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**INTEGRATING SUPPLY CHAIN MANAGEMENT  
AND ENTERPRISE RESOURCE PLANNING  
SYSTEMS: A SURVEY OF SUPERMARKETS IN  
NAIROBI**

**BY  
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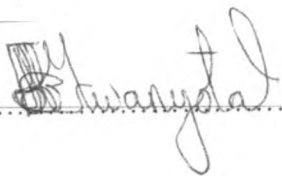
A MANAGEMENT RESEARCH PROJECT SUBMITTED IN PARTIAL  
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**OCTOBER 2004**

DECLARATION

I declare that this project is my original work and has not been submitted for a degree in any other University.

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SIGNED  DATE 3<sup>rd</sup> March 2005


This project has been submitted for examination with my approval as the University Supervisor.

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## **DEDICATION**

I dedicate this project to my parents, Mr. Lomas Mwanyota and Mrs. Mariam Shighadi Mwanyota for their love and parental care.

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## LIST OF ABBREVIATIONS

CIM	-	Computer Integrated Manufacturing
EDI	-	Electronic Data Interchange
EFT	-	Electronic Funds Transfer
ERP	-	Enterprise Resource Planning
FMS	-	Flexible Manufacturing Systems
IT	-	Information Technology
JIT	-	Just In Time
MRP	-	Materials Requirements Planning
MRPII	-	Manufacturing Resource Planning
POS	-	Point of Sales
SCM	-	Supply Chain Management
TLA(s)	-	Three Letter Acronym(s)
TQM	-	Total Quality Management
VCM	-	Value Chain Management

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## ABSTRACT

This study was carried out among the supermarkets operating in Nairobi, Kenya, between August 2003 and January 2004. The study was about the integration of SCM and ERP systems. SCM as a competitive advantage creating and sustaining process aims at optimizing a company's internal practices by synchronizing the management of the flow of physical goods that results in efficient and economic product delivery. The major goal of an SCM system is to optimize customer-supplier relationship. An ERP system on the other hand is a packaged business software system, with several modules that can facilitate the modeling of basic business processes, allow automation and integration of a company's departments and link these to its customers and suppliers in a manner that results in effective and efficient product/ service delivery. SCM and ERP systems are not exclusive but complimentary and their integration is expected to result in a multiplier effect in terms of enhancing the organizations performance. However, this is not always the case, as other researchers have demonstrated key limitations of current ERP systems in providing effective SCM support.

The objectives of the study were to determine the awareness of supermarkets in Nairobi on the usefulness of integrating SCM with ERP systems, to assess the level of contribution as perceived by supermarkets as a result of integrating SCM and ERP systems and to identify factors hindering full integration of SCM and ERP systems among these supermarkets. The need for the study arose out of the necessity to establish how systems improvements resulting from emerging best practices, among them integration of SCM and ERP systems, can lead to gaining strategic value for the supply chain within the Kenyan Retailing Industry.

The data collection for this study was carried out using a semi-structured questionnaire and analyzed using descriptive statistics and frequencies. Factor analysis was used to identify the factors hindering full integration of SCM and ERP systems among supermarkets in Kenya. Results of the study revealed that, the respondents generally associated integration of SCM and ERP systems with the creation of competitive advantage for their organizations. Secondly, although the respondents indicated that

integrating the two systems is beneficial in enhancing marketing services, budgeting and resource planning, distribution management, customer focusing and supplier contact, only about one third had embarked on using either of the systems, let alone integrating them. Thirdly, for those integrating, the factors hindering full integration of SCM and ERP either related to organizational structure, staff issues, financial and technological constraints. Finally, because of the hindrances to integration the respondents suggested staff training and sensitization, organizations embracing new technologies and open sharing of information as some of the ways of enhancing integration of SCM and ERP systems for the benefit of their organizations.

In conclusion, majority of the supermarkets that took part in the study are moderately aware of the use of SCM and ERP let alone the integration of SCM and ERP and that the hindrances to integration stem from organizational, technological and environmental factors. The study recommended that further study be done to determine the reasons behind the individual hindrances.

### 1.1 BACKGROUND

As the world shrinks due to globalization, supply chains become longer and more complex. Today's businesses find that the complex corporate supply chains on which they depend stretch across international borders and also embrace relationships with an increasing number of partners and suppliers. The major challenges for companies today, arise from the fact that the longer the supply chain becomes the more complex it is to manage (Zheng et al., 2000).

