

OSEI TUTU II INSTITUTE FOR ADVANCED ICT STUDIES, GHANA

AFFILIATED TO

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY, KUMASI

SCHOOL OF GRADUATE STUDIES

EVALUATING THE IMPACT OF ISCALA ENTERPRISE RESOURCE PLANNING
SYSTEM ON INDUSTRY IN GHANA.

CASE STUDY, THE COCA-COLA BOTTLING COMPANY, KUMASI-GHANA.

A DISSERTATION PRESENTED TO THE INSTITUTE IN PARTIAL FULFILLMENT
OF THE REQUIREMENT FOR THE AWARD OF THE DEGREE OF MASTER OF
SCIENCE IN ADVANCED ICT STUDIES

(MANAGEMENT OPTION)

BY

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OCTOBER, 2009

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DECLARATION

I hereby declare that this study was under taken independently and it is my original work.

It is not replication of any work either published or unpublished. All references made in this study are acknowledged. Finally, all aspects of this study have been discussed with and approved by my supervisor, Mr. Kwaku Asamoah-Duah.

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I declare that this dissertation was written under my supervision and that the student has been consistent in his interaction with me for guidance and direction. He has my consent to present it for assessment.

Signature 

Date 15/10/2009

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(SUPERVISOR)

DEDICATION

I dedicate this research to my parents, Mr. and Mrs. Bawah Ayembillah



ACKNOWLEDGEMENTS

I would like to thank the Almighty God for giving me life and the strength to carry out this research.

My sincerest thanks goes to all those who supported and encouraged me during my study.

My warmest appreciation goes to my academic Supervisor Prof Vasco Fournadjiev for his immense contribution during and after this research. May God richly bless you Prof.

Also my gratitude goes to Prof. Dr. Ir. M. Looijen of the Institute for given us such a wonderful opportunity to be enrolled at the Osei Tutu Institute of Advanced ICT studies

I am also very grateful to Mr. Kwaku Duah of Coca Cola for giving me all the necessary information that was needed to complete this research.

My warmest gratitude goes to my family and friends who supported me all the way through. Thank you very much Mum and Dad for your encouragement and protection.

Finally I would like to say Ayeekeo to all whose prayer and support guided me through this research as well as all those who out of their busy schedule helped me with my many questions and questionnaires.

AYEMBILLAH MOHAMMED CABRAL

OCTOBER, 2009.

ABSTRACT

The world has experienced a new advancement in technology and as such companies are also expected to make good use of this advancement. The introduction of new information technology tools has really benefited the companies. One of such new systems that have been introduced is the ERP system. ERP (Enterprise Resource Planning) systems are a large set of integrated software's that provide support for different organizational activities such as manufacturing, marketing, logistics, finance, accounting human resource etc.

The Coca Cola Bottling Company Limited Kumasi-Ghana is also expecting to benefit from this new technology and has decided to implement ISCALA ERP system at its organizations plant. After the implementation there would be a need to find out whether the ERP has been successfully implemented especially here in Ghana and also to find out whether there has been any impact at all after this system's implementation. Research must also be carried out to check if there was an impact on the companies' processes and if the implementation was a success what are some of the critical success factors that were considered during the implementation here in Ghana.

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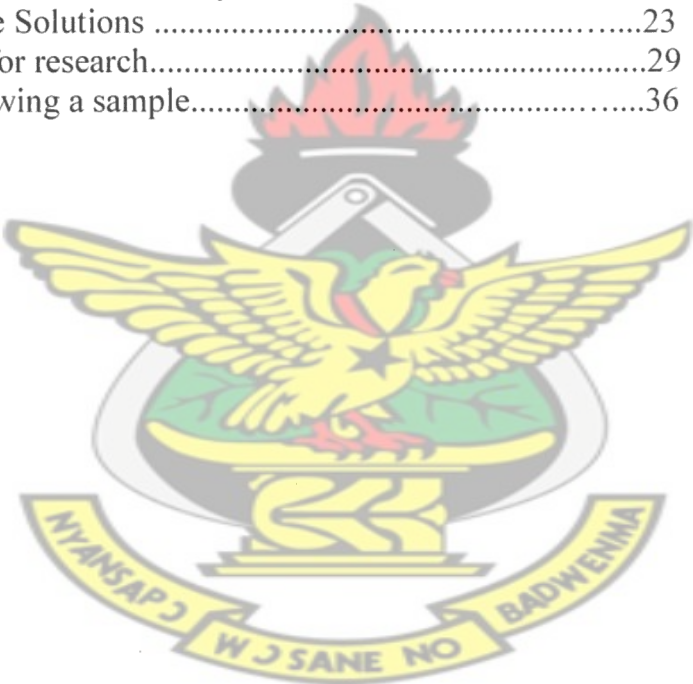
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CHAPTER ONE

1.0 Introduction

This chapter will present an initial discussion about this thesis, research background, the research objectives as well as the structure of this thesis. Based on the initial discussion the actual theoretical background will be presented.

1.1 Research Background

With the recent changes in the business environment privatization, globalization and competition have increased thereby the need for companies to search for new ways to survive and succeed (Spathis and Constantinides, 2004). The world today is benefiting from many forms of technological advancements. Over the years it has improved from a state of no technology or minimal technology to a state of very advanced technology. (Wikipedia, 2008)

The world has seen enormous changes in the way industry processes are carried out. With the introduction of the internet our lives have become simpler. Everything has been made easy. Information transfer has been made faster, better and more efficient and effective.

In Ghana today this technology has caught up with us, and as such we have some of the modern facilities to ensure the smooth running of some of these technologies. The internet for example, is available to all major in Ghana and a greater percentage of most towns have access to this facility. Considering this new way for information transfer, Ghanaian industries have also adopted the internet to enable them survive and also ensure that they become more efficient and more effective.

Originally companies have had to do most of their accounting processes and general business processes using the paper and pen method. Now some applications have been developed to ensure that we no longer have to use and waste lots of paper and ink while at work.

Innovative information technology offers the required tools for companies to respond effectively and efficiently to these changes and Enterprise Resource Planning (ERP) systems is an example of such information technology infrastructure (Nicolaou, 1999).

Enterprise Resource Planning (ERP) systems are a large set of integrated software which provides support for different organizational activities, such as manufacturing, logistics, finance, accounting, sales, marketing, and human resources. The benefits of an ERP system is that it creates synergies between different parts in the organization by sharing data and knowledge, reducing costs, and it gives the management support to improve business processes (Aldawani, 2001).

Prasad, Maneesh and Jayanth (1999), in their book explained that, organizations implementing ERP were about to conduct massive changes to most business processes within the organization. These changes need to be well managed in order for these companies to benefit from the ERP solution. Critical success factors identified such as top management commitment, business process reengineering, integration, and training of users to name a few, must be carefully considered in order to make sure that the implementation is successful.

As such this research aims at investigating the impact on a case company (Coca cola-Kumasi) in Ghana to verify these factors and to find out if there exist other factors that might be of importance to companies in Ghana that will want to implement ERP systems.

1.2 Research Problem

Coca-Cola Bottling Company in Kumasi has recently implemented an ERP system by the name ISCALA by EPICOR based on good practices. After such a huge investment top management will want to know how this implementation has impacted on the company.

1.3 Research Objective

This research aims at studying the impact on performance of the company. Specifically the following objectives have been set for the research investigation:

1. To identify the strategic impact that ERP has brought to the organization.
2. To identify the organizational processes at Coca Cola – Kumasi that have been affected due to ISCALA ERP implementation.
3. To study the effectiveness and efficiency in implementing ISCALA ERP on the organization.

1.4 Research Question

Was the implementation really necessary and what will be the critical success factors that have to be recognized to efficiently and effectively implement this ERP system in Ghanaian Companies?

1. How does ERP System implementation affect the company's efficiency?
2. What benefits are derived from implementation of ISCALA ERP?
3. Does ERP system depend on some critical success factors for implementation to succeed?

1.5 Research Method

The empirical method of this study has been conducted using a survey questionnaire targeted at employees of Coca Cola Kumasi in Ghana. The research method includes the use of interviews and also questionnaires to help collect primary data for the study. Journals, articles, books and other materials were used to get the secondary data.

1.6 Structure of the thesis

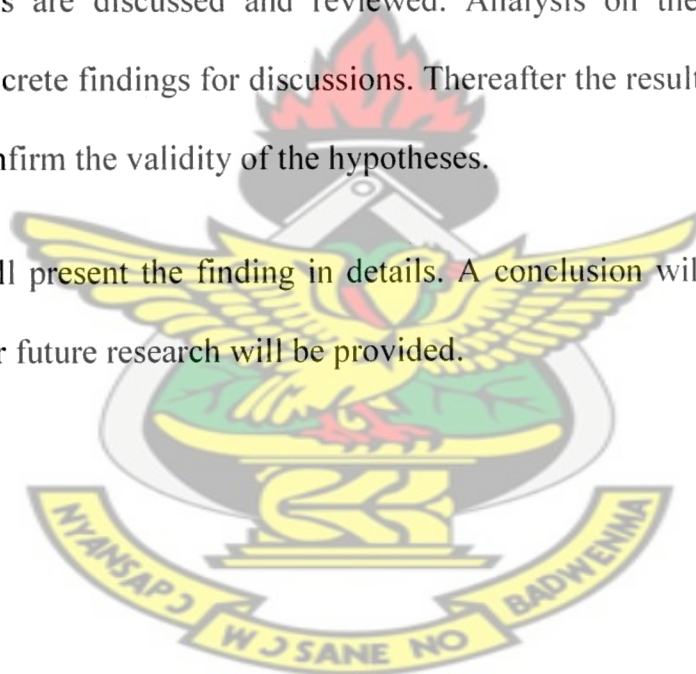
This thesis is divided into five chapters. The first chapter covers the introduction and research background, the objectives of the study, the research question, the methods and the structure of the thesis.

Chapter two defines what an enterprises resource planning (ERP) systems is. The study also includes the characteristics and architecture of ERP Systems. Chapter three discusses

the methodology being used and also some of the data collection methods and how they are used to come up with good data to be analyzed.

