QA item	String(20)
QAI_Desc	Description of the QA item	String(30)
QAI_Version	Version of the QA item	String(12)
QA_Type	Type of the QA item	String(20)
QA_Person	QA Person	String(20)
QA_Date	Date of the QA item	Date

5.2.3 PARAMETERS

5.2.3.1 Data source Parameters

1. DataDirectory (String) – This is the directory where input files for flat file based reports are located.
2. InputFile (String) – This is the name of a flat file used in a flat file based report. The name is case sensitive. The .txt extension for text files is always lower case, while the name of the file without the extension is always all upper case.

5.2.3.2 Run-Time Parameters

1. ReportTitle (String) – Is the title of the report, and will be displayed at the top of each page in all capital letters.

5.2.3.3 Report parameters – Adhoc parameters

1. QAI_ID – Indicates the identification number of the quality assurance item
2. QAI_Name – Indicates the name of the quality assurance item
3. QAI_Version – Indicates the name of the quality assurance person
4. QA_Type – Indicates the type of the quality assurance item
5. QA_Person – Indicates the quality assurance person
6. QAI_Date – Indicates the date of the quality assurance task

5.2.4 Overridden methods and functions

Apart from the methods inherited from the libraries that were already overridden, other methods were overridden as shown below. Methods were overridden to achieve specialized reporting.

5.2.4.1 Enable reading of Logo for display on the report

In order to achieve the above purpose, **Function SuggestRoiName( ) As String** was overridden as shown in Appendix 16 (15).

5.2.4.2 Insert single quotes of comma separated parameter values to ensure that they are used correctly in the queries.

In order to achieve the above purpose, **Function Multiselect(Mystring as string) As string** was overridden as shown in Appendix 16 (16).

5.2.4.3 Ensure that the queries are modified according to the given parameters

In order to achieve the above purpose, **Function ObtainSelectStatement( ) As String** was overridden as shown in Appendix 16 (17).

5.3 QUALITY_ASSURANCE REPORT REQUESTER

5.3.1 OVERVIEW OF THE QUALITY_ASSURANCE REPORT REQUESTER

Quality_Assurance Requester is a Graphical User Interface that provides a list of parameters that enable users of the Requester report to make selections based on their choices and run them. Upon selecting appropriate filters, the requester will pass these to the Quality_Assurance report.

5.3.2 REQUESTER PARAMETERS

The requester provides a set of controls that help a user to perform a specified task. The functional declarations are declared and read by the parameters from the report application's GlobalDHTMLCode.

5.3.2.1 QAI_ID

This is a single line control which takes the ID of the quality assurance item.

5.3.2.2 QAI_Name

This is a single line control which takes the name of the quality assurance item. It is coded to work with wild-card characters. For example “F*” means every thing that begins with F.

5.3.2.3 From Effective Date

The From Effective Date is single line control will accept a date in (mm/dd/ccyy) format. Upon hitting the submit button, the value will be validated to ensure it is in this format and also that the To Effective Date is also populated (if one date is populated the other must be populated as well) and vice versa. The From Effective Date must be equal to or smaller than the To Effective Date.

5.3.2.4 To_Effective Date

This single line control will accept a date in (mm/dd/ccyy format). Upon hitting the submit button, the value is validated to ensure it is in this format and also that the From Effective Date is also populated (if one date is populated the other must be populated as well) and vice versa. The To Effective Date must be equal to or larger than the From Effective Date. The To Effective Date code effects the above besides the coded script in validation function in the browser code.

5.3.2.5 QA_Person_ID

This is a single line control that takes in the identification number of the quality assurance person. It is also coded to work with wild cards. For example “F*” means every thing that begins with F.

5.3.2.6 QAI_Type

This is a drop down control. The values are read in from the database. The default value is coded to accept “ALL” or blank meaning that the requester can be submitted without necessarily choosing the value of the QAI type.

5.3.2.7 QA_ID

This is a Free Form Box. Just like the other controls, the default value is “ALL” which means that all the users are selected. It is also coded to work with wild-card characters. For example “F*” means any user that begins with F. The report accepts a list of user Ids (if ALL is selected) or parse it accordingly as filtered, which is described in the WHERE clause of the base SQL query.

5.3.2.8 QAI_Version_No

This control is used to select or filter the version numbers of QAI. It is also a Free Form Box. The default value is “ALL” meaning that all the version numbers are selected. It is also coded to work with wild-card characters. Unlike other controls whose values are read as upper case from the database, the value for version number is lower case and hence it is coded to accept any case entered by the user but has to convert to lower case before being passed to the report. For example “v*” or “V*” are passed as “v*” and it means all version numbers beginning with v. The report accepts a list of version numbers (if ALL is selected) or parse it accordingly as filtered in the WHERE clause of the base SQL query.

5.3.2.9 Submit Button

This control button will perform all the validation process on the fields and display the appropriate error messages. If validation is passed, the appropriate report will be generated in transient mode.

5.3.2.10 Reset Button

This control button re-sets all filters back to their default and set the focus back on the drop down controls (for environment) or to free box forms for other controls.

5.3.3 METHODS AND FUNCTIONS OVERRIDDEN

Apart from the methods inherited from the libraries that were already overridden, other methods were overridden as shown in the following appendices.

5.3.3.1 Initialize the arrays which store data

In order to achieve the above purpose, **Function SuggestRoiName(row As AcDataRow) As String** was overridden as shown in Appendix 16 (1).

5.3.3.2 Enable the running of multiple queries in obtainselect statement

In order to achieve the above purpose, **Function NewContent(index As Integer) As AcReportComponent** was overridden as shown in Appendix 16 (2).

5.3.3.3 Enable reading if a textfile to show which report to run

In order to achieve the above purpose, **Function BrowserCode( ) As String** and **Sub NetscapeViewTimeUpdate( )** were overridden as shown in Appendix 16 (3)and Appendix 16 (4).

5.3.3.4 Enable reading of textfile to set the values on the dropdowns

In order to achieve the above purpose, **Sub SetValue(row As AcDataRow)** was overridden as shown in Appendix 16 (5).

5.3.3.5 Load dropdowns and give the names of the dropdowns

In order to achieve the above purpose, **Function BrowserCode( ) As String, Sub NetscapeViewTimeUpdate( ), Sub SetValue(row As AcDataRow)**, were overridden

as shown in Appendix 16 (6), Appendix 16 (7), Appendix 16 (8), Appendix 16 (9), Appendix 16 (10), Appendix 16 (11).

5.3.3.6 Enable reading of multiple queries

In order to achieve the above purpose, **Function ObtainSelectStatement( ) As String** was overridden as shown in Appendix 16 (12).

5.3.3.7 Assign values to arrays which are used to load dropdowns

In order to achieve the above purpose, **Sub OnRead( )**was overridden as shown in Appendix 16 (13).

5.3.3.8 Requester GUI and other code

The **browser code was as shown** in Appendix 16 (14) in order to achieve form verifications among other requester functionalities.

CHAPTER SIX

6 SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

6.1 SUMMARY OF FINDINGS

Objective one (1) of the study sought to assess the extent of use of enterprise reporting systems at Kisii Bottlers (K) Ltd.. To meet this objective, the following research questions were used;

i) What is the current situation in the utilization of enterprise reports, and other electronic data resources?

ii) What are the factors determining the current status in the use of enterprise reporting systems?

It was found out that the main electronic information resources of the company are reports, spreadsheets, word documents and web documents. Electronic reports were the most popularly used of all the cited electronic information resources by all the categories of report users. This revealed the influence that reports had in management decision making.

Original adoption of ER systems and the current use of those systems depended on a number of factors that influenced the current situation in the use of ER systems. In the original design and development of reports, respondents cited user involvement, management support and developers' ability as the major factors that played a part in determining the current status of the use of ER systems in the company.

In relation to report generation, frequency of report generation, promptness of report generation, format of generated reports and mode of administration of report generation played a part in determining the current status of the use of ER systems in the company.

Medium of report distribution, promptness in report distribution and mode of administration of report distribution played a role in determining the current status of the use of ER systems in the company.

Review and revision of reports were determined by user involvement, management support and developers' competence.

Objective two (2) of the study sought to identify the challenges experienced in the use of enterprise reporting systems. To meet this objective, the following research questions were used;

i) What are the challenges facing use of enterprise reporting systems?

The challenges associated with user involvement in the design and development of ER systems included; inadequate user commitment, developers' negative attitude and inadequate management commitment. The challenges that were associated with developers' competence: in the design and development of ER systems were; poor choice of software for the design and development of reports, limited expertise on design and development of reports, inappropriate design and development procedures. The challenges associated with Management support in the design and development of ER systems included; users' attitude about the importance of report information, inaccessibility of the reporting system by other employees and infrastructural inadequacies.

The challenges associated with the report frequency in the generation of reports included; users' attitude about the importance of report information, inaccessibility to the reporting system by less privileged employees and infrastructural inadequacies. The challenges associated with promptness of report generation in the generation of reports included; users' attitude about the importance of report information, inaccessibility to

the reporting system by less privileged employees and infrastructural inadequacies. The challenges associated with the format of generated reports included; ease of use and compatibility of format with other data in different format. The challenge associated with mode of administration in the generation of reports was inadequate discipline in the generation of reports.

The challenge associated with the medium of report distribution in the distribution of reports was the reliability of the medium. The challenge associated with the mode of administration in the distribution of reports was lack of discipline in generating reports.

Objective three (3) of the study sought to determine appropriate Key Performance Indicators and Service Level Agreements that can be tracked to enhance use of enterprise reporting systems. To meet this objective, the following research question was used;

i) Which Service Level Agreements and Key Performance Indicators related to enterprise reporting systems, are important to track?

Findings indicated that the key things to be tracked to enhance the design and development of reports include; percentage number of relevant report users consulted during the design and development of reports, the level of relevant competence of the developers of reports, the level of management support in the design and development of reports.

Findings indicated that the key things to be tracked to enhance the generation of reports include; Level of satisfaction of the frequency of report generation, the level of satisfaction of the promptness of report generation, the level of satisfaction of the format of generated reports, the level of satisfaction of the mode of administration of report generation.

Findings indicated that the key things to be tracked to enhance the distribution of reports include; the level of satisfaction of the medium of report distribution, and the level of satisfaction of the mode of report distribution.

Findings indicated that the key things to be tracked to enhance the review and revision of reports include; percentage number of relevant report users consulted during the review and revision of reports, the level of relevant competence of the developers of reports and the level of management support in the review and revision of reports.