Many companies believe that within the next five years, ninety-five (95%) percent of supply chains will be demand-driven. The pace of change will depend on businesses' capabilities to meet three challenges: building agility to meet changing market needs; making market demand information readily available and; establishing robust relationships with customers and suppliers (Fischer, 1997).

We predict the next "drivers" for systems improvements will be getting strategic value out of systems to improve the supply chain. Those who have implemented new systems will look for ways to capitalize on their investments and exploit technology for competitive reasons. Frequently cited examples include e-commerce capability, electronic links along the supply chain, reducing inventory, exploiting databases for customer information, and otherwise increasing the role of technology in customer interfaces (Ayers, 2001).

The retailing business is not getting any easier, new distribution channels and novel formats are nibbling at gross margins, the life cycles of products are shortening, fickle customers are becoming more demanding and erratic changes in demand are forcing retailers to make decisions faster than ever before. Worse, consolidation is creating ever-larger change, which means retailers must manage hundreds of stores- stocking thousands of products and making thousands of pricing and inventory decisions for each item at each store each week. Its no wonder, retailers are clamoring for better tools by leveraging

the latest in mathematical modeling techniques and the power of IT (Scott & Patricia, 2001).

The advent of computers, also led to the adoption of computer based technologies as a way of improving the operations of supermarkets. Initially adoption of computer-based technologies was done to improve day-to-day activities in supermarkets such as billing customers and maintenance of stock records. Today, supermarkets are aiming at developing competitive advantage over other supermarkets using the computer-based technologies (Instore, 2002).

The need to heavily rely on enhanced SCM systems is becoming more crucial. However, the current cost to acquire an SCM system is far beyond what a smaller company can afford. For example, the SCM application package from i2 Technologies will easily cost from three to five million United States Dollars (US \$3, 000,000 to US \$5, 000,000). This high cost limits the wide implementation of SCM systems (Zheng et al., 2000).

ERP systems can be considered as a solution. However, other researchers have demonstrated key limitations of current ERP systems in providing effective SCM support. These limitations stem from the fact that the first generation of ERP products had been designed to integrate the various operations of an individual firm. In modern SCM, however, integration needs to be across organization boundaries (Akkermans et al., 2003).

Because of these limitations of ERP systems, the competitive advantages of ERP systems have been diminishing. As a result, ERP is recently undergoing a radical change. In order to compete with the fast growing SCM application providers, major players in the ERP market are attempting to extend beyond the core functionality of their ERP products to include the SCM capabilities (Information Week, October 1997).

The enhancement of the existing ERP systems with the additional supply chain capabilities offers a possible solution. It can easily be found that extending the

capabilities of the existing ERP systems by adding certain SCM capabilities now becomes a new trend in the marketplace. Indeed, the major system providers have realized the feasibility and potential benefits of the integration of SCM and ERP systems. This too has its limitations (Zheng et al., 2000).

We don't claim that the softwares' are a cure-all. Retail operations are too complex and the difficulty of ensuring data integrity to severe to promise that. However, given the industries myriad challenges, the time is right for a technology that brings control to what was risky, rigor to what was intuitive, and science to what was guesswork (Scott & Patricia, 2001).

## **1.2 STATEMENT OF THE PROBLEM**

Innovation in the supply chain puts new demands on information systems and the people who develop and manage them. Making information systems work to improve supply chains is an important SCM skill. But, putting technology ahead of strategic design and operational requirements is a frequent shortcoming. Consequently much effort is wasted or even counterproductive (Ayers, 2001).

Yet, Ayers (2001), predicts the next "drivers" for systems improvements will be getting strategic value out of systems to improve the supply chain. Zheng et al (2000) goes further to argue that the integration of all the core business processes can be achieved through integration of SCM with ERP to form this one comprehensive system, that results in cooperation among multiple parties, vendors, consulting firms and implementing companies to generate a new working environment and significantly facilitate business operation and decision making.