Chapter four introduces the data analysis of this study. The objective and the research hypotheses of the thesis are discussed and reviewed. Analysis on the data will be performed to give us concrete findings for discussions. Thereafter the results are analyzed with statistical test to confirm the validity of the hypotheses.

Finally, Chapter five will present the finding in details. A conclusion will be presented and some suggestions for future research will be provided.



CHAPTER TWO

2.0 Literature Review

This chapter will present an introduction of Enterprise Resource Planning (ERP) systems its characteristic, architecture as well as advantages and disadvantages. There is a further analysis on ISCALA at the latter portion of this chapter.

2.1 What is ERP?

2.1.1 A look at the definitions

ERP has been defined by various authors but with few differences (Laugling, 1999) states that ERP systems have been developed to meet the need to plan and manage complex manufacturing processes. He went on to add that, the functionality of ERP systems has been broadened as companies want to integrate different units, share services and run global operations. With the ERP systems broad functionality, much of the organization's legacy systems can be replaced with an ERP system, providing better support for new business structures and strategies. Before the year 2000, ERP systems were also installed to ensure millennium compliant software (Laugling, 1999).

Kumar and Hillegersberg (2000) also define enterprise resource planning (ERP) systems as “configurable information system packages that integrate information and information-based processes within and across functional areas in an organization.”

Davenport, (2000) defines ERP system as a software package that offers integrated solution to companies information need. Yet according to Ross, (1999) enterprise system

offer configurable business solution for typical functional areas such as procurement, material management, production, sales and distribution, financial accounting and human resources management.

Wreden in 1999, Hill in 2000, and Loizos in 1998 all defined Enterprise Resource Planning as a set of applications that help manage and automate a business. A large database provides access to all application programs and serves in all areas within a manufacturing enterprise.

Enterprise Resource Planning (ERP) systems are a large set of integrated software which provides support for different organizational activities, such as manufacturing, logistics, finance, accounting, sales, marketing, and human resources. The main benefits of an ERP system are that it creates synergies between different parts in the organization by sharing data and knowledge, reducing costs, and it gives the management support to improve business processes (Aldawani, 2001).

ERP incorporates all of the elements of a business, from financial processes to manufacturing and marketing activities, into a unified whole that operates more effectively and efficiently in today's competitive economy (Hill, 2000). These applications include finance, human resources, management, manufacturing, logistics, and supply chain management.

2.1.2 The anatomy of ERP system

According to Hunton, Wright and Wright (2004), ERP systems facilitate horizontal and vertical integration of business processes across an organization via a synchronized suite of software applications as shown in figure 2.1

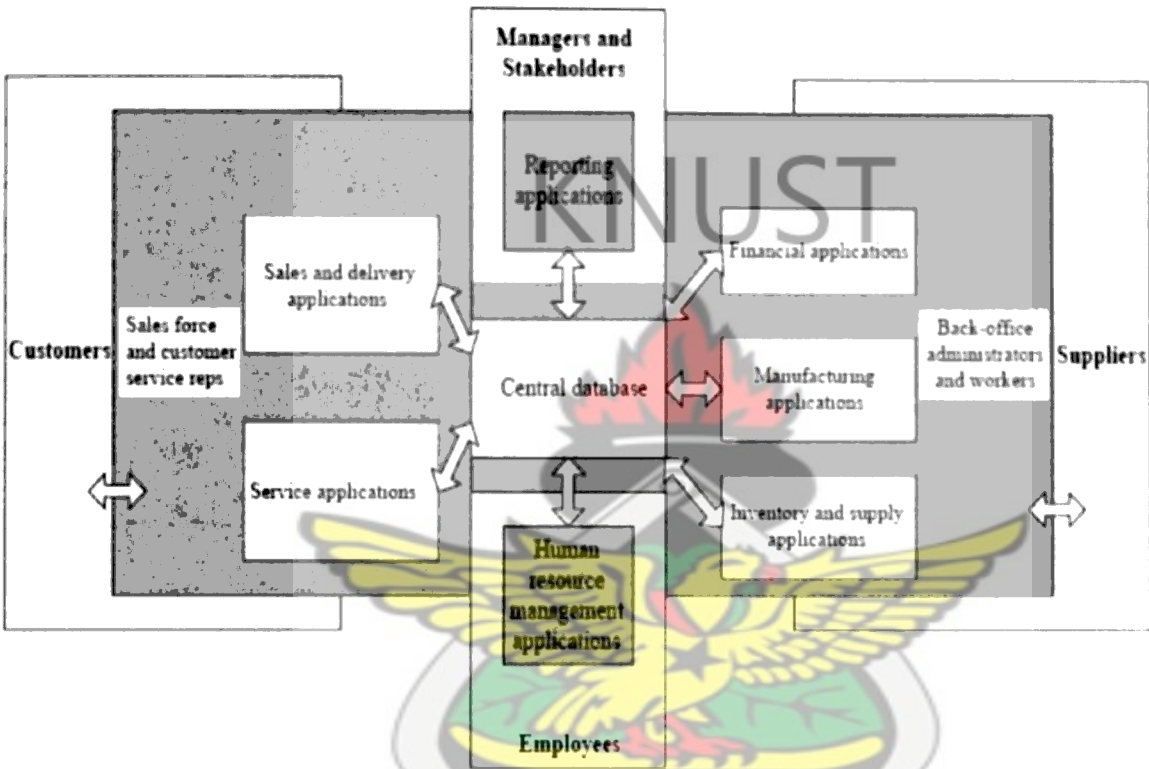


Figure 2.1 the anatomy of an ERP system source: Davenport 1998

Normally each of the departments in an organization has its own computer system optimized for the particular ways that the department does its work. However, ERP systems combine them all together into a single, integrated software program that runs on a single database so that the various departments can more easily share information and communicate with each other.

ERP systems not only encompass traditional transaction processing but also elements of management support systems and knowledge management (Davenport, 2000). ERP systems offer unique advantages to companies adopting them, by improving the decision making process via the provision of appropriate and timely information (Hunton et al 2004). Most companies want to standardize processes and learn the best practices embedded in ERP systems to ensure quality and predictability in their global business interest by reducing cycle times from order to delivery (Ross J.W, 1999).

ERP systems have two important features: The first feature is that, it facilitates a causal connection between a visual model of business processes and the software implementation of those processes, and the second feature is that it ensures a level of integration, data integrity and security, which is not easily achievable with multiple software platforms (Parr and Shanks 2000).

ERP systems can provide an organization with competitive advantage through improved business performance by integrating supply-chain management, receiving inventory management, customer orders management, production planning and management, shipping, accounting, human resource management and all other activities that take place in the modern business (Hitt et al 2002 and Kalling, 2003).

2.1.3 The architecture of ERP Enterprise system

An Enterprise Resource Planning system is a packaged business software system that enables a company to manage the efficient and effective use of its resources (materials, people, plant and equipment, etc.). Among the most important attributes of ERP are its abilities to:

- Automate and integrate the majority of an organization’s business processes
- Share common data and practices across the entire enterprise
- Produce and access information in a real-time environment

This can be seen in the ERP architecture shown in figure 2.2

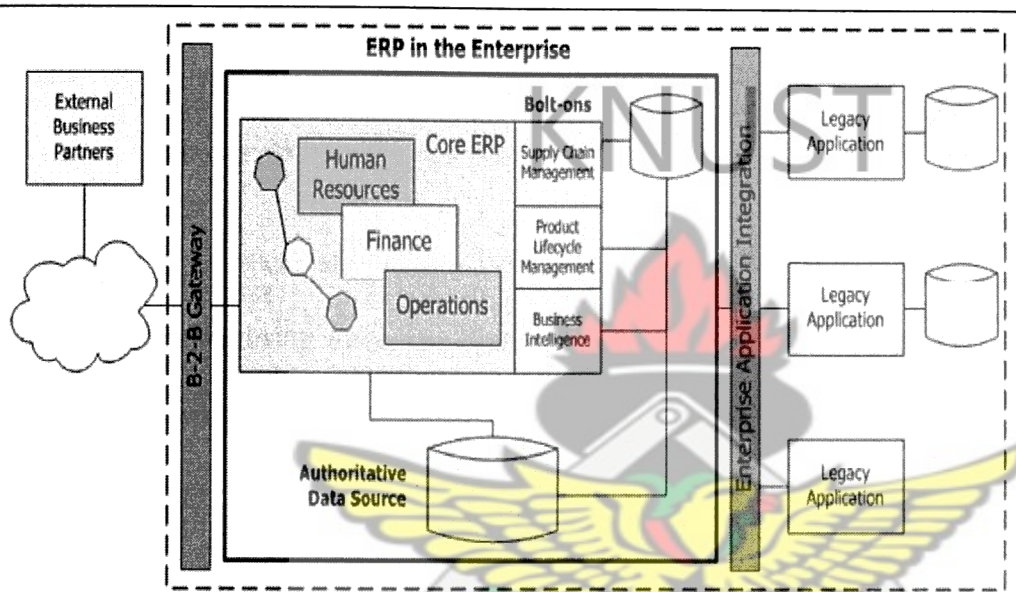


Figure 2.2 the ERP System Enterprise Architecture source: wikipedia 2009

2.1.4 History behind ERP

Although ERP has been the key tool for many business transformation efforts during the 1990s, ERP is actually just the latest generation of a continuing evolution of business systems whose origins date back to the 1950s (Deloitte Consulting, 2009).

Early 1950s: Inventory control systems – The main focus of manufacturing systems in the 1950's was on Inventory control designed to track stock levels and their locations.

This was one of the first business applications of technology outside the finance and accounting areas (Deloitte Consulting, 2009).

1950s-1960s: The first model for manufacturing – Materials Requirements Planning (MRP) – was developed. This helped companies to plan their orders for purchased and manufactured materials. But MRP ran on mainframe computers – making it difficult to manage and expensive to maintain. Most of the software packages during that period (usually customized by then) were designed to handle inventory based on traditional inventory concepts (Wikipedia, 2008).

1970s-1980s: This era still focused on the manufacturing industry, MRP evolved into MRP II, Manufacturing *Resource* Planning. The integration of financial systems enabled MRP II to be used as more of a closed-loop planning tool (Deloitte Consulting, 2009).