Objective four (4) of the study sought to assess the benefits of systematic tracking of the identified Key Performance Indicators and Service Level Agreements in the use of enterprise reporting systems. To meet this objective, the following research question was used;

i) How is a reporting system a practical solution to the identified factors limiting use of enterprise reporting systems?

Findings indicated that systematic tracking of KPIs and SLAs could assist in making decisions about possible adjustments to involve more and relevant report users to facilitate better design and development of reports. Report findings also indicated that it could assist in taking appropriate actions in the involvement of the right persons in the design and development of reports. Report findings also indicated that it could assist in sensitizing the management on what could be done to support the processes of design and development of reports among others.

Findings indicated that systematic tracking of KPIs and SLAs could assist in making statistical assessment of report utilization and make appropriate decisions that could encourage report utilization. It was also found that it could enable management to make

appropriate decisions about the mode of administration of report generation so as to counter any report administration challenges.

Findings indicated that systematic tracking of KPIs and SLAs could enable management and make appropriate decisions about the medium so as to have in place the most reliable medium for report distribution that will encourage use of enterprise reports. It was found that it could enable management make appropriate decisions about the mode of administration of report distribution to encourage the use of reports in the company.

Findings indicated that systematic tracking of KPIs and SLAs could assist in making decisions about possible adjustments to involve more and relevant report users to facilitate better review and revision of reports. It was found that it could assist in taking appropriate actions in the involvement of the right persons in the review and revision of reports. Report findings also indicated that it could assist in sensitizing the management on what could be done to support the processes of review and revision of reports among others.

Objective five (5) of the study sought to design and develop a systematic supervision reporting system to enhance use of enterprise reporting systems. To accomplish this objective, the following research question was used;

i) How can a supervision reporting system promote the use of enterprise reporting systems?

A systematic solution was developed to track the Key Performance Indicators and Service Level Agreements determined in the study as per objective three of the study. The solution was designed as a supervision reporting system with metrics and indicators of the status the use of reporting in the company to facilitate action from the responsible persons in the company.

6.2 CONCLUSIONS

Objective one (1) of the study sought to assess the extent of use of enterprise reporting systems at Kisii Bottlers (K) Ltd.. In light of this, it can be seen that electronic reports being the most popularly used of all the cited electronic information resources in the company indicate the influence of reports in management decision making. This emphasized the need to step up utilization of them through improving the electronic data depositories such as databases, data warehouses, files and all kinds of electronic data sources that are capable of providing information to reporting systems. The level of utilization of reports is influenced by factors related to the design, development, generation, distribution, review and revision of reports. This implies that at each stage of the report cycle the overall efficiency of reporting systems is influenced and it is therefore necessary for each of the stages of the cycle to be improved for overall improvement in the use of reporting systems.

Objective two (2) of the study sought to identify the challenges experienced in the use of enterprise reporting systems. In light of this, it can be seen that the challenges facing use of reporting systems are also associated with the design, development, generation, distribution, review and revision of reports. These challenges are controllable if identified and dealt with. These challenges include; inadequate user commitment, developers' negative attitude, inadequate management commitment, poor choice of software for the design and development of reports, limited expertise on design and development of reports, inappropriate design and development procedures, users' attitude about the importance of report information, infrastructural inadequacies, inaccessibility to the reporting system by less privileged employees, ease of use and compatibility of format with other data in different format, inadequate discipline in the

generation of reports, reliability of the medium, lack of discipline in generating reports among others.

Objective three (3) of the study sought to determine appropriate Key Performance Indicators and Service Level Agreements that can be tracked to enhance use of enterprise reporting systems. In light of this, it can be seen that the amount of relevant information possessed by decision makers is a critical aspect of efficient decision making. This implies that even information about the use of reporting systems can be tracked and necessitate action from different relevant persons in the company. The information about use of reporting systems can be tracked and the presented by using a supervision reporting system. The parameters that can be tracked include; percentage number of relevant report users consulted during the design and development of reports, the level of relevant competence of the developers of reports, the level of management support in the design and development of reports, level of satisfaction of the frequency of report generation, the level of satisfaction of the promptness of report generation, the level of satisfaction of the format of generated reports, the level of satisfaction of the mode of administration of report generation, the level of satisfaction of the medium of report distribution, and the level of satisfaction of the mode of report distribution, percentage number of relevant report users consulted during the review and revision of reports, the level of relevant competence of the developers of reports and the level of management support in the review and revision of reports.

Objective four (4) of the study sought to assess the benefits of systematic tracking of the identified Key Performance Indicators and Service Level Agreements in the use of enterprise reporting systems. In light of this, it can be seen that tracking of Key Performance Indicators and Service Level Agreements in the use of enterprise reporting systems is beneficial to deliver information about the status of reporting systems to the

right persons in the company for appropriate action to improve the use of those systems. All the challenges facing use of enterprise reporting systems across the reporting cycle can be dealt with first and foremost if they are clearly identified. The identification is achieved through tracking of measurable aspects of use of reporting systems which give outright indications of a problem that needs to be addressed?

Objective five (5) of the study sought to design and develop a systematic supervision reporting system to enhance use of enterprise reporting systems. In light of this, it can be seen that a supervision reporting system to track the Key Performance Indicators and Service Level Agreements determined in the study as per objective three of the study is an appropriate solution. The design and development of this solution must be informed by the findings of the study.

6.3 RECOMMENDATIONS

In the light of the findings, the study recommends the following;

1. In order to derive the right information from the company's electronic data resources, there is a need for the IT department to improve the storage mechanisms of data in the company for ease of access through data warehousing.

2. In order to tap the influence of employees to promote use of enterprise reporting, there is need for the IT department to facilitate training to report users and other relevant persons on their role in the different aspects of enterprise reporting.

3. In order to improve the effectiveness of the use of enterprise reporting systems in the company. There is a need for the top management of the company to grow the IT department to possess diverse skills relevant to business intelligence and enterprise reporting such as programming, data warehousing, and database administration among others.

4. In order to provide useful information to the relevant persons in the organization to take appropriate action and promote use of ER systems in the company. There is need for the IT department to adopt a supervision reporting system such as the one developed in the study for tracking the critical aspects of the reporting.

5. In order to promote the use of enterprise reporting systems, there is a need for policy formulation and implementation by the IT department relating to design and development of reports, generation of reports, distribution of reports, review and revision of reports.

6.4 RECOMMENDATIONS FOR FURTHER RESEARCH

1. A research on the cost evaluation of enterprise reporting and business intelligence services in the soft drinks industry and in other organizations would give a true reflection of the value of BI and ER.

2. A research into the use of artificial intelligence such as neural networks to determine failings in the different aspects of the use of BI tools in and offer suggestions on appropriate steps to improve use of ER systems.

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APPENDIX 01: INTERVIEW QUESTIONS FOR BUSINESS MANAGERS & OPERATIONAL LEVEL EMPLOYEES BEFORE PRESTESTING

INTRODUCTION

The objective of this exercise is to gather information to investigate the use of ER with a view of determining a systematic solution to any possible challenges facing use of ER in the soft drinks industry.

The respondents are urged to answer the questions as accurately as possible. The respondent is also informed that the researcher is obliged to strive to guarantee the respondent's total confidentiality.

Current situation of enterprise reporting

1. What are the company's electronic data sources/repositories that can be used in facilitating decision making?
2. What are the categorizations of the reports generated by the organization? On what criteria is such categorization based on?
3. Who are the report users in the company? And what role do they have in reporting?
4. How important are these electronic data sources in supporting decision making in your organization?
5. How satisfactory is the electronic data storage in meeting the company's electronic data needs?
6. How is reporting carried out in the company to utilize the electronic data repositories in providing information in decision making?

Challenges faced in the use of ER systems

7. To what extent do you think enterprise reporting is sufficiently embraced in the organization?

8. What are the problems facing utilization of the electronic data repositories as information sources for decision making in the company using the current mechanisms?

9. To what extent is reporting a good means of providing information for decision making in the company?

10. How suitable are the electronic data repositories in the organization in allowing better reporting?

11. What is the percentage of the intended users that use reports in decision making?

12. To what extent, in your opinion, do the implemented reporting systems meet the company's information needs?

13. What in your opinion are the reasons responsible for the current utilization level of reporting in your company?

14. What in your view are the important aspects of reporting that are not captured in the current enterprise reporting systems?

15. What is the role of IT department or related department in the company in the maintenance and promotion of better use of reporting in the company?

16. How satisfactory is the role of the reporting/business intelligence department or related department in providing effective enterprise reporting in your organization?

17. What in your opinion are the challenges facing use of ER systems in your

company?

Appropriate KPIs and SLAs for use of enterprise reporting systems

18. Who designed and developed the current reporting mechanisms for the company?
19. What percentage of the current report users were involved in the requirements definition, before the reports were designed?
20. Who determined the tools that were used in the design and deployment of reports in the company?
21. What factors influenced the choice of the tools used in the design of reports?
22. How often does the company review the report designs to meet the dynamic reporting needs of reporting in the company?
23. What in your view are the inadequacies in the current reporting systems designs?
24. Does the company generate reports regularly?
25. If yes, at what interval?
26. Do you feel the interval of report generation is appropriate for maximization of reporting in decision making?
27. How is the report generation and distribution administered?
28. Through what medium does the organization's reporting mechanisms deploy reports?
29. In what format are the reports generated?
30. In your opinion, how effective is the method of report deployment used in the organization?

31. In your opinion, how suitable is the format in which you get the reports?

Possible benefits of systematic tracking of the use of ER systems

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32. How beneficial do you think is enterprise reporting in promoting management decision making in your company?

33. What consequential overheads are as a result of ineffective enterprise reporting in the company?

34. In what ways in your opinion can enterprise reporting provide a solution to the above mentioned overheads?

APPENDIX 02: INTERVIEW QUESTIONS FOR BUSINESS MANAGERS & OPERATIONAL LEVEL EMPLOYEES AFTER PRETESTING

INTRODUCTION

The objective of this exercise is to gather information to investigate the use of ER with a view of determining a systematic solution to any possible challenges facing use of ER in the soft drinks industry.

The respondents are urged to answer the questions as accurately as possible. The respondent is also informed that the researcher is obliged to strive to guarantee the respondent's total confidentiality.

Current situation of enterprise reporting

---

1. What are the company's electronic data sources/repositories that you use in facilitating decision making?
2. What are the categorizations of the reports generated by the organization? On what criteria is such categorization based on?
3. How important are these electronic data sources in supporting decision making in your organization?
4. How satisfactory is the electronic data storage in meeting the company's electronic data needs?
5. How is reporting carried out in the company to utilize the electronic data repositories in providing information in decision making?