In the Kenyan context, a number of researches have been done on retailing in general and several studies have been carried out on supermarkets. Ngatia (2000) concluded that service providers and customers perceptions of service quality differ especially in areas that concern dealing with customers. Kyalo (2001) observed that supermarkets see store

brands as a strategic tool of ensuring customer loyalty to the store and that increased competition is the major challenge in introducing and managing these brands.

Other studies focused on strategy practices and how they can be used to gain competitive advantage. Karemu (1993) concluded that supermarkets studied did not appear to be using strategy to gain an edge over their competitors. Almost all supermarkets appear to be doing the same thing in the same way. Munyoki (1997) observed that, competition, handling & selling costs and demand considerations were the most important factors affecting pricing strategies respectively. Kipkorir (1995) concluded that, improvements in intelligence gathering from the marketing environment might or might not lead to improvements in organizational performance. It is how the marketing intelligence gathered is utilized that can result to attaining great competitive advantage.

Yet other studies focused on various technological aspects that can be utilized to improve the retailing business. Musembi (2001) analysis indicated that there is still a lot of ignorance with respect to e-commerce. Only a few supermarkets realize its vast potential and the opportunity to reap a host of benefits through competitive advantage. Sailewu (2001) concluded that supermarkets have not formed a strong and concrete perception about e-marketing, because the technology is still new in Kenya and supermarkets need to be educated further about this new marketing tool. Masese (2001) found out that suppliers' financial stability and adaptation to new technology should be put into consideration in supplier selection to enhance a mutual supplier-retailer relationship, for the benefit of both.

As evident from the researchers, no scholar has looked at how systems improvements resulting from emerging best practices can lead to gaining strategic value for the supply chain within the Kenyan Retail Industry. An emerging practice recently has been the integration of SCM and ERP systems. According to Instore (2002), recently, Uchumi Supermarkets Limited began implementing an ERP system as a way to further improve its operations. This research, intends to investigate the status of integration of SCM and ERP systems among supermarkets in Kenya.

Researchers have initially focused on describing the content of these practices and the extent to which they have been adopted, without fully comprehending how they fit into the broader theoretical context of strategy or considering the extent to which they can contribute to performance. Operations management in particular must set, as one of its research goals, the testing of such initiatives are indeed linked to improved performance, and what mechanisms come into play (Voss et al., 1997).

### **1.3 OBJECTIVES OF THE STUDY**

The objectives of the study were the following.

- To determine the awareness of supermarkets in Nairobi on the usefulness of integrating SCM with ERP systems
- To assess the level of contribution as perceived by supermarkets as a result of integrating SCM and ERP systems.
- To identify factors hindering full integration of SCM and ERP systems

### **1.4 IMPORTANCE OF THE STUDY**

The study was expected to be useful to:

- SCM and ERP systems developers in determining their business potential in the market place.
- The supermarkets studied, to give them an indication of their status in relation to how adequately they are utilizing current technologies to improve their business operations in a dynamic business environment. Similarly, potential suppliers of SCM and ERP systems in providing them with information on how technologically focused their target supermarkets are.
- The researchers and academia in this area, as the study will serve as background material for further research and it will also highlight on the current trends in the adoption of SCM and ERP systems in the retail industry. This will contribute new knowledge on SCM and ERP systems.

## **2.0 LITERATURE REVIEW**

This chapter presents a review of relevant literature published on SCM and ERP systems. The review opens with an examination of the sources of competitive advantage and how operations of a business can be a source of competitive advantage. It then examines SCM and ERP systems and their integration. It closes by looking at supermarkets and especially the development of supermarkets in Kenya.

### **2.1 OPERATIONS AND COMPETITIVE ADVANTAGE**

Strategic management practitioners and researchers have long been pre-occupied with the phenomenon of persistent superior performance demonstrated by highly successful firms. As such a great deal of attention has been focused on the nature and causes of competitive advantage. To date, various theoretical frameworks and perspectives have been advanced that attempt to explain competitive advantage. For instance, the traditional industry analysis approach emphasizes the importance of industry structure and market position (Porter, 1980).

The newly emerged resource based viewpoint to a firm's unique resources, core competence and dynamic capabilities in a rapidly changing global market is another approach to creating competitive advantage (Barney, 1991; Prahalad & Hamel, 1990; Teece et al., 1997).

