

## Systematic Tracking of Key Performance Indicators for Enhanced Use of Enterprise Reports in the Soft Drinks Industry in Kenya

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**Abstract:** Computer based information systems that exist in organizations gather and store voluminous data that is a useful resource in supporting management decision making. Enterprise Reporting, which is the focus of this study, provides a means by which these organizations can unify and sift the vast amounts of electronic data available so as to glean insights that are handy in management decision making. This paper aims at finding a solution to the current underutilization of the existing volumes of electronic data through enterprise reporting. The study specifically assessed the status and the challenges of enterprise reporting, and determined appropriate Key Performance Indicators that can be tracked, and how they can be tracked to enhance the use of enterprise reports. Data was collected through the use of interviews, and thematic analysis method was used to analyze the responses obtained. Purposive sampling method was used to get respondents, drawn from business and Information Technology functions of the organization. The study was informed by systems theory, whereby enterprise reporting was regarded a component of a computer based information system of a typical organization. The study anticipated that utilization of electronic data through enterprise reporting can be improved through systematic tracking of Key Performance Indicators related to the factors that negatively influence the use of enterprise reports. Whereas this study was confined to specific company in the soft drinks industry, the findings can be of relevance to a wider group of related organizations. The study has generated an in-depth understanding of the issues related to the use of enterprise reports and anticipated to make a contribution to the existing knowledge on Enterprise Reporting and Business Intelligence in general in various organizations. The findings of the research will therefore help shape policies relating to the use of enterprise reports to facilitate better decision making and consequently better realization of organizational goals.

**Keywords:** Business Intelligence, enterprise report, Report design, Report development, Report generation, Report distribution, Report review, Report revision

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### I. Introduction

Kisii Bottlers Kenya Limited, where this study was conducted, is a franchise of the Coca Cola Company in the larger Coca Cola Africa administrative region, and Coca Cola East Africa region. It is also one of the currently existing six Coca Cola bottling companies in Kenya situated in Kisii central district, Nyanza province, and western region of Kenya. The other five Coca Cola franchise companies in Kenya are; Nairobi Bottlers Kenya Limited located in Nairobi, Equator Bottlers Kenya Limited located in Kisumu, Rift Valley Bottlers Kenya Limited Located in Eldoret, Mount Kenya bottlers Kenya Limited Located in Nyeri and Coastal Bottlers Kenya Limited located in Mombasa.

Computer based information systems that exist in organizations gather and store voluminous data that is a useful resource to support management decision making through enterprise reporting. Enterprise Reporting, which was the focus of this study, provides 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 [Business Objects, 2002]. Adequate use of enterprise reports to support management decision making at Kisii Bottlers Kenya Limited was noted not to be maximally achieved as manifested in the unnecessarily lengthy reports printed in the company, only for a few pages of the reports to be utilized, inaccessibility of reports to some report users in spite of the availability of such reports in the reporting systems and dissatisfaction of report information by some report users among others. This underutilization of enterprise reports to support management decision making may be associated with limiting factors in the processes of the use of the enterprise reporting systems.

The main aim of the study was to investigate the use of enterprise reports in the soft drinks industry with a view to developing a solution to enhance the use of enterprise reports. The study specifically sought to assess the extent of use of enterprise reports in the soft drinks industry, to identify the challenges experienced in the use of enterprise reports, to determine appropriate Key Performance Indicators that can be tracked to enhance use of enterprise reports, and finally to develop a systematic solution to enhance the use of enterprise reports in the organization.

The study was limited in a number of ways as it focused on one player in the soft drinks industry in Nyanza province, Kenya. The findings may therefore only be generalized with caution across other organisations and which implies that another study should be done using a more representative sample population so that the findings can be generalized across all companies in the soft drinks industry and outside the industry. The developed model can be used as a solution to the practical challenges facing use of enterprise reporting in organizations.

This study was informed by systems theory and in the context of this study the system is an integrated computer based management information system in the organization; that gather, store, process, evaluate, and distribute needed, timely, and accurate information to management decision makers. Enterprise reporting is the component of the system that delivers timely, accurate and needed information to decision makers.

### **Adoption and use of Information Technology in Enterprise Reporting Systems for soft drinks industry**

Information Technology has emerged as a basic fact of life in the business strategies of major corporations [Galliers R.D. 1994]. Information Technology facilitates the convergence of communications, computers, and information. Business analysts agree that Information Technology is more important today than it was in the past. Currently, companies across the world typically spend about six percent of their total revenue on Information Technology [Anandarajan A. and Wen H. J. 1999].