Challenges faced in the use of ER systems

6. To what extent do you think enterprise reporting is sufficiently embraced in the organization?
7. What are the problems facing utilization of the electronic data repositories as information sources for decision making in the company using the current mechanisms?
8. To what extent is reporting a good means of providing information for decision making in the company?
9. To what extent, in your opinion, do the implemented reporting systems meet the company's information needs?
10. What in your opinion are the reasons responsible for the current utilization level of reporting in your company?
11. What in your view are the important aspects of reporting that are not captured in the current enterprise reporting systems?
12. What is the role of IT department or related department in the company in the maintenance and promotion of better use of reporting in the company?
13. How satisfactory is the role of the reporting/business intelligence department or related department in providing effective enterprise reporting in your organization?
14. What in your opinion are the challenges facing use of ER systems in your company?

Appropriate KPIs and SLAs for use of enterprise reporting systems

15. What percentage of the current report users were involved in the requirements definition, before the reports were designed?
16. What factors influenced the choice of the tools used in the design of reports?
17. Does the company generate reports regularly?
18. If yes, at what interval?
19. Do you feel the interval of report generation is appropriate for maximization of reporting in decision making?
20. How is the report generation and distribution administered?
21. Through what medium does the organization's reporting mechanisms deploy reports?
22. In what format are the reports generated?
23. In your opinion, how effective is the method of report deployment used in the organization?
24. In your opinion, how suitable is the format in which you get the reports?

Possible benefits of systematic tracking of the use of ER systems

25. How beneficial do you think is enterprise reporting in promoting management decision making in your company?
26. What consequential overheads are as a result of ineffective enterprise reporting in the company?
27. In what ways in your opinion can enterprise reporting provide a solution to the above mentioned overheads?

APPENDIX 03: INTERVIEW QUESTIONS FOR IT MANAGEMENT STAFF

INTRODUCTION

The objective of this exercise is to gather information to investigate the use of ER with a view of determining a systematic solution to any possible challenges facing use of ER in the soft drinks industry.

The respondents are urged to answer the questions as accurately as possible. The respondent is also informed that the researcher is obliged to strive to guarantee the respondent's total confidentiality.

Current situation of enterprise reporting

1. What are the company's electronic data sources/repositories that can be used in facilitating decision making?
2. What are the categorizations of the reports generated by the organization? On what criteria is such categorization based on?
3. Who are the report users in the company? And what role do they have in reporting?
4. How important are these electronic data sources in supporting decision making in your organization?
5. How satisfactory is the electronic data storage in meeting the company's electronic data needs?
6. How is reporting carried out in the company to utilize the electronic data repositories in providing information in decision making?

Challenges faced in the use of ER systems

7. To what extent do you think enterprise reporting is sufficiently embraced in the

organization?

8. What are the problems facing utilization of the electronic data repositories as information sources for decision making in the company using the current mechanisms?

9. To what extent is reporting a good means of providing information for decision making in the company?

10. How suitable are the electronic data repositories in the organization in allowing better reporting?

11. What is the percentage of the intended users that use reports in decision making?

12. To what extent, in your opinion, do the implemented reporting systems meet the company's information needs?

13. What in your opinion are the reasons responsible for the current utilization level of reporting in your company?

14. What in your view are the important aspects of reporting that are not captured in the current enterprise reporting systems?

15. What is the role of IT department or related department in the company in the maintenance and promotion of better use of reporting in the company?

16. How satisfactory is the role of the reporting/business intelligence department or related department in providing effective enterprise reporting in your organization?

17. What in your opinion are the challenges facing use of ER systems in your company?

18. Who designed and developed the current reporting mechanisms for the company?
19. What percentage of the current report users were involved in the requirements definition, before the reports were designed?
20. Who determined the tools that were used in the design and deployment of reports in the company?
21. What factors influenced the choice of the tools used in the design of reports?
22. How often does the company review the report designs to meet the dynamic reporting needs of reporting in the company?
23. What in your view are the inadequacies in the current reporting systems designs?
24. Does the company generate reports regularly?
25. If yes, at what interval?
26. Do you feel the interval of report generation is appropriate for maximization of reporting in decision making?
27. How is the report generation and distribution administered?
28. Through what medium does the organization's reporting mechanisms deploy reports?
29. In what format are the reports generated?
30. In your opinion, how effective is the method of report deployment used in the organization?
31. In your opinion, how suitable is the format in which you get the reports?

Possible benefits of systematic tracking of the use of ER systems

32. How beneficial do you think is enterprise reporting in promoting management decision making in your company?

33. What consequential overheads are as a result of ineffective enterprise reporting in the company?

34. In what ways in your opinion can enterprise reporting provide a solution to the above mentioned overheads?

APPENDIX 04: INTRODUCTORY LETTER FROM SCHOOL OF INFORMATION SCIENCES, MOI UNIVERSITY

MOI UNIVERSITY

DEPARTMENT OF INFORMATION TECHNOLOGY

Tel: (053) 43231
Fax No. (053) 43292
Telex NO: 35047 MOIVASITY

P. O. Box 3900
Eldoret
Kenya.

REF: IS/MPHIL/056/07 DATE: 23rd October, 2008

Ministry of Education,
P. O. Box 30040-00100,
NAIROBI.

Dear Sir/Madam,

RE: RESEARCH PERMIT FOR RATEMO MAKIYA CYPRIAN – IS/MPHIL/056/07

The above named person is an MPhil student at Moi University in the Department of Information Technology, School of Information Sciences, Moi University.

Mr. Cyprian is intending to carry out research work entitled ***"Adoption and Use of Enterprise Reporting Systems in the Soft Drinks Industry: A Case Study of Cocacola Kisii Bottlers Ltd. Kenya".***

We are kindly requesting you to issue him with a research permit to enable him proceed with his research.

Thank you.

Yours sincerely,

HEAD
DEPT. OF INFORMATION TECHNOLOGY

for MOI UNIVERSTY
SCHOOL OF IFORMATION SCIENCE

DR. DAVID GICHOYA
HEAD,
DEPARTMENT OF INFORMATION TECHNOLOGY

DG/cam

APPENDIX 05: AUTHORIZATION LETTER FROM THE MINISTRY OF SCIENCE AND TECHNOLOGY

NATIONAL COUNCIL FOR SCIENCE AND TECHNOLOGY

Telegrams: "SCIENCETECH", Nairobi
Telephone: 254-20-241331, 241349,
254-20- 311761, 241376,
Fax: 254-20- 213215
When replying please quote

P. O. Box 30623 –00100
NAIROBI- KENYA

REF: NCST/13/001/C/711

19th November 2008

Mr. Ratemo M. Cyprian
P.O. Box 188
Kisii

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on "**Adoption and use of Enterprise Reporting Systems in the Soft Drinks Industry: A case Study of Coca Cola Kisii Bottlers Ltd.**", I am pleased to inform you that you have been authorized to carry out in **Kisii District** for a period ending **31st December, 2008**.

You are advised to report to Chief Executive Officer of the organization before embarking on your research.

On completion of your research, you are expected to submit two copies of your research report to this office.

FOR PERMANENT SECRETARY
MINISTRY OF SCIENCE AND
TECHNOLOGY

Z. O. OWITI
FOR: EXECUTIVE SECRETARY

Copy to:

Chief Executive Officer,
Coca Cola Kisii Bottlers Ltd.
Kisii

APPENDIX 06: RESEARCH PERMIT FROM THE MINISTRY OF SCIENCE AND TECHNOLOGY

PAGE 2

THIS IS TO CERTIFY THAT:

Prof./Dr./Mr./Mrs./Miss RATEMO CYPRIAN MAKIYA

of (Address) P.O.BOX 3900, ELDORET

has been permitted to conduct research in COCACOLA KISII BOTTLERS, Location,

KISII District,

NYANZA Province,

on the topic ADOPTION AND USE OF ENTERPRISE REPORTING SYSTEMS IN THE SOFT DRINKS INDUSTRY: A CASE STUDY OF COCACOLA KISII BOTTLERS LTD., KENYA.,

for a period ending 31ST DECEMBER, 2009

PAGE 3

Research Permit No. NCST/13/001/38C 711

Date of issue 12-11-2008

Fee received KSHS.500

Z.O.OWITI

Applicant's Signature

FOR *Permanent Secretary Ministry of Science and Technology*

MINISTRY OF SCIENCE AND TECHNOLOGY

CONDITIONS

1. You must report to the District Commissioner and the District Education Officer of the area before embarking on your research. Failure to do that may lead to the cancellation of your permit.
2. Government Officers will not be interviewed without prior appointment.
3. No questionnaire will be used unless it has been approved.
4. Excavation, filming and collection of biological specimens are subject to further permission from the relevant Government Ministries.
5. You are required to submit at least two(2)/four(4) bound copies of your final report for Kenyans and non-Kenyans respectively.
6. The Government of Kenya reserves the right to modify the conditions of this permit including its cancellation without notice

GPK 6055—3m—10/2003

REPUBLIC OF KENYA

RESEARCH CLEARANCE PERMIT

(CONDITIONS—*see* back page)

APPENDIX 07: LETTER OF REQUEST TO KISII BOTTLERS (K) LTD. FOR AUTHORIZATION TO CONDUCT RESEARCH IN THE COMPANY

Ratemo Makiya Cyprian
P. O. Box 188- 40200,
Kisii

Human Resource Manager
Kisii Bottlers (K) Ltd.
P. O Box 3456 – 40200
Kisii

Dear Sir/Madam,

RE: REQUEST TO FOR AUTHORIZATION TO CARRY OUT A RESEARCH IN YOUR FIRM

I am a student at the school of information sciences, Moi University pursuing M.Phil. degree in Info. Sci. (Information Technology). I have been permitted to do a research entitled: ***Use of ER systems in the soft drinks industry: A case study of Kisii Bottlers (K) Ltd.*** and I would wish to request you to allow me to gather information from your company to enable me to successfully conduct the proposed research, which is a requirement for the award of the degree being pursued. This research will hopefully be of interest to you and I am hopeful that it will be of benefit to you in one way or another.

Enclosed herewith are copies of my curriculum vitae, the research proposal detailing the interview questions that will be used in the collection of data and Letter of Introduction from the department of IT. A Research clearance permit from the Ministry of Science and Technology will also be made available to you before the completion of the data collection exercise.

Thank you in advance.