Mid-1980s: An improvement of the 70's breakthroughs in manufacturing such as Just-in-Time delivery combined with the plummeting price of computing to create 'islands of automation'. Through computer-integrated manufacturing (CIM), production plants were able to automate processes, and the market for automated systems grew dramatically (Deloitte Consulting, 2009).

Late 1980s-1990s: With the development of client-server technology, MRP II evolved further into Enterprise Resource Planning. ERP expanded the boundaries of MRP II to include other essential resources, particularly human and capital resources (Deloitte Consulting, 2009).

Late 1990s: Companies during this period were focused on using ERP which, by now, had become the technology backbone of choice to realize and sustain competitive advantage. Towards the end of this period, complementary technologies such as supply chain optimization and customer relationship management systems began to extend the functionality of enterprise applications (Deloitte Consulting, 2009).

The future: Companies have already begun to extend their enterprise systems beyond their own four walls through various forms of e-Business to connect with customers and suppliers. The next few years will see enterprise systems become the facilitators of corporate growth not just resource and cost management (Deloitte Consulting, 2009).

In figure 2.1 there is a representation of the evolution of ERP from a smaller scope to a broader and more complex one. This is because with time people demand more from the systems and as such the scope broadens and the functionality also becomes more.

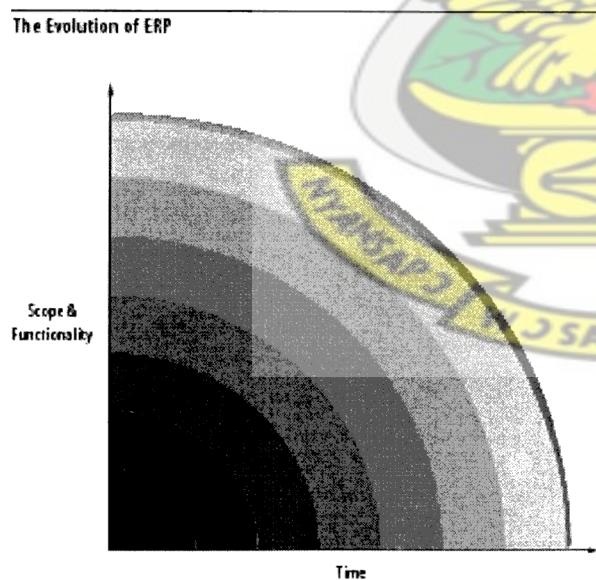


Figure 2.3 The Evolution of ERP

source: Deloitte Consulting, (2009)

2.1.5 Some vendors of ERP

Below are some ERP vendors available and also how much revenue they made in the year 2006

Vendor	Revenue[3]	Revenue[4]	Year
	(Native currency)	(million \$)	
SAP	1.401 billion EUR	12401.4	2006
Oracle Applications	14.38 billion USD	14380	2006
Infor Global Solutions	2.1 billion USD	2100	2006
Lawson Software	390.776 million USD	390.8	2006
Epicor	384.1 million USD	384.1	2006
QAD	225 million USD	225	2006
NetSuite	67.2 million USD	67.2	2006

Table 2.1 List of ERP vendors' source: wikipedia, (2009)

2.2 Software components of ERP Systems

Most ERP Systems are composed by the modules or components. These modules are:

- Sales and Distribution
- Material Management
- Financial Accounting
- Human Resources Management

- Quality Management
- Project Management

Sales & Distribution: This portion contains the functions related to the sale of goods to customers and includes recording customers order, shipping of goods to customer, and billing the customer. The processes are inter-connected to the Material Management module to check the availability of inventory and record the issue of goods, the Financial Accounting module to record the sales and the Controlling module for profitability analysis (Shehab E.M et al 2004).

Material Management: Unlike the previous portion this aspect contains the function related to acquisition of goods from vendors and management of goods in the warehouse. It prepares and records a purchase order, receives goods from vendors and record the vendors invoice (Shehab E.M et al 2004).

Financial Accounting: This is the portion that contains the function related to business events from other modules such as the Sales & Distribution and also Material Management. It records transactions into the general ledger accounts, external account statements, the balance sheet, profit and loss statement and statement of cash flows (Shehab E.M et al 2004).

Human Resources: It contains the function related to the recruitment, management and administration of personnel, payroll processing and personnel training and travel. The HR module is also used to maintain data related to training and work benefits. (Shehab E.M et al 2004)

Quality Management: This contains the function related to product inspections, material certifications and quality controls (Shehab E.M et al 2004).

Project Management: This contains the function related to research and development, construction, marketing projects, cost settlement and project phases (Shehab E.M et al 2004).

A representation of these is as shown in figure 2.4

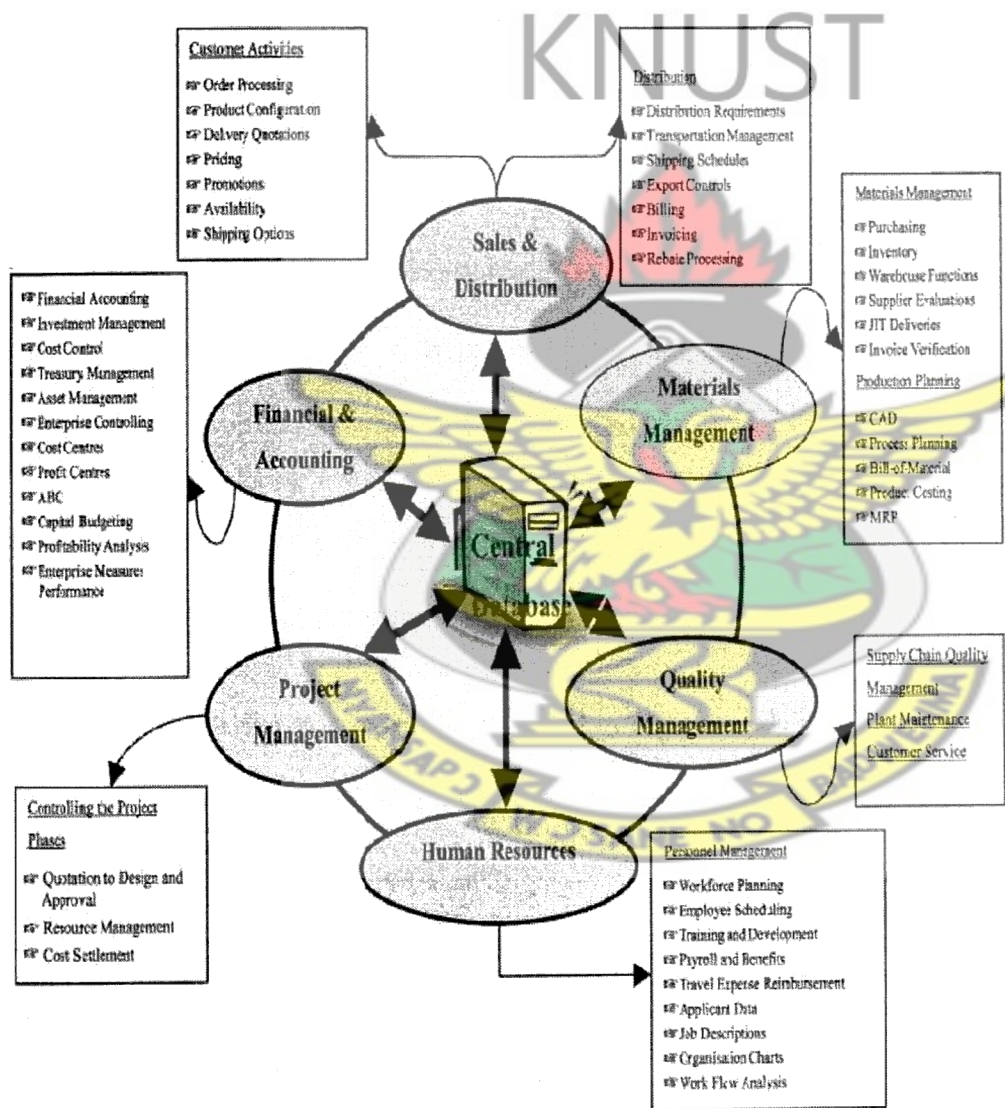


Figure 2.4 software components of an ERP system source: (Shehab E.M et al 2004)

2.3 Benefits and Demerits of ERP implementation systems to the organization

By becoming the integrated information solution across the entire organization, ERP systems allow companies to better understand their business. With ERP software, companies can standardize business processes and more easily ensure best practices. So by creating more efficient processes, companies can concentrate their efforts on serving their customers and maximizing their profit (Wikipedia, 2008).

Some of the benefits that can be derived from ERP systems include

ERP Systems centralize the data in one place. Benefits of this include:

- Eliminates the problem of synchronizing changes between multiple systems
- Permits control of business processes that cross functional boundaries
- Provides top-down view of the enterprise (no "islands of information")

As well as reduces the risk of loss of sensitive data by consolidating multiple permissions and security models into a single structure

2.3.1 Advantages of ERP system

1. **Integrate financial information:** Anytime the CEO tries to understand the company's overall performance, he may find many different versions of the truth. Finance has its own set of revenue numbers, sales has another version, and the different business units may each have their own version of how much they have contributed to revenues. ERP creates a single version of the truth that cannot be questioned because everyone is using the same system (Christopher Koch, 2007).

2. **Integrate customer order information:** ERP systems can become the place where the customer order lives from the time a customer service representative receives it until the loading dock ships the merchandise and finance sends an invoice. By having this information in one software system, rather than scattered among many different systems that cannot communicate with one another, companies can keep track of orders more easily, and coordinate manufacturing, inventory and shipping among many different locations at the same time (Christopher Koch, 2007).

3. **Standardize and speed up manufacturing processes:** Manufacturing companies— especially those with an appetite for mergers and acquisitions—often find that multiple business units across the company make the same widget using different methods and computer systems. ERP systems come with standard methods for automating some of the steps of a manufacturing process. Standardizing those processes and using a single, integrated computer system can save time, increase productivity and reduce head count (Christopher Koch, 2007).