Information and communication technologies 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 [Davern M. and Kauffman R. 2000]. 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 [Anandarajan A. and Wen H. J. 1999].

After implementing Intuitive ERP, NDI experienced continued success in improving inventory management and increasing revenue. Prior to implementation, the company had struggled to achieve even two inventory “turns” (i.e., turnovers) per year. Inventory turns have now more than doubled, and expectations are that the company will better that in the near future. Since it implemented the system, NDI’s revenue has increased from \$10 million to over \$20 million, with little increase in inventory value. In addition, the company has reduced order cycle time for its flagship product from four months to four weeks, an improvement of almost 80 percent. This was a result of improved planning capabilities due to the ERP system. Improvements in production control and inventory management have had a direct impact on customer delivery and satisfaction. The material requirements planning (MRP) and forecasting capabilities of Intuitive ERP have allowed NDI to better service its customers. The addition of better planning capabilities had an immediate positive impact on labor and materials, [Wen H. J. 2008]

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]. 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, resulting in the handling of a lot of electronic data through information technology systems. Anticipated benefits of implementing information technology systems 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 [Gronad Peters 2003]. Technology now allows information handling to be decentralized via the use of networks and personal computers. 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 2002].

### **The need for faster access to business information in the soft drinks industry**

Lots of money has been spent on enterprise applications such as Oracle and Siebel to replace legacy applications, improve efficiencies and gain greater competitive advantage. A lot more has been spent in installing and customizing these applications to meet each organization’s unique business requirements. Above the improved efficiencies, a much greater potential lies within this substantial investment and remains largely untapped. [Bakos Y. J. 1995]. 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.

Butler Group believes that intelligent use of information in decision comes from the synergy between decision makers and the tools they employ. True Business Intelligence 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. "Enterprises having difficulty coping with three terabytes of data today need to quickly find solutions for dealing with 300 terabytes of data tomorrow." [Davern M. and Kauffman R. 2000]. To optimally guide the corporate ship on the right direction, one factor will remain paramount: the need for data. Users will always overwhelm the Information Technology department in their search for answers to business questions unless a cost-effective solution which enables users to help themselves is present.

New business initiatives of Kisii Bottlers Kenya Limited demand access to vital information and since 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, enterprise reporting remains a paramount strategy to tap from the data. 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 executives and managers of such an organization.

### **Use of Business Intelligence and Enterprise Reporting in the soft drinks industry**

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 on-line analytical processing (OLAP) solutions, the Business Intelligence market is expected to continue to rise into the coming years and forecasts predict the Business Intelligence field will grow at 23% annually [Darrow 2003].

Business Intelligence is an approach to management that allows an organization to define what information is useful and relevant to its corporate decision making. [Vitt 2002]. According to Whitehorn there is little consensus on a definition for Business Intelligence; 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 Business Intelligence focus. Whilst acknowledged that there is little academic research on Business Intelligence [Grey 2003; Jagielska et al 2003], there is a growing body of literature, largely vendor and industry focused. This literature tends to centre Business Intelligence 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 Business Intelligence vendors [Business Objects 2003; Cognos 2003; MicroStrategy 2003; SAS 2004].

There has been an overwhelming interest over the year 2007 on providers of Business Intelligence services. IBM acquired its long-time business partner and business intelligence 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 Business Intelligence players. These business activities surrounding Business Intelligence indicate the world's recent interest in this area of computing [Business Objects 2002].

After spending years and possibly millions of investment money in Enterprise Resource Planning - style systems, many companies now store vast amounts of transactional data. The role of enterprise reporting 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 Coca-Cola Kisii Bottlers Kenya Limited like other Coca-Cola franchise companies has a heavy distribution channel intended to get as much of her products as possible to customers and as such collects lots of electronic data that is a resource for decision making information through enterprise reporting and other business intelligence tools.

## **II. Methodology**

This study adopted qualitative approach and interviews were used to collect data. The study followed a multi-informant design as a source of research triangulation for extracting improved contextual information and highlight perceptual differences between key participants across different areas within the organization. In this Information Technology study, this design was used to obtain varying opinions amongst Information Technology professionals and business management persons in about use of enterprise reports. Thematic analysis method was used to analyze the responses obtained from respondents.