Yours sincerely,

Ratemo Makiya Cyprian

APPENDIX 08: AUTHORIZATION LETTER FROM KISII BOTTLERS (K) LTD. TO CONDUCT RESEARCH IN THE COMPANY

Coca-Cola
KISII
BOTTLERS LIMITED

31st October 2008,

TO WHOM IT MAY CONCERN

Dear sir / Madam,

RE: INDUSTRIAL RESEARCH- RATEMO MAKIYA CYPRIAN.

We acknowledge receipt of your letter dated **31st October 2008**.
We are pleased to inform you that your request has been accepted, and you are requested to come on **3rd November 2008,** for the required information.

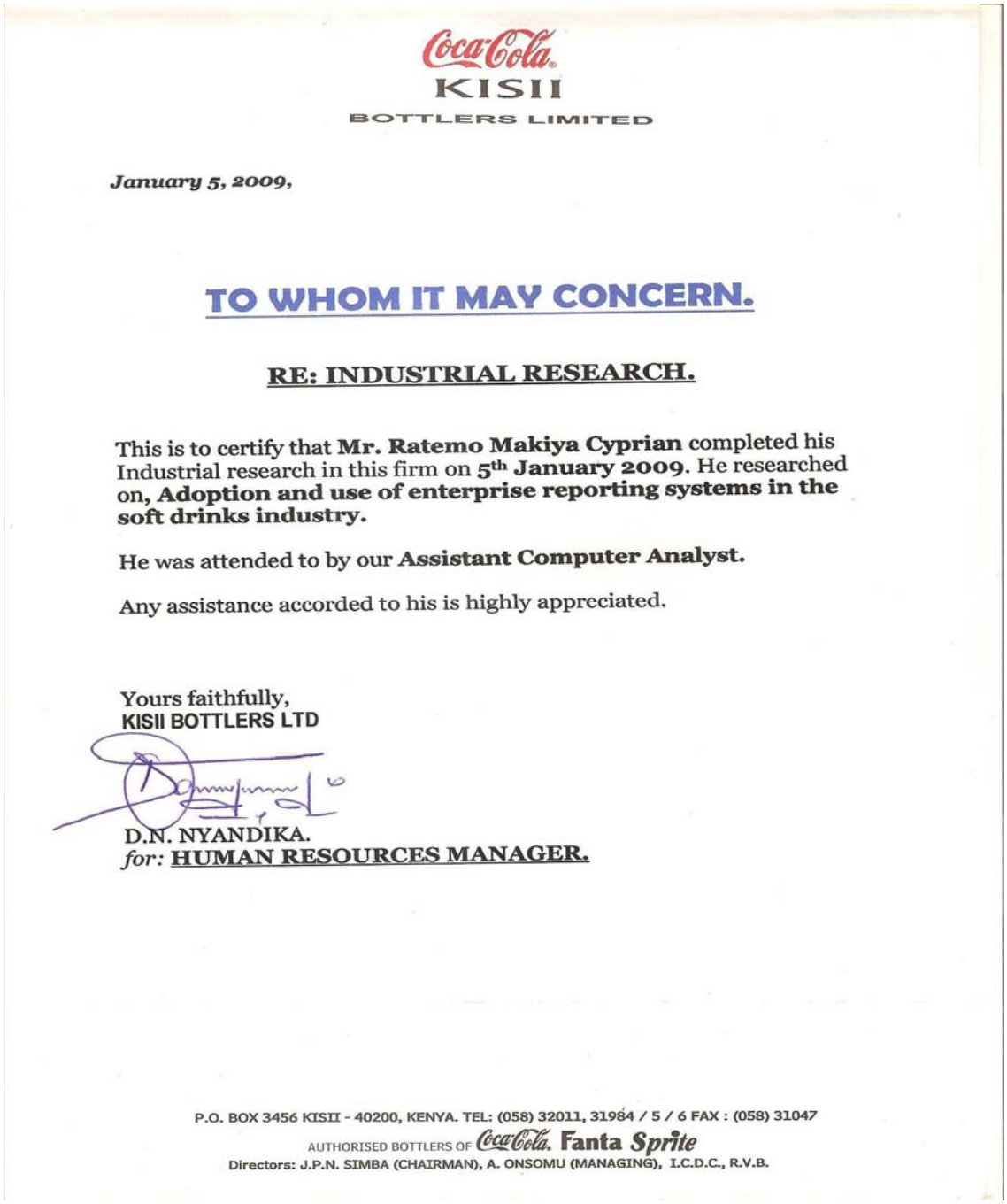
.

Yours faithfully,
KISII BOTTLERS LTD

D.N. NYANDIKA
For: **HUMAN RESOURCES MANAGER.**

P.O. BOX 3456 KISII - 40200, KENYA. TEL: (058) 32011, 31984 / 5 / 6 FAX : (058) 31047
AUTHORISED BOTTLERS OF Coca-Cola Fanta Sprite
Directors: J.P.N. SIMBA (CHAIRMAN), A. ONSOMU (MANAGING), I.C.D.C., R.V.B.

APPENDIX 09: CERTIFICATION LETTER FROM KISII BOTTLERS (K) LTD. FOR COMPLETION OF INDUSTRIAL RESEARCH



Coca-Cola
KISII
BOTTLERS LIMITED

January 5, 2009,

TO WHOM IT MAY CONCERN.

RE: INDUSTRIAL RESEARCH.

This is to certify that **Mr. Ratemo Makiya Cyprian** completed his Industrial research in this firm on **5th January 2009**. He researched on, **Adoption and use of enterprise reporting systems in the soft drinks industry.**

He was attended to by our **Assistant Computer Analyst.**

Any assistance accorded to his is highly appreciated.

Yours faithfully,
KISII BOTTLERS LTD

D.N. NYANDIKA.
for: **HUMAN RESOURCES MANAGER.**

P.O. BOX 3456 KISII - 40200, KENYA. TEL: (058) 32011, 31984 / 5 / 6 FAX : (058) 31047
AUTHORISED BOTTLERS OF Coca-Cola. Fanta Sprite
Directors: J.P.N. SIMBA (CHAIRMAN), A. ONSOMU (MANAGING), I.C.D.C., R.V.B.

APPENDIX 10: LETTER OF REQUEST TO EQUATOR BOTTLERS (K) LTD. FOR AUTHORIZATION TO CONDUCT PILOT STUDY IN THE COMPANY

Ratemo Makiya Cyprian
P. O. Box 188- 40200,
Kisii

Human Resource Manager
Equator Bottlers (K) Ltd.
Kisumu

Dear Sir/Madam,

RE: REQUEST TO FOR AUTHORIZATION TO CARRY OUT A PILOT STUDY IN YOUR FIRM

I am a student at the school of information sciences, Moi University pursuing M.Phil. degree in Info. Sci. (Information Technology). I have been permitted to do a research entitled: ***Use of ER systems in the soft drinks industry: A case study of Kisii Bottlers (K) Ltd.*** and I would wish to request you to allow me to gather some information from your company to enable me to revise the research instruments that I will use in the actual study.

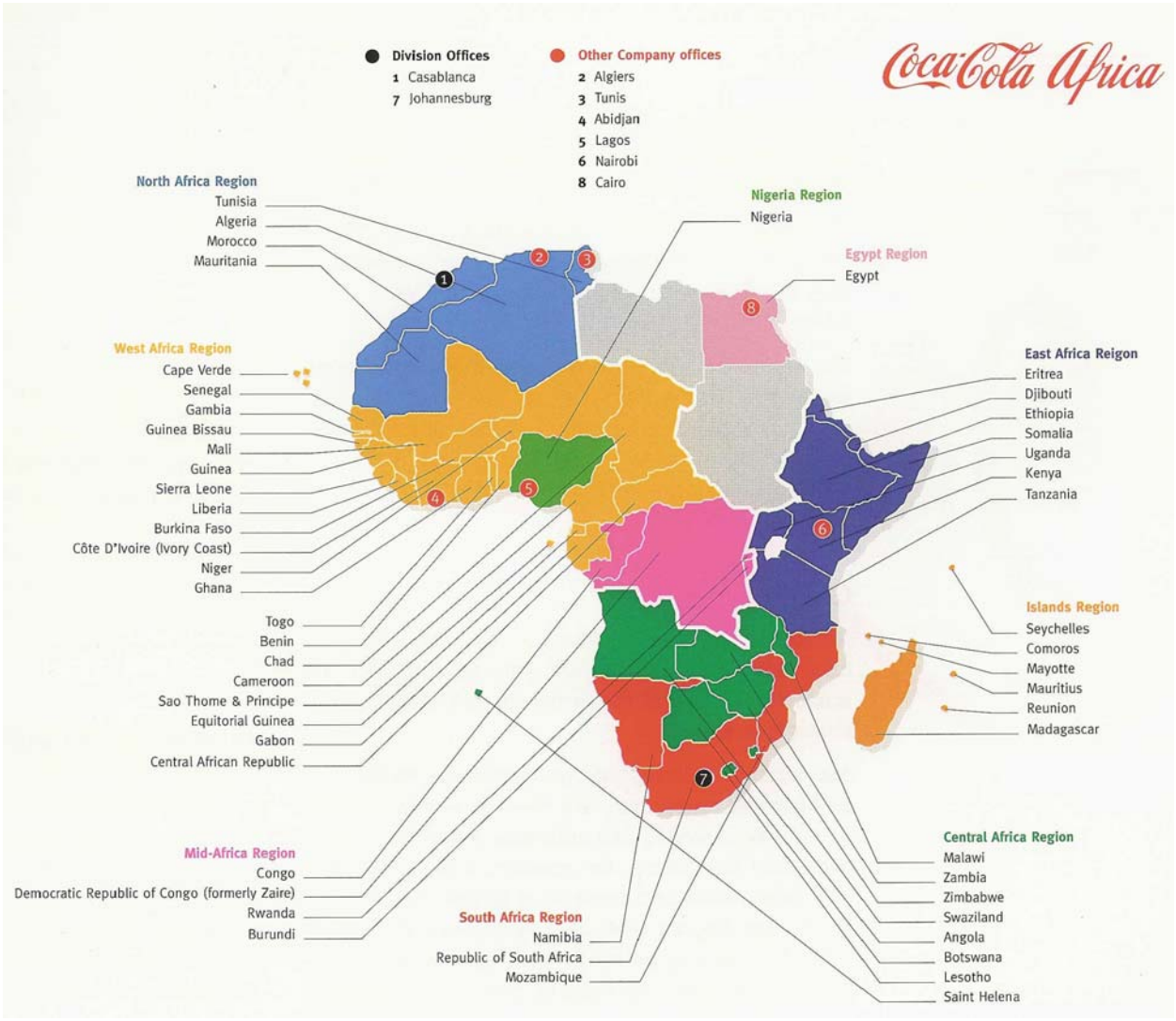
Enclosed herewith are copies of my curriculum vitae, the research proposal detailing the interview questions that will be used in the collection of data and Letter of Introduction from the department of IT. A Research clearance permit from the Ministry of Science and Technology will also be made available to you before the completion of the data collection exercise.