4. **Reduce inventory:** ERP helps the manufacturing process flow more smoothly, and it improves visibility of the order fulfilment process inside the company. That can lead to reduced inventories of the stuff used to make products (work-in-progress inventory), and it can help users better plan deliveries to customers, reducing the finished good inventory at the warehouses and shipping docks. To really improve the flow of your supply chain, you need supply chain software, but ERP helps too (Christopher Koch, 2007).

5. **Standardize HR information**— Especially in companies with multiple business units, HR may not have a unified, simple method for tracking employees' time and communicating with them about benefits and services, ERP can fix that.

In the race to fix these problems, companies often lose sight of the fact that ERP packages are nothing more than generic representations of the ways a typical company does business. While most packages are exhaustively comprehensive, each industry has its quirks that make it unique. Most ERP systems were designed to be used by discrete manufacturing companies (that make physical things that can be counted), which immediately left all the process manufacturers (oil, chemical and utility companies that measure their products by flow rather than individual units) out in the cold. Each of these industries has struggled with the different ERP vendors to modify core ERP programs to their needs (Christopher Koch, 2007).

2.3.2 Disadvantages

- Customization of the ERP software is limited.
- ERP systems can be very expensive (This has led to a new category of "ERP light" solutions)
- The system may be too complex measured against the actual needs of the customers.

2.4 Implementation

Implementing an ERP system is a complex and time consuming project. Since ERP systems are meant to integrate all business processes it will cause major changes in the

organization. The implementation of ERP most often exceeds the budget, the time schedules and they are also sometimes fairly risky.

It is important that the system being implemented supports all the organizational needs and requirements. Another important issue as stated by Hong & Kim, (2002) is that the system meets the anticipated expectations.

2.4.1 ERP and company size

Company size is very important in establishing or implementing ERP Systems.

According to Mabert et al. (2003) the size of an enterprise plays an important role when implementing ERP systems. He further indicated five key dimensions where the size of the organization has an impact.

According to Marbert et al (2003) the following submissions are true

1. Adoption of ERP systems by large companies is motivated more by strategic needs whereas tactical considerations are more important for smaller companies.
2. Larger companies employ more ERP functionality than small companies.
3. Larger companies customize ERP software more while small companies adopt business processes within ERP systems more.
4. Large companies use an incremental implementation approach by phasing in the systems while smaller companies adopt more radical implementation approaches such as implementing the entire system or several major modules at the same time

5. Large companies report greater benefits in the financial areas, while small companies report more benefits from their ERP implementations in manufacturing and logistics. This is a little illustration in our study just to explain that some bigger companies need more sophisticated functionality than smaller companies and as such there is no “all size fit all” in the implementation of ISCALA ERP System.

2.4.2 Approaches to implementing ERP systems

There are different approaches and strategies that can be used when implementing ERP systems, some of these approaches are listed below;

- Best of Breed approach (Olson, 2004)
- Reengineering approach (Bingi et al., 1999)
- Complete functionality approach (Holland & Light, 1999)
- The skeleton approach (Bingi, Sharma & Gofla, 1999)
- Best practice approach (Bingi et al. 1999)
- Single module approach (Holland & Light, 1999)

According to Olson (2004) most companies and organizations do not implement full or complete suits because these suits are normally very expensive and also companies do not need all of them to run their processes.

According to Olson the most idealist approach will be the best-of-breed approach where by the best of modules are selected from the different vendors and implemented as one.

2.5 THE ISCALA ERP

In this section ISCALA ERP is going to be explained better. There will be a look at some of the solutions available for customers who are prepared to introduce this system in their firms and organizations.

2.5.1 What is Epicor ISCALA

Epicor (NASDAQ: EPIC) develops a range of enterprise software solutions targeted at mid-market companies primarily in the manufacturing, distribution, retail, hospitality and services industries. The company is headquartered in Irvine, California and was founded in 1984 as Platinum Software Corporation. In the late 1990's, the executives made some strategic acquisitions to help evolve Platinum from a provider of financial accounting systems to a provider of end-to-end enterprise solutions. To help solidify the transformation, the company went through a name change. In May 1999, Platinum Software changed its name to Epicor Software Corporation.

Epicor ISCALA is a business solution designed for the worldwide divisions and subsidiaries of multinational corporations and large local or regional companies that may have significant cross-border trading requirements. The software includes integrated Enterprise Resource Planning (ERP), supply chain, Manufacturing Execution Systems (MES), field service, project management, payroll and other capabilities, all built on a collaborative business Microsoft .NET and Web services-based framework (Epicor, 2009).

ISCALA integrates Internet technology and traditional enterprise resource planning (ERP) functionality to make global business simple. With ISCALA, global companies can integrate their ERP systems anywhere in the world, whether in a subsidiary, division, or headquarters, and extend the system to their partners and suppliers. ISCALA's collaborative ERP software helps global companies meet the requirements for advanced e-business, as well as use a standard ERP product for managing traditional business processes. This enables them to gain measurable benefits from trading electronically, building a private exchange or global portal, or optimizing the supply chain, as **iScala** provides additional security, scalability, and flexibility (Epicor, 2009).

ISCALA combines country-specific localizations and multi-language capabilities with leading capabilities to support global, multi-company or multi-site business models that need to collaborate with customers, suppliers, sister organisations or other partners to achieve operational and business excellence. With specialised out-of-the-box functionality, ISCALA will help your company achieve competitive advantage in industry segments including chemical and Pharmaceutical, Industrial Machinery, Light Engineering, Electronics, Automotive Components, Consumer Packaged Goods and Hospitality. Companies may standardize their plants and operating divisions on a centralized or distributed model of ISCALA, while supporting country specific localizations and languages at each site. Through either model corporate headquarters achieve consistent visibility of information and operations, as well as supporting the global implementation of common procedures, practices and controls (Epicor, 2009).

The integration capabilities supplied with ISCALA enable you to configure business processes and connect with your internal and external supply chain for visibility and automated trading, thereby reducing operational costs, improving turnaround times and providing supply and demand information to help make business decisions with confidence. ISCALA's comprehensive functional depth and breadth, from customer management through manufacturing to after-sales, will enable you to rapidly implement and automate key processes for your industry anywhere in the world.

2.5.2 Epicor Business Software Solutions

Figure 2.5 shows the different Business Software Solutions being introduced by Epicor

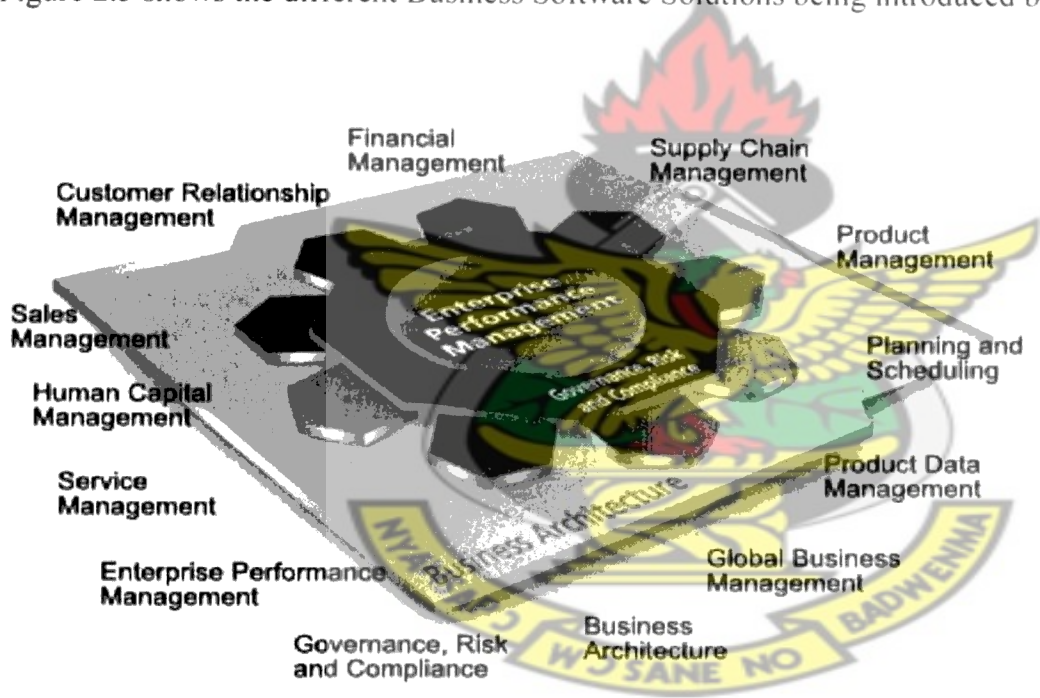


Figure 2.5 Business Software Solutions source: (www.epicor.com, 2009)

Supply Chain Management

The primary purpose for the existence of any supply chain is to satisfy customer needs and business profits. Epicor offers an extensive range of Supply Chain Management (SCM) software as part of its end-to-end ERP solutions. Epicor SCM is complemented by an array of enterprise capabilities, including customer relationship management (CRM), supplier relationship management (SRM), and supply chain execution (SCE) (Epicor, 2009).

Retail Management

Retail enterprise software helps the retailers to improve visibility across the entire chain in the company. In the retail sector, an ERP solution includes point-of-sale, inventory management, distribution, merchandising, warehousing and the centralization of information management (Epicor, 2009).

Service Management

Service management solutions help coordinate all service center processes to secure the best usage of resource and material, at the right time, for the lowest possible cost, with the greatest return, all leading to improved customer satisfaction. Epicor service management software supports lean service organization requirements with comprehensive escalation management that enables management of customer service level agreements (Epicor, 2009).

Enterprise Performance Management

EPM solutions help businesses establish financial and operational targets and the ability to deliver performance results in a timely manner to everyone in the organization that can impact those results. Epicor EPM provides a complete set of tools and applications that let you plan, execute, and analyze at both strategic and tactical levels – aligning business activities with business goals (Epicor, 2009).