### **Data analysis and interpretation**

The interview schedule that was used in the study was divided into three parts. The first part sought information on the extent of use of enterprise reports in the organization; the second part was used to gather information on the challenges experienced in the use of enterprise reports and the third part for collecting information about Key Performance Indicators in use of enterprise reports.

### **Extent of use of enterprise reports and other electronic information sources**

Findings indicated that the commonly used electronic sources of information that aided decision-making processes in the organization in the past year were as follows; Enterprise reports, Microsoft Excel spreadsheet documents, Microsoft Word documents and internet resources in varied forms. All these electronic sources of information were used in the organization for decision making albeit different frequency. Enterprise reports were however reported to be the most commonly used electronic source of information compared to the rest with 86% of the respondents confirming reliance on enterprise reports for decision making. 76% of the respondents confirmed that they used Microsoft Excel spreadsheet documents in that year, 62% used Microsoft Word documents and 45% used internet resources for decision making information.

According to the information collected in the first part of the interview schedule that required respondents to give information on the extent of use of enterprise reports in the organization, enterprise reports were found to be easy to use due to the fact that they contained accurate information for decision making. This was so because they depended on data repositories that were systematically populated with relevant data about key functions of the organization through reliable and systematic computer based means. The reason for the small percentage of respondents not relying on enterprise reports was their inability to identify the appropriate reports for particular decision-making-information needs. The percentage of respondents who used spreadsheet documents as a source of decision making information did so because the data having been collected using spreadsheets, ad hoc analysis of the collected data was best done and output presented to management decision makers using spreadsheets. The information on spreadsheets had a limitation of being re-usable since spreadsheets were mostly prepared to derive particular information for a particular purpose or within a timeline without bearing in mind possible need of the same information by the same or different users at a later time. The percentage of respondents who used word documents as a source of decision making information did so because most reports, policy documents were done and stored in this format and such documents contained useful information for decision making. The last category of electronic information resource and least commonly used was internet accessible documents, in various formats. The respondents who used internet resources were however those who were not only computer literate but also were knowledgeable of where and how to get information on the internet that would empower them in making decisions.

### **The general factors affecting use of enterprise reports in the organization**

The factors that affected the use of enterprise reports were analyzed under the following identified categories; Design and development of reports, generation of reports, distribution of reports, review and revision of reports.

Design and development of enterprise reports was explained to respondents as the creation of conceptual reporting solutions and the transformation of the conceptual solutions into executable enterprise reports. It was found that the design and development of the original enterprise reports of the organization were based on a borrowed conceptual model from a sister franchise organization, but a number of customizations were made over time to meet specific decision-making-information needs of the organization's report users. User involvement, competence of developers, and management support in the design and development of enterprise reports had the most influence in the use of enterprise reports in the organization albeit varied frequency. The specific factors that needed to be checked to achieve better use of enterprise reports in the organization include; user commitment in giving necessary information to help in developing useful reports, the developers' attitude about the user's ability to make contribution about the information they desired on reports and how they wanted the information presented on the reports, management commitment in providing financial resources and other possible help and finally choice of software tools and supportive software and hardware infrastructure for the design and development of reports and their continuous use.

Generation of enterprise reports was explained to respondents as the production of viewable reports from stored electronic data at a particular time by executing the report designs against the data. Frequency of report generation, promptness of report generation, format of generated reports and mode of administration of report generation had the most influence in the use of enterprise reports in the organization albeit varied frequency. The specific factors that needed to be checked to achieve better use of enterprise reports in the organization include; users' attitude about the importance of report information, inaccessibility to the reporting system by less privileged employees largely due to infrastructural inadequacies and power outages, ease of use

and compatibility of format of generated report with other data in different format and finally the mode of administration of generation of reports.

Distribution of reports was explained to respondents as the process of delivery of generated reports to the intended users in the right form using a specific medium. Medium of report distribution and mode of administration of the report distribution process had the most influence in the use of enterprise reports in the organization albeit varied frequency. The specific factors that needed to be checked to achieve better use of enterprise reports in the organization include; the reliability of the medium in delivering reports as quickly as possible after being generated, the issue of discipline of report users in accessing generated reports.