Thank you in advance.

Yours sincerely,

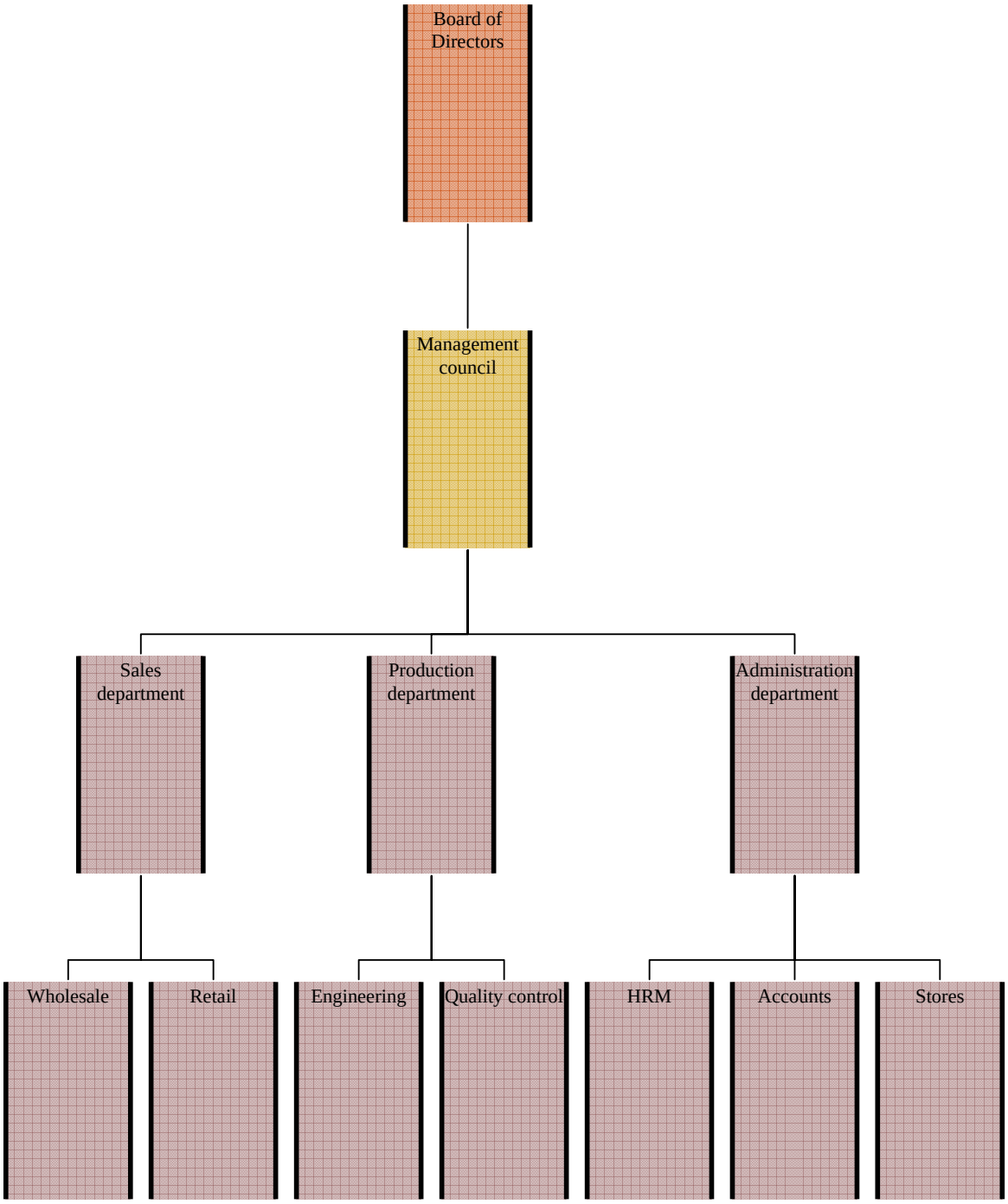
Ratemo Makiya Cyprian

APPENDIX 11: MAP OF AFRICA SHOWING THE COCA-COLA AFRICA REGIONS



APPENDIX 12: PART OF THE ORGANIZATIONAL STRUCTURE OF KISII BOTTLERS (K) LTD.

RR



APPENDIX 13: PROJECT PLAN SUMMARY.

Milestone Number	**Milestone Name**	**Timeline**
001	Collecting, comprehending, and logistically formalizing requirements.	**2 weeks**
002	Design of report mock ups and the repository model	**1 week**
003	Acquiring of resources and actual construction of the reporting system.	**9 weeks**
004	Testing of the system using the established test scripts and documentation of the system design and development	**1 week**
TOTAL TIME		**13 WEEKS**

APPENDIX 14: REPORT REQUESTER PARAMETERS MOCK UP

Quality Assurance Report Requester

QAI_ID	
QAI_Name	
QAI_Desc	
QAI_Version	
QA_Type	
QA_Person	
Start_Date:	
End_Date:	
SUBMIT	**RESET**

APPENDIX 15: QA_REPORT MOCK UP

QA REPORT AS AT #### LOGO

QAI_ID	QAI_Name	QAI_Desc	QAI_Version	QA_Type	QA_Person	QA_Date

APPENDIX 16: OVERRIDEN METHODS & FUNCTIONS FOR REPORT REQUESTER

1. Function SuggestRoiName(row As AcDataRow) As String

```
Function SuggestRoiName( row As AcDataRow ) As String
   SuggestRoiName = Super::SuggestRoiName( row )
Glb_strtestimagefile="D:\colo\corp_logo.jpg"
NoDataAdding ="False"
redim QAI_Names(1)
redim QAI_Descs(1)
redim QAI_Versions(1)
redim QA_Types(1)
redim QAPERSONS(1)
End Function
```

2. Function NewContent(index As Integer) As AcReportComponent

```
Function NewContent( index As Integer ) As AcReportComponent
  ' Set NewContent = Super::NewContent( index )
if index = 1  then
Set NewContent = New Persistent Looping_Query
elseif index = 2 then
NoDataAdding ="True"
Set NewContent = New Persistent Looping_Query
Elseif index = 3 then
SecondQuery="False"
ThirdQuery="True"
Set NewContent = New Persistent Looping_Query
Elseif index = 4 then
ThirdQuery="False"
FourthQuery="True"
Set NewContent = New Persistent Looping_Query
Elseif index = 5 then
FourthQuery="True"
Set NewContent = New Persistent FormBasedReport
else
Set NewContent = Nothing
end if
End Function
```

3. Function BrowserCode( ) As String

```
Function BrowserCode( ) As String
   BrowserCode = Super::BrowserCode( )

   ' Insert your code here
       FinalMenuCode = NetscapeBegin + Chr$(10) + "<SELECT  onchange='getreportdetails()'
TabIndex='1' NAME='" + MenuName + "'" + NetscapeEventHandler + ">" + Chr$(10)
       'FinalMenuCode = FinalMenuCode + "<option value=''></option>"
       FinalMenuCode = FinalMenuCode + MenuCode  + Chr$(10)
       FinalMenuCode = FinalMenuCode + "</SELECT>"  + Chr$(10)
       FinalMenuCode = FinalMenuCode + NetscapeEnd + Chr$(10) + MenuScript
       BrowserCode = FinalMenuCode
End Function
```

4. Sub NetscapeViewTimeUpdate( )

```
Sub NetscapeViewTimeUpdate( )
       Dim el as String
```

```
   Super::NetscapeViewTimeUpdate( )

        ' This code is specific to SELECT element
        '
        If IsNetscape4() Then
                NetscapeBegin = "<FORM NAME='SelElementForm'>" + "<!-- " +      GetUserAgentString()
+ " -->"
                NetscapeEnd   = "</FORM>"
                'NetscapeEventHandler = " " + FormElementHandlerName + "='g_theNetscapeForm." +
FormElementName + ".value = this.value' "
                el = "document.SelElementForm." + FormElementName
                 'NetscapeEventHandler = " " + "onChange='alert(" + el + ".options[" + el +
".selectedIndex].value);'"
                NetscapeEventHandler = " " + "onChange='g_theNetscapeForm." + FormElementName +
".value ="  +  el + ".options[" + el + ".selectedIndex].value;'"
Title=NetscapeEventHandler
End If

End Sub
```

5. Sub SetValue(row As AcDataRow)

```
Sub SetValue( row As AcDataRow )
   Super::SetValue( row )
  redim Report(1)
dim Channel2,counts as integer
dim linedata
Channel2 = FreeFile()
        Open DataDirectory & InputFile For Input As #Channel2
Do Until EOF(Channel2)
Line Input #Channel2, linedata
Report(ubound(Report))=linedata
redim preserve Report(ubound(Report) + 1)
counts=counts + 1
loop

        Dim NL as String
        Dim TAB as String
        Dim i as Integer
   Dim z as  Integer
        Dim text as String
        Dim value as String
   Dim MenuCode1,MenuCode2
   Dim x as integer
   Dim wholetext as String
   Dim counter1 as integer


        NL  = Chr$(10)
        TAB = Chr$(9)
        i   = 0
   text="Please select report....."
   value=text
        ' Do not repeat options
        If Not (IsAlreadyProcessed(value)) Then
                MenuCode = MenuCode + NL + "<option value='" + value + "' selected='selected'>" + text +
"</option>"
        for x =1 to counts
```

```
    text=Report(x)
    value=text
   MenuCode1="<option value="'+ value +"'>" + text + "</option>"
   MenuCode2=MenuCode2 + MenuCode1
   next x
End If
MenuCode=MenuCode + MenuCode2

End Sub
```

6. Function BrowserCode( ) As String

```
Function BrowserCode( ) As String
BrowserCode = Super::BrowserCode( )
   ' Insert your code here
 ' Insert your code here
        FinalMenuCode = NetscapeBegin + Chr$(10) + "<SELECT size='2' multiple='multiple'
onchange='loadQAI_Name()' TabIndex='8'disabled='disabled'   NAME='" + MenuName + "'" +
NetscapeEventHandler + ">" + Chr$(10)
        'FinalMenuCode = FinalMenuCode + "<option value=''></option>"
        FinalMenuCode = FinalMenuCode + MenuCode  + Chr$(10)
        FinalMenuCode = FinalMenuCode + "</SELECT>"  + Chr$(10)
        FinalMenuCode = FinalMenuCode + NetscapeEnd + Chr$(10) + MenuScript
        BrowserCode = FinalMenuCode
End Function
```