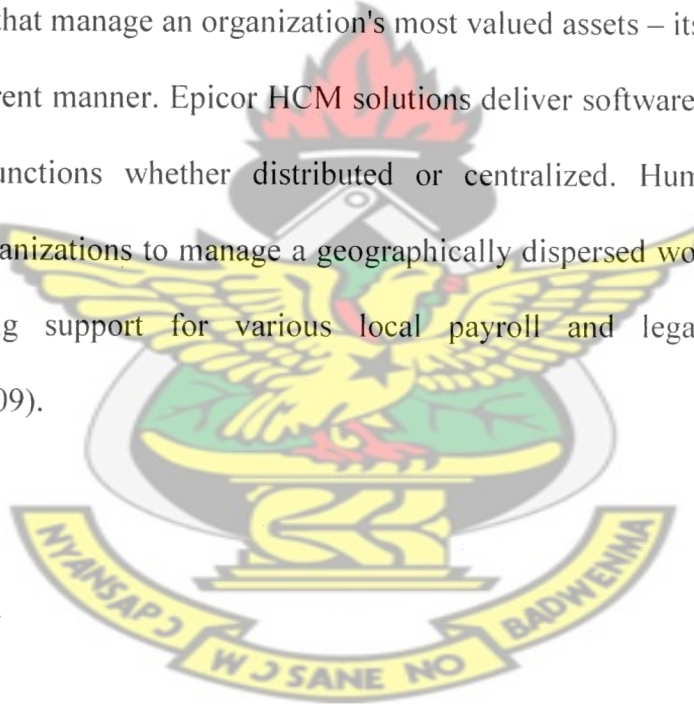
Human Capital Management

HCM refers to solutions that manage an organization's most valued assets – its employees – in a strategic and coherent manner. Epicor HCM solutions deliver software support for all employee related functions whether distributed or centralized. Human Capital Management enables organizations to manage a geographically dispersed workforce in a global manner, ensuring support for various local payroll and legal reporting requirements (Epicor, 2009).

IT Service Management

ITSM helps ensure business goals are met and value delivered by providing both the business and the IT department with a common set of best practices and tools. ITSM also plays a key role in compliance management. With regulatory and legal requirements such as SOX, BASEL II, COBIT, ISO/BS, and HIPAA organizations need to provide

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transparency and accountability in business processes and corporate accounting (Epicor, 2009).

Governance, Risk and Compliance

Legal, regulatory and supply chain mandates continue to be a challenge for some organizations. Implementing governance risk and compliance (GRC) strategies helps control risk effectively handle regulatory compliance and ultimately drive business performance. US Congress passed the Sarbanes-Oxley Act of 2002 (SOX) comprising eleven sections, ranging from corporate responsibility and reporting to auditor independence and compliance certification. SOX Compliance was primarily designed for public companies, regardless of size; it clearly continues to have far-ranging implications for private firms as well (Epicor, 2009).

Professional Services Automation (PSA)

It helps companies proactively plan projects and make more informed decisions particularly when matching skills and availability to project needs. This type of software helps minimize non-billable hours, maximize revenues, better plan projects and produce more profitable engagements while increasing customer and staff satisfaction (Epicor, 2009).

Service-oriented Architecture (SOA)

It is an approach to developing enterprise software applications in such a way that software processes are broken down into services which are then made available and

transparency and accountability in business processes and corporate accounting (Epicor, 2009).

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Service-oriented Architecture (SOA)

It is an approach to developing enterprise software applications in such a way that software processes are broken down into services which are then made available and

discoverable on a network. SOA addresses the complexity, inflexibility, and weaknesses of existing approaches to business process design, workflow, and application integration (Epicor, 2009).

2.5.3 Products provided by EPICOR

Some of the products provided by ISCALA include:

- EPICOR
- VANTAGE
- CLIENTELE
- EPICOR FOR SERVICE ENTERPRISES
- VISTA
- RETAIL (CRS AND NSB)
- ISCALA

Source: Epicor, (2009)

In the next chapter we are going to discuss the research methodology that was used for this study and the chosen method will affect the outcome of the study.

CHAPTER THREE

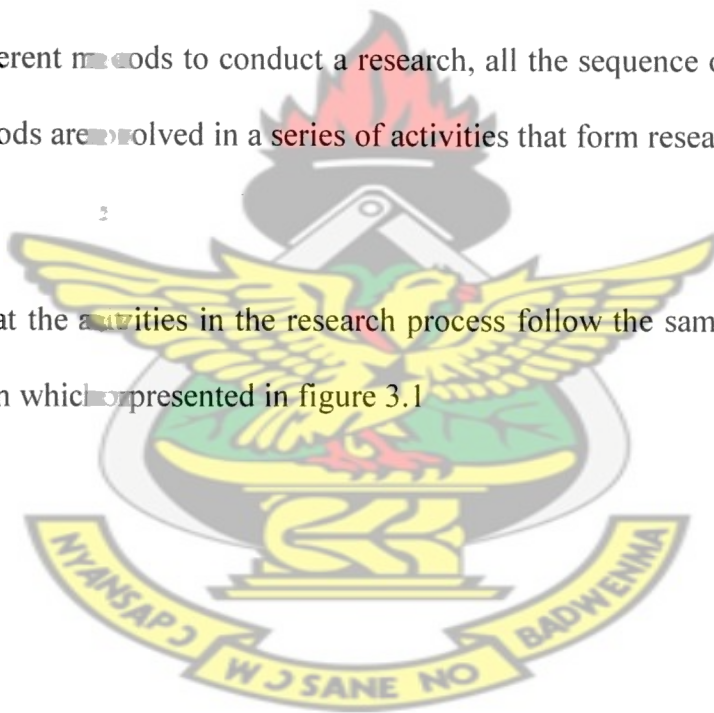
3.0 Introduction

This chapter will discuss and motivate the approach used in this research. This chapter describes research process, research design and also explains type, strategy and approach of this research. Sample selection, method of collecting the data, the reliability and validity of this study are all discussed in this chapter.

3.1 Research process

Although there are different methods to conduct a research, all the sequence of activities are the same. The methods are involved in a series of activities that form research process with high dependency.

It is not all the time that the activities in the research process follow the same order but there is a generic pattern which is presented in figure 3.1



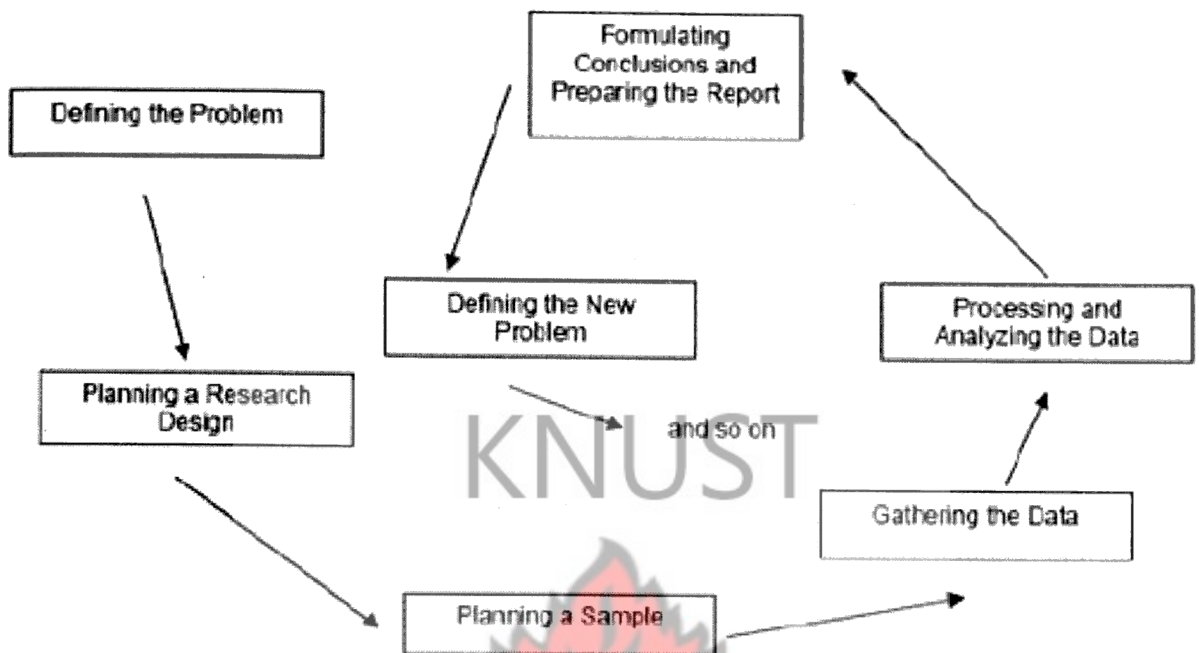


Figure 3.1 generic pattern for research source: (zikmund, 2000)

After going through this cycle the conclusions made sometimes generate new ideas that also go through the same process over and over again.

3.2 Research purpose

This research will be helpful to industry especially in Ghana who will want to implement similar ERP system in Ghana. By the end of the research some findings will be made to and added to already existing works and studies especially in the African and Ghanaian context to allow companies and individuals to be able to relate the situation at Coca cola and that of their organizations. This research will serve as a guide to ensure that best practices are employed towards the implementation of ERP systems especially in Ghana.

Descriptive studies are studies that the researcher wishes to portray a situation or phenomenon such as an event or process. He also explains that in descriptive studies the problem is usually structured and well understood. The problem is such that the task to solve is clear.

In exploratory studies the situation is practical and if a researcher wants to clarify his understanding of a problem then he uses this method (Saunders, Lewis and Thornhill, 2000). Pervez G. (2005) says that it is a method of finding out when a problem is badly understood.

Finally explanatory studies are useful when the researcher wishes to establish the causal relationships between variables (Saunders, Lewis and Thornhill, 2000).

Pervez G. (2005) calls it causal studies and explains that this kind of method is structured but the researcher is also confronted with cause-and-effect problems. So then a mix of the two methods will allow him obtain his results.

3.3 Research approach

According to Cantzler (1992) there are two different research methods; there is the quantitative research method and the qualitative method. Most often the research method a researcher will use will be based on hopes to achieve. This will depend greatly on how much time the researcher has and how much resources are available to him. The two methods can be combined during research or used separately.