Time honored theory of creative destruction forces us to rethink the importance of innovation, competing against time and destroying the old equilibrium as well as established convention as yet another approach to creating a competitive advantage (Schumpeter, 1934, 1950).

Recently, the knowledge-based view articulates that creating a learning organization and fostering knowledge generation and exploitation should be the fundamental basis for competitive advantage in an increasingly information-based economy (Senge, 1990; Nonaka, 1991).



With “newest best practice” and “state-of-the-art strategic tools” in the popular business literature changing more quickly than items on restaurant menus (Eccles & Nohria, 1992; Micklethwait & Wooldridge, 1996), management practitioners are constantly bombarded by contradicting views and often confused by fragmented theoretical understanding.

However, building on prior research and observations regarding the rising of advantage in various business situations, managers need to analyze their generic sources of competitive advantage. These sources could either be exploited through purposeful strategizing (Andrews, 1971) or be made available to a firm by luck (Barney, 1986), or a combination of both luck and managerial action (Liebermann & Montgomery, 1988). Awareness of the generic sources and the relationship among them will aid managers in their search for competitive advantage.

A firm’s competitive advantage often arises from one or more of the following three sources: ownership-based; proficiency-based; and access-based. That is, a firm can gain advantage by ownership or possession of certain valuable assets or factors such as strong market position (Porter, 1980), unique resource endowment (Barney, 1991), or reputation (Hall, 1992); by opportunity or rights to gain superior access to inputs and markets (Liebermann & Montgomery, 1988), exclusive relationship with supplier or distribution channel (Nonaka, 1991) and producing quality products at lower costs and delivering the right products and/or services to its customers in the right place, at the right price and time through the right channels (Teece et al., 1997). Simply put, to achieve any advantage in business, a firm has to look deeply and systematically into what it has, what it knows and does, and what it can get.

Operations of a business can be a source of competitive advantage through superior knowledge, competences or capabilities in managing its business processes (Prahalad & Hamel, 1990).

In the 1970s, firms frequently attacked the problem of operations performance by addressing structural aspects of their operations strategy. In particular, a firm's facilities and sourcing strategies were often adjusted, chopped or wrenchingly changed as regimes of new managers stepped in to "fix" specific operations problems (Hayes & Pisano, 1994). Unfortunately, it was not enough. Despite occasional (although unpredictable) beneficial effects, operation's performance languished as a result of short-term vision. Something more than "restructuring" was needed in order to cultivate operations performance at the unit level.

In the early 1980's, technology apparently rode to the rescue on a silicon chip-studded robot. Systems in which computers controlled not only individual processes but also the co-ordination of different processes, started to look like a likely prospect for salvation. The unmanned factory-implicitly seeing people as a problem rather than a resource became a goal in itself (Williams, 1988).

A flood of technological TLAs beset manufacturing managers (MRP, MRPII, FMS, CIM) each promising huge competitive leaps in performance. However, these systems failed to guide their way to further improvements by limiting the involvement of skilled people. For example, FMS was found to be flexible in that it could switch quickly among the products for which it was originally designed- yet was relatively inflexible once new products were required (Upton, 1992).

At the time, something about the way in which people viewed their work and the philosophy that encouraged them to seek out improvements had been lost. The failure of the pure systems approach hailed a new wave of improvement philosophies: Empowerment; Agility; Total Quality; World- Class and Re-engineering (Hammer & Champy, 1993) each aimed to radically alter the culture of operations, as well as provide a different approach for rebuilding competitive advantage. Despite these problems, computer integration has become a necessary step, rather than sufficient condition for success in many operations (Rogers, et al., (1992).

Today, the most important decision for a manager embarking on any improvement path, is that of selecting a direction for that path. As Hayes & Pisano (1994) describe, the danger of improvement themes like "World-Class" is that they do little to ensure that the long-term direction of improvement will fit with the competitive needs of the business.

In today's economy supply chain flow has become a critical factor that has significant impact on business success. SCM is emerging as one of the most powerful organizational strategies to sustain competitive advantages (Ayers, 1999).

## **2.2 SUPPLY CHAIN MANAGEMENT (SCM)**

### **2.2.1 DEFINITION OF SCM**

Supply chain is defined as "a group of organizations connected loosely, all collaborating on the same goal: efficient and economical product delivery. Or, a set of order-entry-and-order-fulfillment-related physical and binary interactions connecting a company and its customers and suppliers" (Zheng et al., 2000).