7. Sub NetscapeViewTimeUpdate( )

```
Sub NetscapeViewTimeUpdate( )
   Super::NetscapeViewTimeUpdate( )
   Dim el as String

   Super::NetscapeViewTimeUpdate( )

        ' This code is specific to SELECT element
        '
        If IsNetscape4() Then
                NetscapeBegin = "<FORM NAME='SelElementForm'>" + "<!-- " +      GetUserAgentString()
+ " -->"
                NetscapeEnd   = "</FORM>"
                'NetscapeEventHandler = " " + FormElementHandlerName + "='g_theNetscapeForm." +
FormElementName + ".value = this.value' "
                el = "document.SelElementForm." + FormElementName
                'This works: NetscapeEventHandler = " " + "onChange='alert(" + el + ".options[" + el +
".selectedIndex].value);'"
                NetscapeEventHandler = " " + "onChange='g_theNetscapeForm." + FormElementName +
".value ="  +  el + ".options[" + el + ".selectedIndex].value;'"
        End If

End Sub
```

8. Sub SetValue(row As AcDataRow)

```
Sub SetValue( row As AcDataRow )
   Super::SetValue( row )


        Dim NL as String
        Dim TAB as String
        Dim i as Integer
```

```
   Dim z as  Integer
       Dim text as String
       Dim value as String
   Dim MenuCode1,MenuCode2
   Dim x as integer
   Dim wholetext as String
   Dim counter1 as integer


       NL  = Chr$(10)
       TAB = Chr$(9)
       i   = 0

       text  = row.GetValue(OptionText)
       value = row.GetValue(OptionValue)
   text="ALL"
   value=0
       ' Do not repeat options
       If Not (IsAlreadyProcessed(value)) Then
              MenuCode = MenuCode + NL + "<option value='" + value + "'>" + text + "</option>"
for x =1 to Ubound(QAI_Names)
    text=QAI_Names(x)
    value=x
   MenuCode1="<option value='"+ value +"'>" + text + "</option>"
   MenuCode2=MenuCode2 + MenuCode1
   next x
End If
MenuCode=MenuCode + MenuCode2
END SUB
```

9. <u>Function BrowserCode( ) As String</u>

```
Function BrowserCode( ) As String
   BrowserCode = Super::BrowserCode( )
   ' Insert your code here
 ' Insert your code here
       FinalMenuCode = NetscapeBegin + Chr$(10) + "<SELECT size='2' multiple='multiple'
onchange='loadQAI_Desc()' disabled='disabled' TabIndex='10' NAME='" + MenuName + "'" +
NetscapeEventHandler + ">" + Chr$(10)

'FinalMenuCode = FinalMenuCode + "<option value=''></option>"
       FinalMenuCode = FinalMenuCode + MenuCode  + Chr$(10)
       FinalMenuCode = FinalMenuCode + "</SELECT>"  + Chr$(10)
       FinalMenuCode = FinalMenuCode + NetscapeEnd + Chr$(10) + MenuScript
       BrowserCode = FinalMenuCode
End Function
```

10. <u>Sub SetValue(row As AcDataRow)</u>

```
Sub SetValue( row As AcDataRow )
   Super::SetValue( row )


       Dim NL as String
       Dim TAB as String
       Dim i as Integer
   Dim z as  Integer
       Dim text as String
       Dim value as String
   Dim MenuCode1,MenuCode2
```

```
   Dim x as integer
   Dim wholetext as String
   Dim counter1 as integer


        NL  = Chr$(10)
        TAB = Chr$(9)
        i   = 0

        text  = row.GetValue(OptionText)
        value = row.GetValue(OptionValue)
   text="ALL"
   value=0
        ' Do not repeat options
        If Not (IsAlreadyProcessed(value)) Then
                MenuCode = MenuCode + NL + "<option value='" + value + "'>" + text + "</option>"
for x =1 to Ubound(QAI_Descs)
    text=QAI_Descs(x)
    value=x
   MenuCode1="<option value='"+ value +"'>" + text + "</option>"
   MenuCode2=MenuCode2 + MenuCode1
   next x
End If
MenuCode=MenuCode + MenuCode2
END SUB
```

11. Function BrowserCode( ) As String

```
Function BrowserCode( ) As String
   BrowserCode = Super::BrowserCode( )
   ' Insert your code here
 ' Insert your code here
        FinalMenuCode = NetscapeBegin + Chr$(10) + "<SELECT size='2' multiple='multiple'
disabled='disabled' onchange='loadQAI_Version()' TabIndex='11' NAME='" + MenuName + "'" +
NetscapeEventHandler + ">" + Chr$(10)
        'FinalMenuCode = FinalMenuCode + "<option value=''></option>"
        FinalMenuCode = FinalMenuCode + MenuCode  + Chr$(10)
        FinalMenuCode = FinalMenuCode + "</SELECT>"  + Chr$(10)
        FinalMenuCode = FinalMenuCode + NetscapeEnd + Chr$(10) + MenuScript
        BrowserCode = FinalMenuCode
End Function
```

12. Function ObtainSelectStatement( ) As String

```
Function ObtainSelectStatement( ) As String
  ' ObtainSelectStatement = Super::ObtainSelectStatement( )
Dim SelectClause as string
Dim FromClause as string
Dim Whereclause as string
Dim OrderClause as string
Dim Stross as string


if NoDataAdding ="True" then
        if SecondQuery="True" then
                SelectClause = " SELECT DISTINCT TransactionTable.QAI_Version as QAI_Name,
TransactionTable.QAI_Version as QAI_ID, TransactionTable.QAI_Version as QAI_Desc"
                FromClause = " FROM TransactionTable "
                WhereClause = " "
                OrderClause = "ORDER BY TransactionTable.QAI_Version "
```

```
            'Stross = SelectClause & FromClause & WhereClause& OrderClause
Stross = SelectClause & FromClause       & OrderClause
ObtainSelectStatement = Stross

   elseif ThirdQuery="True" then
      SelectClause = " SELECT DISTINCT TransactionTable.QA_Type as QAI_Name,
TransactionTable.QA_Type as QAI_ID, TransactionTable.QA_Type as QAI_Desc"
            FromClause = " FROM TransactionTable "
            WhereClause = " "
            OrderClause = "ORDER BY TransactionTable.QA_Type "
            'Stross = SelectClause & FromClause & WhereClause& OrderClause
Stross = SelectClause & FromClause       & OrderClause
ObtainSelectStatement = Stross


    elseif FourthQuery="True" then
 SelectClause = " SELECT QAPERSONS.QA_PersonName as QAI_Name,
QAPERSONS.QA_PersonName as QAI_ID, QAPERSONS.QA_PersonName as QAI_Desc"
            FromClause = " FROM QAPERSONS "
            WhereClause = " "
            OrderClause = "ORDER BY QAPERSONS.QA_PersonName "
            'Stross = SelectClause & FromClause & WhereClause& OrderClause
Stross = SelectClause & FromClause       & OrderClause
ObtainSelectStatement = Stross



   end if

Else
SelectClause = " SELECT QAITEMS.QAI_ID, QAITEMS.QAI_Name, QAITEMS.QAI_Desc "
            FromClause = " FROM QAITEMS "
            WhereClause = " "
            OrderClause = " "
            'Stross = SelectClause & FromClause & WhereClause& OrderClause
      Stross = SelectClause & FromClause
            ObtainSelectStatement = Stross

SecondQuery="True"

end if
End Function
```

13. Sub OnRead( )

```
Sub OnRead( )
   Super::OnRead( )
if NoDataAdding ="True" then

if SecondQuery="True" then

  QAI_Versions(ubound(QAI_Versions))=QAI_Name
redim preserve QAI_Versions(ubound(QAI_Versions) + 1)
  end if
if ThirdQuery="True" then
QA_Types(ubound(QA_Types))=QAI_Name
redim preserve QA_Types(ubound(QA_Types) + 1)
end if
if FourthQuery="True" then
QAPERSONS(ubound(QAPERSONS))=QAI_Name
```

```
redim preserve QAPERSONS(ubound(QAPERSONS) + 1)
end if
else
QAI_Names(ubound(QAI_Names))=QAI_Name
redim preserve QAI_Names(ubound(QAI_Names) + 1)
QAI_Descs(ubound(QAI_Descs))=QAI_Desc
redim preserve QAI_Descs(ubound(QAI_Descs) + 1)
end if
glb_strNoData="False"

End Sub
```