Review and Revision of enterprise reports was explained to respondents as the assessment of reports in an effort to identify possible improvements that can be incorporated to improve them, and the actual modification of those reports as per the review. User involvement in the review, competence of developers in facilitating identification of the necessary improvements and the inclusion of those improvements in the reports and management support in the review and revision processes had the most influence in the use of enterprise reports in the organization albeit varied frequency. The specific factors that needed to be checked to achieve better use of enterprise reports in the organization include; user commitment in giving necessary information to help in reviewing reports, the developers' attitude about the user's ability to propose modifications on the reports, management commitment in providing financial and non financial help in the review and revision of reports.

The original reports having been based on an existing conceptual model of another franchise organization, user involvement at that initial stage was minimal. User involvement only come in to shape the reports in an effort to meet the information needs of the users based on the limitations they faced while using the reports. Developers' competence was found to be key to determine how well user requirements were captured and met in the developed reports and consequently how much enterprise reports were used in the organization. Management support having an influence on the amount of financial resources available and which also contributed to determine the level of expertise that was put to use in the design and development of the reports was found to influence the quality of reports and consequently the level of use of the enterprise reports. Other than financial support, management support extended to include other influence that management could exert on the processes of the design and development of organization's reports like tactful supervision of the design and development progress and internal personnel management relevant in the design and development processes of the reports that had an influence on the level of use of enterprise reports.

It was found that generation of reports by users for use in the organization was not regular despite the fact that the organization's reports were categorized on the basis of how regular they were supposed to be generated i.e. daily, weekly, monthly, quarterly and yearly. Generation of the reports therefore depended on the need for certain information on reports by the users rather than at the expected end of a specific period. It was therefore clear that a regular pattern in the generation of reports would be essential so as to maximize utilization of report information. Promptness in the report generation processes influenced the use of enterprise reports and speedy generating of enterprise reports led to timely utilization of information. Format of generated reports also influenced the level of use of the generated reports and diversity of report formats was necessary to increase the usability of reports in the available diverse report formats. Such output formats as printed paper reports, PDA compatible reports and other mobile devices were suitable for reports users who work away from the organization's premises, in places where desk top computers and laptops cannot be used for long hours because of poor power storage capability. The mode of administration of the report generation processes influenced the status in the use of enterprise reports. The mode of administration of the report generation processes was self-administration and report users determined when to generate reports or when reports were to be generated for them. This eliminated involvement of extra human resources in report generation. It was however found that a different mode of administration where an autonomous party administered report generation could be advantageous since it eliminate laziness to generate enterprise reports and help report users that lacked knowledge on report generation. It also 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 congested.

It was found that the medium of distribution of reports in the organization 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 organization to access reports easily and quickly as long as they had a connection to the server via the network. It was however found that the occasional failures of the network system at the time of initiating report distribution was a limiting factor in the delivery of highly needed reports for use. Efforts to minimize the level of downtime of the network system was critical to ensure availability of the report system for report generation and this in turn would enhance the overall use of enterprise report for management decision making. The mode of administration of distribution of reports in the organization was found to self-administration. This was mode was found to be suitable as it did not require anyone in between to facilitate distribution of reports

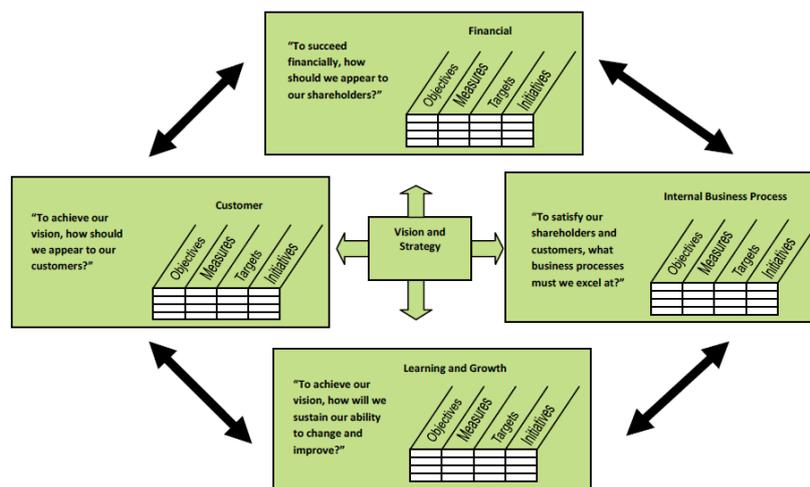
hence faster distribution of reports but this processes needed to be assessed so that it is ensured that report users access or deliver to themselves reports and use them when they are due.