The concept of supply chain is "a set of interconnected linkages between suppliers of materials and services that span the transformation of raw materials into products and services and delivers them to a firm's customers (Krajewski & Ritzman, 1999).

A similar definition of supply chain is "a network of autonomous or semi-autonomous business entities collectively responsible for procurement, manufacturing, and distribution activities associated with one or more families of related products" (Chase et al., 1998).

Dobbler & Burt (1996) defines the supply chain as the upstream portion of the organization's value chain and is responsible for ensuring that the right materials, services and technology are purchased from the right source, at the right time and in the right quantity. Krajewski & Ritzman (1999) also note that a basic purpose of SCM is to control inventory by managing the flow of materials.

Built upon the concept of supply chain, SCM as one of the improvement strategies can be defined as "the delivery of enhanced customer and economic value through synchronized management of the flow of physical goods and associated information from sourcing through consumption". Since SCM is a process of optimizing a company's internal practices and improving the interaction with its suppliers and customers, it encompasses all logistic activities, customer-supplier partnerships, new product development, inventory management, warehousing, transportation, order processing, production scheduling, and customer services (Stephens et al., 2001).

Sheridan & Leibs (1999) distinguish VCM and SCM by asserting that the main difference between these is that, VCM is effectiveness oriented as opposed to SCM which is efficiency oriented. Thus when companies stress effectiveness, they aren't necessarily trying to reduce costs but rather to create the highest value for the customer, which isn't always the lowest cost approach.

Therefore, the philosophy of SCM is to have the right product in the right place, at the right price, at the right time, and in the right condition (Krajewski & Ritzman, 1999).

### **2.2.2 WHY SCM?**

Traditional supply chains are operating on borrowed time. It is no longer simply a matter of pushing products and services toward the customer as efficiently as possible. Instead, the supply chain is becoming pivotal to the success and survival of business. Many managers consider the supply chain so crucial to the survival of their business that the future has been nicknamed the "Supply Chain Age" (Fischer, 1997).

Many companies are achieving significant competitive advantage by the way they configure and manage their supply chain operations (Chase et al., 2001). Fischer (1997) agrees with this and argues further that senior executives today acknowledge the importance of improving their supply chain to enhance the competitive position of their companies. In order to utilize the supply chain to an organization's advantage, the

competitive environment in which businesses are operating, and in which the supply chain must excel, need first to be understood.

Finally, SCM has strategic implications because the supply system can be used to achieve important competitive priorities (Krajewski & Ritzman, 1999).

### **2.2.3 BENEFITS OF SCM**

The benefits of SCM include:

- Reduction in costs as a result of strategic business alliances among the members of the supply chain. Reduced costs results to increased profitability for the organization (Zheng et al., 2000).
- More efficient management of inventory where the emphasis is zero tolerance to inventory. Efficient management of inventory results in decreased inventory costs, a saving for the organizations in the supply chain (Krajewski & Ritzman, 1999).
- Increased efficiency in transactions between supply chain partners due to enhanced information sharing, collaboration and cooperation. IT has played a big role in facilitating improvements in SCM (Fischer, 1997).
- SCM encourages the organization to adopt current information, process and product technologies in enhancing the organizations performance. This ensures that the organization is not rendered technologically obsolete in its business operations (Krajewski & Ritzman, 1999).
- Increased internal business operations efficiency as a result of promoting inter-departmental cooperation and collaboration towards achieving common organizational objectives (Fischer, 1997).
- SCM fosters a spirit of shared ownership of the problems and solutions; strong commitment and involvement by top management; consistent goals and objectives communicated to all levels and functions and across organizations in the supply chain, so that all programs are in consonance; and effective use of recognition and rewards. This acts as a motivating factor for employees in the organizations that constitute the supply chain (Zheng et al., 2000).