14. The Browsercode functions and other code

```
<script language="JavaScript" type="text/javascript">
function loadQA_Person(){
   var
QA_Person=(document.requestForm.mnu_QA_Person.options[document.requestForm.mnu_QA_Person.
selectedIndex].text);
   document.getElementById("param_QA_Person").value=QA_Person
if  (QA_Person=='ALL')    {
     document.requestForm.param_QA_Person.value="ALL"
    }
 if  (QA_Person!=='ALL')    {
loadmultipleQA_Person()
    }
}
function loadmultipleQA_Person(){
  document.requestForm.param_QA_Person.value=""
    for(p=1;p<document.getElementById("mnu_QA_Person").length;p++)
       {
        if(document.getElementById("mnu_QA_Person").options[p].selected==true)
          {
             var y=document.getElementById("mnu_QA_Person").options[p].text

             holdfounddata =document.requestForm.param_QA_Person.value
             document.requestForm.param_QA_Person.value=holdfounddata+","+ y
          }
        }
       var d= document.requestForm.param_QA_Person.value.indexOf(',')
         d=1+(d*1)

document.requestForm.param_QA_Person.value=document.requestForm.param_QA_Person.value.substr
ing(d)
 }


function loadQA_Type(){
   var
QA_Type=(document.requestForm.mnu_QA_Type.options[document.requestForm.mnu_QA_Type.select
edIndex].text);
   document.getElementById("param_QA_Type").value=QA_Type
if  (QA_Type=='ALL')    {
     document.requestForm.param_QA_Type.value="ALL"
    }
 if  (QA_Type!=='ALL')    {
loadmultipleQA_Type()
    }
}
function loadmultipleQA_Type(){
```

```
  document.requestForm.param_QA_Type.value=""
   for(p=1;p<document.getElementById("mnu_QA_Type").length;p++)
      {
       if(document.getElementById("mnu_QA_Type").options[p].selected==true)
         {
            var y=document.getElementById("mnu_QA_Type").options[p].text

            holdfounddata =document.requestForm.param_QA_Type.value
            document.requestForm.param_QA_Type.value=holdfounddata+","+ y
         }
       }
      var d= document.requestForm.param_QA_Type.value.indexOf(',')
       d=1+(d*1)

document.requestForm.param_QA_Type.value=document.requestForm.param_QA_Type.value.substring
(d)
 }


function loadQAI_Version(){
   var
QAI_Version=(document.requestForm.mnu_QAI_Version.options[document.requestForm.mnu_QAI_Ve
rsion.selectedIndex].text);
   document.getElementById("param_QAI_Version").value=QAI_Version
if  (QAI_Version=='ALL')    {
     document.requestForm.param_QAI_Version.value="ALL"
    }
 if  (QAI_Version!=='ALL')    {
loadmultipleQAI_Version()
    }
}
function loadmultipleQAI_Version(){
  document.requestForm.param_QAI_Version.value=""
   for(p=1;p<document.getElementById("mnu_QAI_Version").length;p++)
      {
       if(document.getElementById("mnu_QAI_Version").options[p].selected==true)
         {
            var y=document.getElementById("mnu_QAI_Version").options[p].text

            holdfounddata =document.requestForm.param_QAI_Version.value
            document.requestForm.param_QAI_Version.value=holdfounddata+","+ y
         }
       }
      var d= document.requestForm.param_QAI_Version.value.indexOf(',')
       d=1+(d*1)

document.requestForm.param_QAI_Version.value=document.requestForm.param_QAI_Version.value.su
bstring(d)
 }



function loadQAI_Desc(){
   var
QAI_Desc=(document.requestForm.mnu_QAI_Desc.options[document.requestForm.mnu_QAI_Desc.sel
ectedIndex].text);
   document.getElementById("param_QAI_Desc").value=QAI_Desc
if  (QAI_Desc=='ALL')    {
     document.requestForm.param_QAI_Desc.value="ALL"
    }
```

```
 if  (QAI_Desc!=='ALL')     {
loadmultipleQAI_Desc()
    }
}
function loadmultipleQAI_Desc(){
  document.requestForm.param_QAI_Desc.value=""
    for(p=1;p<document.getElementById("mnu_QAI_Desc").length;p++)
       {
        if(document.getElementById("mnu_QAI_Desc").options[p].selected==true)
          {
             var y=document.getElementById("mnu_QAI_Desc").options[p].text

             holdfounddata =document.requestForm.param_QAI_Desc.value
             document.requestForm.param_QAI_Desc.value=holdfounddata+","+ y
          }
        }
       var d= document.requestForm.param_QAI_Desc.value.indexOf(',')
         d=1+(d*1)

document.requestForm.param_QAI_Desc.value=document.requestForm.param_QAI_Desc.value.substrin
g(d)
 }
function loadQAI_Name(){
   var
QAI_Names=(document.requestForm.mnu_QAI_Name.options[document.requestForm.mnu_QAI_Name
.selectedIndex].text);
   document.getElementById("param_QAI_Name").value=QAI_Names
if  (QAI_Names=='ALL')     {
     document.requestForm.param_QAI_Name.value="ALL"
    }
 if  (QAI_Names!=='ALL')     {
loadmultipleQAI_Name()
    }
}
function loadmultipleQAI_Name(){
  document.requestForm.param_QAI_Name.value=""
    for(p=1;p<document.getElementById("mnu_QAI_Name").length;p++)
       {
        if(document.getElementById("mnu_QAI_Name").options[p].selected==true)
          {
             var y=document.getElementById("mnu_QAI_Name").options[p].text

             holdfounddata =document.requestForm.param_QAI_Name.value
             document.requestForm.param_QAI_Name.value=holdfounddata+","+ y
          }
        }
       var d= document.requestForm.param_QAI_Name.value.indexOf(',')
         d=1+(d*1)

document.requestForm.param_QAI_Name.value=document.requestForm.param_QAI_Name.value.substr
ing(d)
 }
function getreportdetails(){
var rovname ="CYPOREPORT.rox"
document.getElementById("__executableName").value=rovname
document.getElementById("mnu_QAI_Name").disabled=false
document.getElementById("mnu_QAI_Desc").disabled=false
document.getElementById("mnu_QAI_Version").disabled=false
document.getElementById("mnu_QA_Type").disabled=false
document.getElementById("mnu_QA_Person").disabled=false
```

```
document.getElementById("start_dt").disabled=false
document.getElementById("end_dt").disabled=false
}
function Validate()
{

var start_date=document.getElementById("start_dt").value;
var end_date=document.getElementById("end_dt").value;
var start_date2=new Date(start_date);
var end_date2=new Date(end_date);
if(start_date2>end_date2)
{
alert(" From Date must be equal to or smaller than To Date");
return false ;
}
}

// testing date

//end testing date

</SCRIPT>

  <script language="JavaScript" type="text/javascript">

// User Changeable Vars
var HighlightToday  = true;    // use true or false to have the current day highlighted
var DisablePast    = true;    // use true or false to allow past dates to be selectable
// The month names in your native language can be substituted below
var MonthNames = new
Array("January","February","March","April","May","June","July","August","September","October","No
vember","December");

// Global Vars
var now = new Date();
var dest = null;
var ny = now.getFullYear(); // Today's Date
var nm = now.getMonth();
var nd = now.getDate();
var sy = 0; // currently Selected date
var sm = 0;
var sd = 0;
var y = now.getFullYear(); // Working Date
var m = now.getMonth();
var d = now.getDate();
var l = 0;
var t = 0;
var MonthLengths = new Array(31,28,31,30,31,30,31,31,30,31,30,31);

/*
  Function: GetDate(control)

  Arguments:
    control = ID of destination control
*/
function GetDate() {
  EnsureCalendarExists();
  DestroyCalendar();
  // One arguments is required, the rest are optional
  // First arguments must be the ID of the destination control
```

```
  if(arguments[0] == null || arguments[0] == "") {
    // arguments not defined, so display error and quit
    alert("ERROR: Destination control required in funciton call GetDate()");
    return;
  } else {
    // copy argument
    dest = arguments[0];
  }
  y = now.getFullYear();
  m = now.getMonth();
  d = now.getDate();
  sm = 0;
  sd = 0;
  sy = 0;
  var cdval = dest.value;
  if(/\d{1,2}.\d{1,2}.\d{4}/.test(dest.value)) {
    // element contains a date, so set the shown date
    var vParts = cdval.split("/"); // assume mm/dd/yyyy
    sm = vParts[0] - 1;
    sd = vParts[1];
    sy = vParts[2];
    m=sm;
    d=sd;
    y=sy;
  }

//  l = dest.offsetLeft; // + dest.offsetWidth;
//  t = dest.offsetTop - 125;   // Calendar is displayed 125 pixels above the destination element
//  if(t<0) { t=0; }       // or (somewhat) over top of it. ;)

  /* Calendar is displayed 125 pixels above the destination element
  or (somewhat) over top of it. ;)*/
  l = dest.offsetLeft + dest.offsetParent.offsetLeft;
  l=l+213
  t = dest.offsetTop + 50;
  if(t < 0) t = 0; // >
  DrawCalendar();
}

/*
  function DestoryCalendar()

  Purpose: Destory any already drawn calendar so a new one can be drawn
*/
function DestroyCalendar() {
  var cal = document.getElementById("dpCalendar");
  if(cal != null) {
    cal.innerHTML = null;
    cal.style.display = "none";
  }
  return
}

function DrawCalendar() {
  DestroyCalendar();
  cal = document.getElementById("dpCalendar");
  cal.style.left = l + "px";
  cal.style.bottom = t + "px";
```

```
  var sCal = "<table><tr><td class=\"cellButton\"><a href=\"javascript: PrevMonth();\" title=\"Previous
Month\">&lt;&lt;</a></td>"+
    "<td class=\"cellMonth\" width=\"80%\" colspan=\"5\">"+MonthNames[m]+" "+y+"</td>"+
    "<td class=\"cellButton\"><a href=\"javascript: NextMonth();\" title=\"Next
Month\">&gt;&gt;</a></td></tr>"+
    "<tr><td>S</td><td>M</td><td>T</td><td>W</td><td>T</td><td>F</td><td>S</td></tr>";
  var wDay = 1;
  var wDate = new Date(y,m,wDay);
  if(isLeapYear(wDate)) {
    MonthLengths[1] = 29;
  } else {
    MonthLengths[1] = 28;
  }
  var dayclass = "";
  var isToday = false;
  for(var r=1; r<7; r++) {
    sCal = sCal + "<tr>";
    for(var c=0; c<7; c++) {
      var wDate = new Date(y,m,wDay);
      if(wDate.getDay() == c && wDay<=MonthLengths[m]) {
        if(wDate.getDate()==sd && wDate.getMonth()==sm && wDate.getFullYear()==sy) {
          dayclass = "cellSelected";
          isToday = true;  // only matters if the selected day IS today, otherwise ignored.
        } else if(wDate.getDate()==nd && wDate.getMonth()==nm && wDate.getFullYear()==ny &&
HighlightToday) {
          dayclass = "cellToday";
          isToday = true;
        } else {
          dayclass = "cellDay";
          isToday = false;
        }
        if(((now > wDate)) || (now <= wDate) || isToday) { // >
                sCal = sCal + "<td class=\""+dayclass+"\"><a href=\"javascript:
ReturnDay("+wDay+");\">"+wDay+"</a></td>";
        } else {

        }
        wDay++;
      } else {
        sCal = sCal + "<td class=\"unused\"></td>";
      }
    }
    sCal = sCal + "</tr>";
  }
  sCal = sCal + "<tr><td colspan=\"4\" class=\"unused\"></td><td colspan=\"3\" class=\"cellCancel\"><a
href=\"javascript: DestroyCalendar();\">Cancel</a></td></tr></table>"
  cal.innerHTML = sCal; // works in FireFox, opera
  cal.style.display = "inline";
}

function PrevMonth() {
  m--;
  if(m==-1) {
    m = 11;
    y--;
  }
  DrawCalendar();
}

function NextMonth() {
```

```
  m++;
  if(m==12) {
    m = 0;
    y++;
  }
  DrawCalendar();
}

function ReturnDay(day) {
  cDest = document.getElementById(dest);
  dest.value = (m+1)+"/"+day+"/"+y;
  DestroyCalendar();
}

function EnsureCalendarExists() {
  if(document.getElementById("dpCalendar") == null) {
    var eCalendar = document.createElement("div");
    eCalendar.setAttribute("id", "dpCalendar");
    document.body.appendChild(eCalendar);
  }
}

function isLeapYear(dTest) {
  var y = dTest.getYear();
  var bReturn = false;

  if(y % 4 == 0) {
    if(y % 100 != 0) {
      bReturn = true;
    } else {
      if (y % 400 == 0) {
        bReturn = true;
      }
    }
  }

  return bReturn;
}

  </script>

<head>
<style type="text/css">

/* The containing DIV element for the Calendar */
#dpCalendar {
  display: none;          /* Important, do not change */
  position: absolute;       /* Important, do not change */
  background-color: #eeeeee;
  color: black;
  font-size: xx-small;
  font-family: Verdana, Geneva, Arial, Helvetica, sans-serif;
  width: 150px;
}
/* The table of the Calendar */
#dpCalendar table {
  border: 1px solid black;
  background-color: #eeeeee;
  color: black;
  font-size: xx-small;
```

```
  font-family: Verdana, Geneva, Arial, Helvetica, sans-serif;
  width: 100%;
}
/* The Next/Previous buttons */
#dpCalendar .cellButton {
  background-color: #ddddff;
  color: black;
}
/* The Month/Year title cell */
#dpCalendar .cellMonth {
  background-color: #ddddff;
  color: black;
  text-align: center;
}
/* Any regular day of the month cell */
#dpCalendar .cellDay {
  background-color: #ddddff;
  color: black;
  text-align: center;
}
/* The day of the month cell that is selected */
#dpCalendar .cellSelected {
  border: 1px solid red;
  background-color: #ffdddd;
  color: black;
  text-align: center;
}
/* The day of the month cell that is Today */
#dpCalendar .cellToday {
  background-color: #ddffdd;
  color: black;
  text-align: center;
}
/* Any cell in a month that is unused (ie: Not a Day in that month) */
#dpCalendar .unused {
  background-color: transparent;
  color: black;
}
/* The cancel button */
#dpCalendar .cellCancel {
  background-color: #cccccc;
  color: black;
  border: 1px solid black;
  text-align: center;
}
/* The clickable text inside the calendar */
#dpCalendar a {
  text-decoration: none;
  background-color: transparent;
  color: black;
}
  </style>
</head>
```