Holme and Solvang (1991) state that qualitative research is characterized by the proximity the researcher has to the respondent. In qualitative research, the use of small groups; not larger than 30 respondents is used and is often built upon interviews and open questions (Cantzler, 1992). Due to the way data collection is done, the answers can vary and it also requires time and money to collect the data this way (Cantzler, 1992).

Cantzler (1992) also explains that quantitative research is a research method where a large amount of respondents can be researched and the data collection is done many times through the use of questionnaires and statistical methods which can be applied to the collected data.

For the complete reflection of the research the following data collection methods will be used Interviews, Observation, Questionnaires and a review of literature.

3.4 Data collection

This study is based on a literature review and an empirical investigation. An empirical study is, according to Repstad, (1993), an investigation based on data which has been collected through surveys or interviews. According to Yin (2003) no source of information is better than others. In fact they should be considered complementary, and therefore a good case study will rely on as many sources as possible. A literature review on the other hand is a study done on literature (magazines, journals, articles company information etc.) to help researchers in a particular subject matter.

3.5 Primary data

According to Lundahl and Skärvad (1999) in their book, an empirical study is done to collect primary data. Lundahl and Skärvad go on to suggest that the researcher should select respondents to get access to deviating or typical cases.

According to Saunders, Lewis & Thornhill (2003) the use of questionnaires works best if the questions asked are of a closed character and if the questions cannot be misinterpreted by different persons, this is to achieve as high validity and reliability as possible. There are six sources of evidence that can be focused in case studies. Each of them will be briefly explained below.

3.5.1 Interviews

There are different forms of interview namely structured interview, semi-structured interview and unstructured interview (Saunders, Lewis & Thornhill, 2000).

Structured interviews use questionnaires, based on a predetermined and standardized or identical set of questions. You read out each question and then record the response on a standardized schedule, usually with pre-coded answers (Saunders, Lewis & Thornhill, 2000).

According to Phillips (1966) a structured method of interview means that there is no room for the respondents to give their own views in a real sense, which might have been useful for the findings. Similarly a total dependence on the unstructured method of interview may not allow accurate testing of the Hypotheses (Phillips, 1966).

Semi-structured and unstructured interviews are both non- standardized. Unstructured interviews are informal and the questions are only roughly predetermined. You would use these to explore in depth a general area in which you are interested (Saunders, Lewis & Thornhill, 2000). In any case there are no predetermined answers so the respondent can reply in his or her own words. (Churchill, 1999)

While in semi-structured interviews, the researcher will have a list of themes and questions to be covered although these may vary from interview to interview. This means that you may omit some questions in particular interviews, given the specific organizational context which is encountered in relation to the research topic (Saunders, Lewis & Thornhill, 2000).

In this research Interviews were used to get about 30% of my data and as such a very integral part of most researches that need to get information from branch heads and managers who have little time but vast experience and facts. The other 50% was obtained from questionnaires and the remaining 20% from literature reviews.

3.5.2 Physical artifact

In this kind of data collection the physical evidences, which are needed, such as technological device, work of art instruments etc... are observed or collected by visiting the site of case study (Saunders, Lewis & Thornhill, 2000).

3.5.3 Direct observation

This can involve observation of meeting; factory works, classrooms and side walk activities etc. Observational evidence is often useful in providing additional information about the topic being studied (Yin, 1994; cite: Sparredal, 2005).

3.5.4 Archival records

This data collection method includes organizational records, charts and maps and survey data previously collected. Also the secondary data can be used in this kind of collection.

This method was very helpful during comparison with taste of technology to a state of no technology.

3.5.5 Documentation

Different types of documents such as statistics, examples, letter journals, branch literature, registration and official publication are all employed to collect data Yin, (1994). This method was employed during the literature review.

3.5.6 Questionnaire

The data in this method will be gathered by sending questions to the respondents.

Questionnaires can be distributed in paper form or by email, fax and etc...There is no explanation or influence of researcher in this method .There are some problems that Saunders et al. (2003) describes with self administrated questionnaires, for example the fact that it is hard to make sure that the right person answers the questionnaire.

According to Saunders et al. (2003), self administrated questionnaire is a good way to collect truthfully data from the respondents; the reason for this is that the respondent does not try to please the interviewer, something that can occur when the researcher is doing interviews.

All these concerns were in mind when given out the questionnaires to the respondents.

3.6 Secondary data

According to Saunders et al. (2003), it is very important to investigate the possibilities to gather secondary data even before the researcher decides to go for a primary data gathering.

So a secondary data research project involves the gathering and/or use of existing environmental data for purposes other than those for which they were originally collected.

These secondary data may be obtained from many sources such as industry surveys, compilations from computerized databases, literature and information systems. My secondary data was obtained from the internet, Coca Cola-Kumasi and books.

3.7 Selection of Sample

Sampling techniques provide a range of methods that enable you to reduce the amount of data you need to collect by considering only data from a sub-group rather than all possible cases or elements (Saunders and Thornhill, 2000).

When the research problem has been specified and an appropriate research design and data collection instrument developed the next step in the research process is to select those elements from which the information will be collected (Pervez G. 2005).

For quantitative studies sampling is very important. Sampling ensures that a fair representation of the whole population is represented.

In the case of this research the sampling was done according to the procedure for drawing a sample based on Churchill (1995).

According to Churchill there are six steps for drawing a sample that is shown figure 3.2

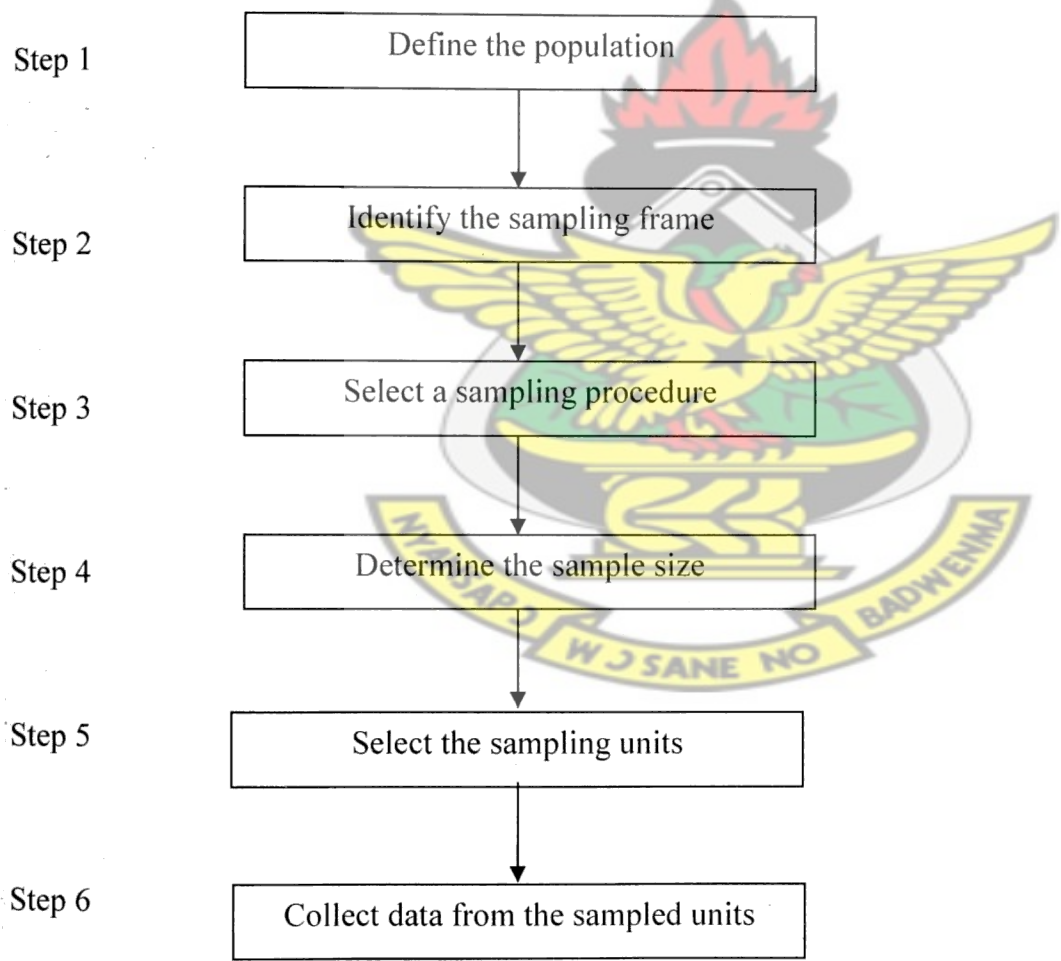


Figure 3.2 Procedure for drawing a sample

Firstly define the population then identify the sampling frame as well

Selecting the sampling procedure was next and also very critical to the sampling.

A portion of the population must be taken but representative of the whole group. So for this research sample of 30 people was accepted.

I then grouped the sample into sample units and finally collected data from the sampling units.

3.8 Trustworthiness

Trustworthiness consist of four key issues namely; validity, reliability, generalizability, and objectivity. Validity and reliability concepts will be described and discussed further below. Validity and reliability have to be considered to reduce the risk of obtaining incorrect answers to research questions (Chisnall, 1997). In this research care was taken to ensure that the research was both reliable and valid and the results a true reflection of the situation there.

3.8.1 Validity

The most important criterion of research is validity. Every research must be valid so as we know that it can be trusted. Validity is defined as the extent to which data collection method or methods accurately measure what they were intended to measure (Saunders et al., 2003). Validity is concerned with the integrity of the conclusions that are generated from research. Validity has to do with whether or not the item actually elicits the intended information. Validity is necessary to assess the quality of the study and determine whether it qualifies to contribute to general body of knowledge

It refers to how well an idea about reality “fits” in with actual reality. Actually, qualitative researchers are more interested in giving a fair, honest, and balanced account of social life from the viewpoint of someone who lives it every day (Neuman, 2003).