- SCM focuses the organization on competitive priorities that result in creating a competitive advantage over the organizations competitors (Chase et al., 2001)
- Improved customer services because of its customer-based and customer focused approach. SCM focuses the organizations total capabilities towards satisfying its customers better than its competitors (Fischer, 1997).
- SCM as one of the best practices enhances the chances of the organization to attain world-class performance status. This is because it spurs the organization to aim for constant and continuous improvement on a global scale (Chase et al., 2001)
- SCM also spurs the organization to rapidly adapt to changes in the external environment thereby fostering a fluid and flexible organization, an essential characteristic for survival and growth in today's ever changing business environment (Fischer, 1997; Zheng et al, 2000)

#### **2.2.4 THE FUTURE OF SCM**

The future of supply chains is both exciting and dynamic. Companies will form intimate relationships with their ever more demanding consumers. As a consequence, consumers will be delighted with the new products and services they receive. Successful companies will long since have abandoned "pushing" to the market, and instead, they will sense and respond. In turn, this will see a supply chain that is continuously adjusting to achieve absolute consumer satisfaction (Fischer, 1997).

Akkermans et al. (2003) in a survey of European firms found these as the key SCM issues for the coming years: (1) further integration of activities between suppliers and customers across the entire supply chain; (2) on-going changes in supply chain needs and required flexibility from IT; (3) more mass customization of products and services leading to increasing assortments while decreasing cycle times and inventories; (4) the locus of the driver's seat of the entire supply chain and (5) supply chains consisting of several independent enterprises.

SCM is heavily reliant on IT as an effective and efficient information processing and communication tool. IT has become crucial today to operations everywhere along the value addition chain and to every functional area within the organization. Computers are spawning a huge proportion of current technological changes and innovations, either directly or indirectly. Computer based information technology, in particular have greatly influenced how operations are managed and how offices work. Information technology makes cross-functional coordination easier and links a firm's basic processes (Krajewski & Ritzman, 1999).

## **2.3 ENTERPRISE RESOURCE PLANNING (ERP) SYSTEMS**

### **2.3.1 DEFINITION OF ERP SYSTEMS**

An ERP system can be defined as "a packaged business software system that lets a company automate and integrate the majority of its business processes, share common data and practices across the enterprise, and produce and access information in a real-time environment". Furthermore, an ERP system is "a business management system that integrates all facets of the business, including planning, manufacturing, sales and marketing" (Zheng et al., 2000).

Preceded by MRP and MRPII respectively, ERP is a third generation approach to planning that considers the enterprise as a whole rather than considers production at the plant production level. It is company-wide in nature and has additional capabilities for quality management, field services, maintenance management, distribution management, marketing management and supplier management (Krajewski & Ritzman, 1999). The word "Enterprise" in ERP means that whatever happens in one area has a ripple effect in other areas (Turbit, 2003).

An ERP system links customers and suppliers to a company's business processes, which are also linked across company departments and functional areas. ERP software is all encompassing and totally integrated. It includes modules for financial accounting, materials management, production planning, sales, distribution, plant maintenance, treasury, human resources, asset management and other areas. Instituting an ERP system

requires retraining employees, many of who take on new responsibilities (Witner & Krumwiede, 2003)

ERP systems focus on a particular organization's operations thus they are organization specific. Integrating ERP systems of one organization to the other is not very easy (Zheng et al., 2000).

Studies show that a large portion of the overall implementation cost for an ERP system can be attributed to consulting fees. Indeed, hardly any organization has the internal knowledge and skills to implement an ERP system successfully without external help. Therefore, it becomes crucial to use consultants effectively to improve the likelihood of success and simultaneously keep the overall costs low (Haines & Goodhue, 2003).

To successfully take on an ERP system, an organization needs to change its corporate culture. It may need to change from being highly flexible and not paying a lot of attention to consistency or accuracy, to one of being almost obsessed with detail. The members of staff in the organization meanwhile need to change the focus of their own jobs to that of the whole organization (Turbit, 2003).

Choosing the right consultants and using their skills and knowledge appropriately, as well as transferring and retaining essential knowledge within the organization, is essential to the overall success of an ERP system implementation (Haines & Goodhue, 2003).

Adopting ERP systems is still a trend in various industries. However, the mature ERP market is experiencing a slowdown after years of continuous growth (Information Week, April 1999).

Currently, more than 60% of Fortune 1000 companies have implemented core ERP applications for manufacturing, finance, and human resource management. Because of certain limitations of ERP systems, which will be discussed later, the competitive advantages of ERP systems have been diminishing (Information Week, January 1998).