APPENDIX 17: OVERRIDEN METHODS AND FUNCTIONS FOR REPORT

1. Function SuggestRoiName( ) As String

```
Function SuggestRoiName( ) As String
   SuggestRoiName = Super::SuggestRoiName( )
Glb_strtestimagefile="D:\colo\corp_logo.jpg"
glb_strNoData="False"
End Function
```

2. Function Multiselect(Mystring as string) As string

```
Function Multiselect(Mystring as string ) As string
Dim myarray() as String
Dim numfields as integer
Dim x as integer
Dim Newstring as string
Dim lents as string
        numfields=ListToArray(Mystring,myarray,",")
                for x = 1 to numfields
                        myarray(x) = """& myarray(x) & "","
                        Newstring = Newstring & Myarray(x)
                next x
        Lents = Left$(Newstring, len(Newstring) - 1)
        Multiselect = Lents
End Function
```

3. Function ObtainSelectStatement( ) As String

```
Function ObtainSelectStatement( ) As String
    'ObtainSelectStatement = Super::ObtainSelectStatement( )
        Dim selectClause As string
        Dim FromClause As string
        Dim WhereClause As string
        Dim OrderClause As string
        Dim Qstmts As string

   Dim param_QAI_Nameselect as string
           If Ucase(param_QAI_Name) = "ALL" then
        param_QAI_Nameselect = ""
        else
        param_QAI_Name = Multiselect(param_QAI_Name)
        param_QAI_Nameselect = " where QAITEMS.QAI_Name in (" & param_QAI_Name & ") "
        end if

        selectClause = "SELECT QAITEMS.QAI_ID, QAITEMS.QAI_Name, QAITEMS.QAI_Desc,
TransactionTable.QAI_Version, TransactionTable.QA_Type, TransactionTable.QA_Date,
QAPERSONS.QA_PersonId, QAPERSONS.QA_PersonName "
   FromClause = "FROM QAITEMS RIGHT JOIN (QAPERSONS RIGHT JOIN TransactionTable ON
QAPERSONS.QA_PersonId=TransactionTable.QA_PersonId) ON
QAITEMS.QAI_ID=TransactionTable.QAI_ID"
  ' WhereClause = "WHERE "
   Qstmts = SelectClause & FromClause  & param_QAI_Nameselect
        'setclipboardtext (Qstmts)

 ObtainSelectStatement = Qstmts
```

```
 Dim param_QAI_Descselect as string
          If Ucase(param_QAI_Desc) = "ALL" then
       param_QAI_Descselect = ""
       else
       param_QAI_Desc = Multiselect(param_QAI_Desc)
   IF param_QAI_Nameselect = "" THEN
       param_QAI_Descselect = " where QAITEMS.QAI_Desc in (" & param_QAI_Desc & ") "
   ELSE
      param_QAI_Descselect = " and QAITEMS.QAI_Desc in (" & param_QAI_Desc & ") "
   END IF
       end if

       selectClause = "SELECT QAITEMS.QAI_ID, QAITEMS.QAI_Name, QAITEMS.QAI_Desc,
TransactionTable.QAI_Version, TransactionTable.QA_Type, TransactionTable.QA_Date,
QAPERSONS.QA_PersonId, QAPERSONS.QA_PersonName "
   FromClause = "FROM QAITEMS RIGHT JOIN (QAPERSONS RIGHT JOIN TransactionTable ON
QAPERSONS.QA_PersonId=TransactionTable.QA_PersonId) ON
QAITEMS.QAI_ID=TransactionTable.QAI_ID"
  ' WhereClause = "WHERE "
   Qstmts = SelectClause & FromClause  & param_QAI_Nameselect & param_QAI_Descselect
       'setclipboardtext (Qstmts)

 ObtainSelectStatement = Qstmts

Dim param_QAI_Versionselect as string
          If Ucase(param_QAI_Version) = "ALL" then
       param_QAI_Versionselect = ""
       else
       param_QAI_Version = Multiselect(param_QAI_Version)
   IF param_QAI_Descselect = "" AND param_QAI_Nameselect = "" THEN
       param_QAI_Versionselect = " where TransactionTable.QAI_Version in (" & param_QAI_Version
& ") "
   ELSE
      param_QAI_Versionselect = " and TransactionTable.QAI_Version in (" & param_QAI_Version &
") "
   END IF
       end if

       selectClause = "SELECT QAITEMS.QAI_ID, QAITEMS.QAI_Name, QAITEMS.QAI_Desc,
TransactionTable.QAI_Version, TransactionTable.QA_Type, TransactionTable.QA_Date,
QAPERSONS.QA_PersonId, QAPERSONS.QA_PersonName "
   FromClause = "FROM QAITEMS RIGHT JOIN (QAPERSONS RIGHT JOIN TransactionTable ON
QAPERSONS.QA_PersonId=TransactionTable.QA_PersonId) ON
QAITEMS.QAI_ID=TransactionTable.QAI_ID"
  ' WhereClause = "WHERE "
   Qstmts = SelectClause & FromClause  & param_QAI_Nameselect & param_QAI_Descselect &
param_QAI_Versionselect
       'setclipboardtext (Qstmts)

 ObtainSelectStatement = Qstmts
Dim param_QA_Typeselect as string
          If Ucase(param_QA_Type) = "ALL" then
       param_QA_Typeselect = ""
       else
       param_QA_Type = Multiselect(param_QA_Type)
   IF param_QAI_Descselect = "" AND param_QAI_Nameselect = ""  AND param_QAI_Versionselect =
"" THEN
       param_QA_Typeselect = " where TransactionTable.QA_Type in (" & param_QA_Type & ") "
   ELSE
      param_QA_Typeselect = " and TransactionTable.QA_Type in (" & param_QA_Type & ") "
```

```
   END IF
        end if
        selectClause = "SELECT QAITEMS.QAI_ID, QAITEMS.QAI_Name, QAITEMS.QAI_Desc,
TransactionTable.QAI_Version, TransactionTable.QA_Type, TransactionTable.QA_Date,
QAPERSONS.QA_PersonId, QAPERSONS.QA_PersonName "
   FromClause = "FROM QAITEMS RIGHT JOIN (QAPERSONS RIGHT JOIN TransactionTable ON
QAPERSONS.QA_PersonId=TransactionTable.QA_PersonId) ON
QAITEMS.QAI_ID=TransactionTable.QAI_ID"
  ' WhereClause = "WHERE "
   Qstmts = SelectClause & FromClause  & param_QAI_Nameselect & param_QAI_Descselect &
param_QAI_Versionselect & param_QA_Typeselect
        'setclipboardtext (Qstmts)

 ObtainSelectStatement = Qstmts

Dim param_QA_Personselect as string
           If Ucase(param_QA_Person) = "ALL" then
        param_QA_Personselect = ""
        else
        param_QA_Person = Multiselect(param_QA_Person)
   IF param_QAI_Descselect = "" AND param_QAI_Nameselect = ""  AND param_QAI_Versionselect =
"" and param_QA_Typeselect = "" THEN
        param_QA_Personselect = " where QAPERSONS.QA_PersonName in (" & param_QA_Person &
") "
   ELSE
      param_QA_Personselect = " and QAPERSONS.QA_PersonName in (" & param_QA_Person & ") "
   END IF
        end if

        selectClause = "SELECT QAITEMS.QAI_ID, QAITEMS.QAI_Name, QAITEMS.QAI_Desc,
TransactionTable.QAI_Version, TransactionTable.QA_Type, TransactionTable.QA_Date,
QAPERSONS.QA_PersonId, QAPERSONS.QA_PersonName "
   FromClause = "FROM QAITEMS RIGHT JOIN (QAPERSONS RIGHT JOIN TransactionTable ON
QAPERSONS.QA_PersonId=TransactionTable.QA_PersonId) ON
QAITEMS.QAI_ID=TransactionTable.QAI_ID"
  ' WhereClause = "WHERE "
   Qstmts = SelectClause & FromClause  & param_QAI_Nameselect & param_QAI_Descselect &
param_QAI_Versionselect & param_QA_Typeselect & param_QA_Personselect
        'setclipboardtext (Qstmts)
 ObtainSelectStatement = Qstmts
End Function
```