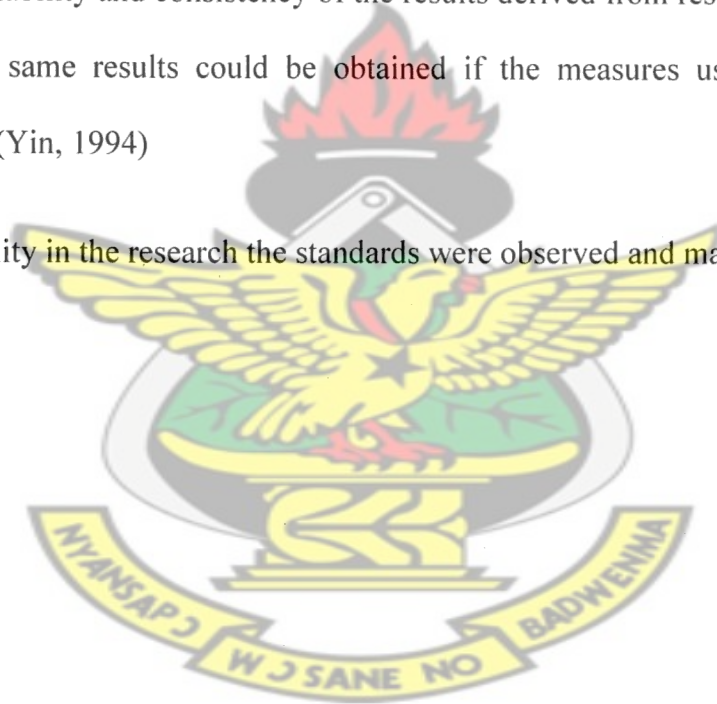
3.8.2 Reliability

Reliability is concerned with the question of whether the results of a study are repeatable

So in order to achieve as high reliability as possible, it is important that the study is conducted in the same way for all respondents.

Reliability refers to the stability and consistency of the results derived from research. It is the probability that the same results could be obtained if the measures used in the research were simulated (Yin, 1994)

In order to ensure reliability in the research the standards were observed and maintained.



CHAPTER FOUR

This Chapter is looking at analyzing the data received from the respondents.

After the analysis an interpretation of the results obtained will be developed.

4.0 Data Analysis

Based on the Research objectives and the Research Questions the hypotheses for the data analysis will be developed.

Specifically the following objectives have been set for the research investigation:

1. To identify the strategic impact that ERP has brought to the organization.
2. To identify the organizational processes that has improved due to ERP implementation.
3. To study the effectiveness of ERP on the organization.

While the following Research Questions were derived from the objectives

1. How does ERP System implementation affect the company's efficiency?
2. What benefits are derived from implementation of ISCALA ERP?
3. Does ERP system depend on some critical success factors for implementation to succeed?

For the hypothesis the question to be investigated is *how ERP systems affect the company's efficiency*. So hypothesis 1 formulated.

4.1 The Hypothesis

Tools used for Hypothesis Testing

Two related samples test: these tests concern those situations in which persons, objects etc are measured twice.

Null hypothesis H0: There is no increase in efficiency after implementation of ERP.

Alternate hypothesis Ha: There is an increase in efficiency after implementation of ERP.

All data collected was carefully classified, tabulated and interpreted on the basis of which, tables, charts and graphs were drawn up. Percentages were drawn from the tabulated frequencies and the data have been analyzed. The analysis helped in drawing inferences and for better understanding graphs were plotted.

4.2 The response rate

The survey questionnaire was sent to 30 employees working at Coca Cola-Kumasi. After one week a reminder was sent to the employees through email.

The questionnaire was well explained to them and the responses that were received indicated just that. Table 4.1 shows results from questions on Questionnaire during survey.

QUESTIONNAIRE	COUNT	PERCENTAGE
Total number of Questionnaires sent out	30	100
Total number of Questionnaires Received by respondents	30	100
Total number of Questionnaires filled out by respondents	30	100
Total number of Responses usable for the study	30	100

Table 4.1 Rating of the overall process of implementation of ISCALA ERP system

4.3 The response from questionnaire

1. How would you rate the overall process of implementing ISCALA ERP System in your company?

For Question one, a total of 30 answers were received

This question has been formulated to know the respondents view of how involving the implementation of ISCALA was to them on a personal basis.

- Very difficult means that the data was so hard to get and there were no standards and so data migration for those particular respondents was very difficult and took a lot of time.

- A Difficult responds would mean that the data was ready just that some needed to be standardized.
- Easy means that implementation was successfully done without encountering any problem. Data was ready and could go straight into the ERP software to commence work.
- Very easy means that respondent is extremely satisfied and overwhelmed by ERP system's speed and also data here was already cleaned and ready to be uploaded.

Response	Number of Response	Percentage
Very Difficult	3	10.00%
Difficult	5	16.67%
Easy	16	53.33%
Very Easy	6	20.00%
Total	30	100.00%

Table 4.2 Rating of the overall process of implementation of ISCALA ERP system

2. How would you rate the security of ISCALA ERP System?

For Question two, a total of 30 answers were received

This question has been formulated to know the respondents view of how secured ISCALA is as compared to their original system.

Response	Number of Response	Percentage
Very Bad	0	0.00%
Bad	2	6.67%
Good	12	40.00%
Excellent	16	53.33%
Total	30	100.00%

Table 4.3 Rating of the overall security of ISCALA ERP system

3. How would you rate your level of satisfaction of the processing speed of ISCALA ERP System?

For Question three, a total of 30 answers were received

This question has been formulated to know the respondents view of how he or she rates the processing speed of ISCALA ERP System as compared to their original system.

Response	Number of Response	Percentage
Very Bad	1	3.33%
Bad	1	3.33%
Good	18	60.00%
Excellent	10	33.33%
Total	30	100.00%

Table 4.4 Rating of the overall processing speed of ISCALA ERP system

4. How would you rate your level of efficiency after implementation of ISCALA ERP System?

For Question four, a total of 30 answers were received

This question has been formulated to know the respondents view of how efficient the organisation's processes are compared to their original system.

Response	Number of Response	Percentage
Very Bad	0	0.00%
Bad	0	0.00%
Same	4	13.33%
Good	10	33.33%
Excellent	16	53.33%
Total	30	100.00%

Table 4.5 Rating of the overall efficiency of ISCALA ERP system

5. What is your opinion on the ease of access to information after implementation of ISCALA ERP System?

For Question five, a total of 30 answers were received

This question has been formulated to know the respondents view on the ease of access to information as compared to their original system.

Response	Number of Response	Percentage
Very Difficult to access	0	0.00%
Difficult to access	3	10.00%
Easy to access	7	23.33%
Very Easy to access	20	66.67%
Total	30	100.00%

Table 4.6 Rating of the overall ease of access of ISCALA ERP system

6. After the implementation of ISCALA ERP System there has been a better standardization/integration of information.

For Question six, a total of 30 answers were received

This statement has been formulated to know what the respondents think about it. Whether they agree or disagree.

Response	Number of Response	Percentage
Strongly disagree	0	0.00%
Disagree	4	13.33%
Agree	14	46.67%
Strongly Agree	12	40.00%
Total	30	100.00%

Table 4.7 Rating of the overall standardization of ISCALA ERP system

7. Has ISCALA ERP system given the company an improved cooperates image?

For Question seven, a total of 30 answers were received

This question has been formulated to know what the respondents' opinions are.

Response	Number of Response	Percentage
No (Strongly)	2	6.67%
No	3	10.00%
Yes	16	53.33%
Yes (Strongly)	9	30.00%
Total	30	100.00%

Table 4.8 Rating of the overall performance of co-operate image of ISCALA ERP system

8. How would you rate your Keeping of inventory after implementation of ISCALA ERP System?

For Question eight, a total of 30 answers were received

This question has been formulated to know what respondents opinion about the inventory of his department after ERP Implementation is.

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Response	Number of responses	Percentage
Very hard to keep	0	0.00%
Hard to keep	3	10.00%
Same	5	16.67%
Easy to keep	12	40.00%
Very easy to keep	10	33.33%
Total	30	100.00%

Table 4.9 Rating of the overall process inventory keeping of ISCALA ERP system

4.4 Results from interviews

There was an interview session with the heads of the departments involved with the implementation of ERP system and Results are as shown in table 5.0.

The following table is what I finally gathered from my interview with those heads

	Failure	The same as previous method	Percentage Increase
Productivity	0	0	60% better
Performance	0	0	50% better
Security	0	0	80% better
Efficiency	0	0	70% better
Customer Satisfaction	0	0	60% better

Table 5.0 Results form interview after Implementation of ISCALA ERP system

The questions were all inclined towards these five research areas. The views of the heads of the department on these subject areas were very important. All of them actually agreed that in all these 5 areas there was an improvement but there were different ranges for their departments' level of success. These implied that there has been a positive impact on the organization. An average was struck and then used to work the percentage values that were needed.

All of the results showed an improvement and from the analysis of the data received it interpreted that the implementation of ISCALA ERP System was a success that is positive impact after ISCALA implementation.

4.5 The Statistical Test

The statistical test indicated that the null hypothesis could either be rejected or accepted for this statistical test the results from the questionnaires all 8 of the questions.

The standard deviation was obtained and this value used to check my Hypothesis.

At the end of the test my alternate Hypothesis was accepted while the null hypothesis was rejected.