User involvement throughout the process of review and revision could not be adequate as report users were not extensively consulted on changes they wished to be reflected on reports. Developers' competence was found to be critical to determine how well reports were reviewed and revised and it was found that more competence in the review and revision of reports could lead to high quality reports. Just like in design and development of reports, management support having an influence on the amount of financial resources available and which also contributed to determine the level of expertise that was put to use in the review and revision of the reports was found to influence the quality of reports. Other than financial support, it was found that management support extended further to include other influence that management could exert on the processes of the review and revision of organization's reports like; tactful supervision of the review and revision progress and internal personnel management relevant in the review and revision processes of the reports.

Jean-Baptiste (2009) also found that when management accountants are equipped with high IT skills, they are more likely to become members of ERP groups in both the implementation and maintenance phases of ERP systems. The author also stresses that during the implementation of an ERP system, management accountants need enhanced financial, knowledge sharing and IT skills. These same skills are also required in the post implementation phase. Interestingly, report writing abilities were found to be an additional skill required by management accountants after the implementation of an ERP system.

**The learning and growth or innovation perspective**

Intangible drivers for future success such as human capital, organizational capital, training, informational systems, etc. Using this insight, this model has been refined into the concept of the balanced scorecard or strategic performance management tool, described in detail by Robert Kaplan and David Norton in their book, *The Balanced Scorecard: Translating Strategy into Action*. While interpretation of how to apply the balanced scorecard in specific business situations may vary widely, the basic idea of linking corporate strategy to operational tactics remains sound, combining financial and non-financial data to offer good framework to map any company's progress toward success.



These four perspectives are interdependent and hierarchical. Growth is driven by better learning and innovation, which in turn leads to better internal processes, which then improves customer satisfaction, in turn improving financial performance.

**Key Performance Indicators in the use of enterprise reports in the organization**

It was found that the key things to be tracked to enhance the design and development of reports and consequently the use of the developed enterprise reports include; percentage number of relevant 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. The key things to be tracked to improve the generation of reports and consequently the use of the generated enterprise reports include; 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 key things to be tracked to enhance the distribution of reports and consequently the use of the delivered enterprise reports include; the level of satisfaction of the medium of report distribution and the level of satisfaction of the mode of report distribution. The key things to be tracked to enhance the review and revision of reports and consequently the use

of the revised enterprise reports include; percentage number of relevant report users consulted during the review of reports, the level of relevant competence of the developers of enterprise reports and the level of management support in the review and revision of enterprise reports.

Findings indicated that systematic tracking of KPIs could assist in making decisions about possible adjustments to involve more and relevant report users to facilitate better design and development of reports. It could assist in taking appropriate actions in the involvement of the right persons in the design and development of reports, sensitizing the management on what could be done to support the processes of design and development of reports among others. The parameters to be tracked include but not limited to; 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.

### **III. Conclusion and Future Work**

In the light of this research, it can be seen that electronic reports being the most popularly used of all the cited electronic information resources in the organization 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. The challenges facing use of enterprise reports are controllable if identified and dealt with. Since the amount of relevant information possessed by decision makers is a critical aspect of efficient decision making, It implies that information about the use of enterprise reports can be tracked and necessitate action from different relevant persons in the organization. The information about use of reporting systems can be tracked and presented by use of a supervision reporting system, and the indicators of the status in the use of reporting in the organization would be help to facilitate action from the responsible persons in the organization.

The study recommends that in order to derive the right information from the organization's electronic data resources, there is a need for the Information Technology department to improve the storage mechanisms of data in the organization for ease of access through data warehousing. Also, in order to tap the influence of employees to promote use of enterprise reporting, there is need for the Information Technology department to facilitate training to report users and other relevant persons on their role in the different aspects of enterprise reporting. In order to improve the effectiveness of the use of enterprise reports in the organization, there is a need for the top management of the organization to grow the Information Technology department to possess diverse skills relevant to business intelligence and enterprise reporting such as programming, data warehousing, and database administration among others. In order to provide useful information to the relevant persons in the organization to take appropriate action and promote use of Enterprise Reporting systems in the organization. There is need for the Information Technology department to adopt a supervision reporting system such as the one developed in the study for tracking the critical aspects of the reporting. In order to promote the use of enterprise reporting systems, there is a need for policy formulation and implementation by the Information Technology department relating to design and development of reports, generation of reports, and distribution of reports, review and revision of reports.

This paper proposes 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 Business Intelligence and Enterprise Reporting.

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