1. Null hypothesis H_0 :

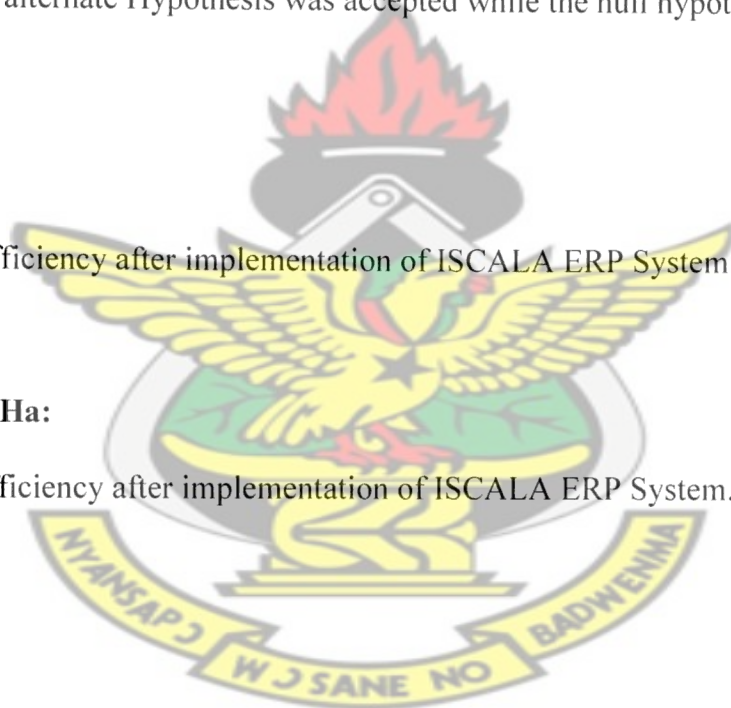
There is no increase in efficiency after implementation of ISCALA ERP System.

H_0 : was rejected.

2. Alternate hypothesis H_a :

There is an increase in efficiency after implementation of ISCALA ERP System.

H_a : was accepted.



CHAPTER FIVE

This chapter seeks to explain the results obtained from the data analysis give a few suggestions and finally conclude.

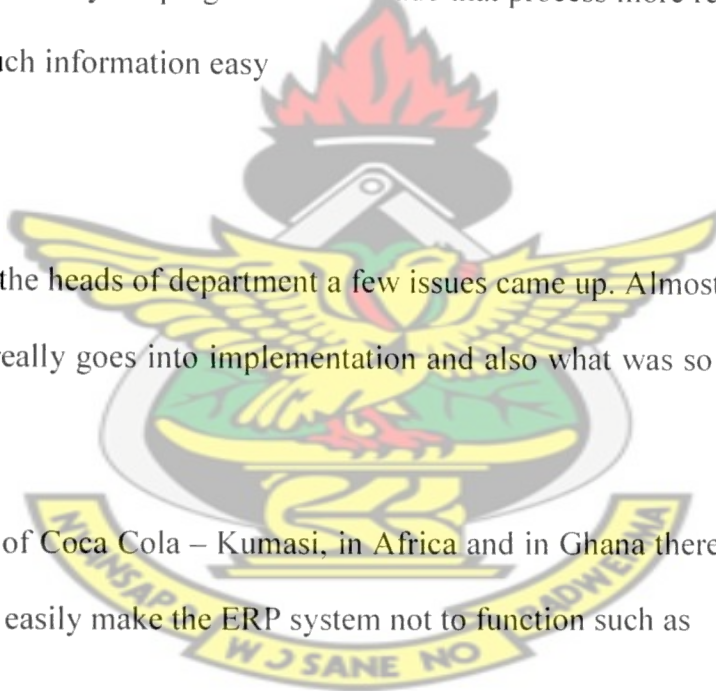
5.1 Findings, Discussions and Conclusions

From the data analyzed above, it can be stated that the overall process of implementing ISCALA ERP System in a company is easy. “This does not indicate at all that during implementation not even one single problem was encountered” these were the words of one of the managers at Coca Cola – Kumasi. He actually said that looking at the progress of ISCALA ERP its implementation has been successful.

From the research (Questionnaire)

1. Results indicate that there has been a successful implementation of ISCALA ERP System
2. The security of the ERP has improved on the whole and was very good
3. The level of satisfaction towards the processing speed from the respondents was ok.
4. There was also the fact that the efficiency level had improved from the results obtained.

5. The results suggested that after ERP implementation at Coca-Cola Kumasi there was an ease of access to information
6. The level of standardisation and integration had improved after the implementation
7. Confirmation of the results indicated that more respondents were of the view that the co-operate image will be improved due to the ISCALA ERP System.
8. Respondents again confirmed that implementation of ISCALA ERP System had helped improve inventory keeping as well as made that process more reliable and also retrieval of such information easy



After the interviews with the heads of department a few issues came up. Almost all of the heads talked about what really goes into implementation and also what was so critical to enable the system work.

According to the IT head of Coca Cola – Kumasi, in Africa and in Ghana there are some general problems that can easily make the ERP system not to function such as

- **Unstable Power supply**

Power supply in Ghana and Africa is very unstable. As such organizations have to ensure that to run ICT systems in Ghana there should be a way to establish an alternate source of

power. Most of such new systems such as ERP's heavily rely on power so without stable power the systems cannot function well.

- **Missing or expensive computers**

Most of the countries in Africa are developing and also under developed, because of that most of the organizations in these countries find it difficult to purchase new and up-to-date hardware and software. For an ERP system to survive it will need basic computer requirements to enable fast processing of data so basic requirements have to be fulfilled to be able to enjoy the use of such systems.

- **Poor maintenance culture**

There is the maintenance culture also in Ghana especially after new systems have been implemented in organizations their maintenance becomes a problem. It is only when they become faulty that the maintenance team comes around thereby shortening the life cycles of most of these systems. The IT head said that such problems are very important to setting up systems such as ISCALA ERP and have to be looked at with all seriousness else the total lifespan of these systems are shortened making it too expensive to maintain.

- **The “failure to use or unable to use” attitude**

The IT head also added that some of the employees could refuse not to use the new system citing different reasons for this. Some of the reasons include lack of computer skills, Age, Lack of motivation so after successfully implementing a new system that is supposed to be working no one is actually using it. All these issues exist and for

successful implementation they must be tackled well to ensure the smooth running of ERP System's in Ghana.

5.2 Critical Success Factors

These are some of the success factors as presented by the head of IT as critical to the implementation.

1. ERP teamwork and composition
2. Study environment well
3. Support from Top management
4. Know the business plan and vision
5. There should be effective communication
6. Good Project Management practices
7. Software development, testing, and trouble shooting
8. Monitoring and evaluation of performance

According to the IT Head these factors play such a vital role in the successful implementation of ISCALA ERP System. These factors as well as some good practices should be able to get any company there.

5.3 Suggestions and Conclusions

This study has been undertaken to find out the impact of ISCALA ERP System implementation at Coca cola-Kumasi in Ghana. The impact is so enormous especially in the Ghanaian society. An analysis of the results has been made. ERP systems can affect nearly every aspect of organizational performance and functioning, and measures of ERP system success must reflect this fact.

This study will be very useful to many organizations especially those who have planned to implement similar ERP systems in Ghana. This will give them an overview of the situation here in Ghana and also guidelines on implementing a successful ERP.

Some critical factors were identified and must be strongly considered when implementing a system such as this to avoid bad results. Aside the fact that best practices and critical success factors are adhered to please bear in mind that not all solutions fit all organizations and as such care must be taken. A good risk analysis must be done to check the possibility of ERP implementation in Ghana especially.

This study can be used as a guide to look out for some issues that might come up during ERP system implementation as well as examine the success rate before implementing it.

During the research there were so many different avenues that could be exploited or researched into and as such readers, fellow researchers as well as senior members are all encouraged to explore more into the ERP world since there is so much yet to be researched into.

The most critical is research in ICT and African society.

Appendix

Questionnaire

1. How would you rate the overall process of implementing ISCALA ERP System in your company?

- A. Very Difficult
- B. Difficult
- C. Easy
- D. Very Easy

2. How would you rate the security of ISCALA ERP System?

- A. Very bad
- B. Bad
- C. Good
- D. Excellent

3. How would you rate your level of satisfaction of the processing speed of ISCALA ERP System?

- A. Very bad
- B. Bad
- C. Good
- D. Excellent

4. How would you rate your level of efficiency after implementation of ISCALA ERP System?

- A. Very bad
- B. Bad
- C. Same
- D. Good
- E. Excellent

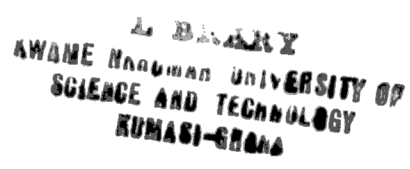
5. What is your opinion on the ease of access to information after implementation of ISCALA ERP System?

- A. Very difficult
- B. Difficult
- C. Easy
- D. Very easy
- To access
- To access
- To access
- To access

6. After implementation of ISCALA ERP System there has better standardization/integration of information?

- A. Strongly Disagree
- B. Disagree
- C. Agree
- D. strongly Agree

7. Has ISCALA ERP system given the company a cooperate image?



In conclusion this has been a very challenging study but in the end the required results were obtained

In fairness the research is limited to Ghana and Coca Cola-Kumasi and as such there could be a different situation through the section of sample size or even through the type of people chosen for the investigation.



Appendix

Questionnaire

1. How would you rate the overall process of implementing ISCALA ERP System in your company?

- A. Very Difficult
- B. Difficult
- C. Easy
- D. Very Easy

2. How would you rate the security of ISCALA ERP System?

- A. Very bad
- B. Bad
- C. Good
- D. Excellent

3. How would you rate your level of satisfaction of the processing speed of ISCALA ERP System?

- A. Very bad
- B. Bad
- C. Good
- D. Excellent

4. How would you rate your level of efficiency after implementation of ISCALA ERP System?

- A. Very bad
- B. Bad
- C. Same
- D. Good
- E. Excellent

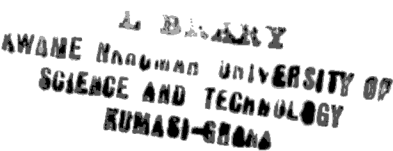
5. What is your opinion on the ease of access to information after implementation of ISCALA ERP System?

- A. Very difficult
- B. Difficult
- C. Easy
- D. Very easy
- To access
- To access
- To access
- To access

6. After implementation of ISCALA ERP System there has better standardization/integration of information?

- A. Strongly Disagree
- B. Disagree
- C. Agree
- D. strongly Agree

7. Has ISCALA ERP system given the company a cooperate image?



A. No Strongly

B. No

C. Yes

D. Yes Strongly

8. How would you rate your Keeping of inventory after implementation of ISCALA ERP System?

A. Very Hard

B. Hard

C. Same

D. Easy

E. Very Easy

To Keep

To Keep

To Keep

To Keep

To Keep



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