### **2.3.2 WHY ERP SYSTEMS?**

The major business value of an ERP system lies in its ability to integrate information across an organization and to model and automate its basic processes. Other competitive advantages provided by ERP system include the increase in the efficiency of management decisions and operation plans, flexibility with adjustments of functionality to react to changes in business needs and the easy movement with technological advances (Zheng et al., 2000).

ERP systems have been widely adopted in large organizations. These systems store critical knowledge used to make the decisions that drive an organization's performance. However, ERP systems are known primarily for their transactional rather than their decision-support characteristics (Holsapple & Sena, 2003).

ERP focuses on operational, tactical and strategic levels of management. Similarly it has a focus on the external supply chain allowing customers access to manufacturing schedules and inventories (Krajewski & Ritzman, 1999).

### **2.3.3 BENEFITS OF ERP SYSTEMS:**

The benefits of ERP systems include:

- ERP system can support the integration of inter-organizational processes and activities. Therefore, it can be used to improve the first major task of a SCM system (Witner & Krumwiede, 2003)
- ERP applications consider how resources can be allocated most efficiently rather than whether all the resources required to execute a plan are in place (Krajewski & Ritzman, 1999).
- ERP systems support the sharing of common data and eliminate the boundaries of information flow within an organization. This greatly improves information visibility and also allows separate functional departments to operate in synchronization (Zheng et al., 2000).

- An ERP system has separate modules to optimize each aspect of an organization's operations and at the same time, it can integrate all of the aspects simultaneously to provide an overall solution for an enterprise (Witner & Krumwiede, 2003).
- ERP systems provide real-time or near real-time processing (Zheng et al., 2000).
- Turbit (2003), further argues that ERP systems will provide: a single system to support rather than several small and different systems; a single applications architecture with limited interfaces; access to management information unavailable across a mix of applications; access to best practice systems and procedures and; more integration hence lower costs and more "automation" of tasks.

### **2.3.4 WEAKNESSES OF ERP SYSTEMS**

Zheng et al. (2000) discussed the weaknesses of ERP systems as follows:

- ERP applications lack strong capabilities to control the execution of the scheduled tasks or to adapt quickly to changing business conditions.
- Currently, the capabilities of an ERP system are limited to the automation and integration of internal business processes of an organization. They lack the capabilities of enabling the free information flow between an organization with its suppliers, customers and partners although through the use of extranets, external organizations can have access to some of the information in the ERP system.
- ERP systems do not include customers in their default picture since customers are outside the boundary of the organization.

### **2.3.5 FUTURE OF ERP SYSTEMS**

ERP systems have revolutionized the way companies are using information technology in their businesses. ERP was created in an effort to streamline business processes and has proven to be successful in many operations. Unfortunately, not all ERP implementations have met expectations. One way that businesses may be able to increase success rates is to embrace creativity and innovation in their ERP implementations. For businesses to do

this, they must first understand how creativity originates and how that creativity can be integrated into business solutions (Siau & Messersmith, 2003).

For those companies that have already automated their internal processes with ERP systems, automating the connections with their partners, suppliers, and customers is the next logical step (Information Week, October 1997).

As the range of ERP systems implementation is getting broader, adopting an ERP system is much more costly than before. This problem has seriously limited the market potential of ERP systems. To solve this problem, top ERP vendors are developing packaged products instead of full ERP implementations to meet the needs of organizations with different sizes. These packaged products essentially are component-based solutions and thus do not have the breadth of full ERP implementations (Zheng et al., 2000).

ERP is recently undergoing a radical change, in order to compete with the fast growing SCM application providers, major players in the ERP market are attempting to extend beyond the core functionality of their ERP products to include the SCM capabilities. Evidence of this change can be seen in the numerous strategic alliances formed currently. For example, major ERP vendor Baan acquired supply chain application vendor Berclain, adding some internally developed supply chain capabilities to its applications (Information Week, January 1998)

## **2.4 SCM AND ERP SYSTEMS INTEGRATION**

The relationship between SCM and ERP systems is not exclusive but complementary. In essence, SCM systems conduct two major tasks, integrating the internal business processes of an individual organization and optimizing the interaction of the specific organization with its external business partners. An ERP system has found a solid position to support the integration of inter-organizational processes and activities. Therefore, it can be used to improve the first major task of an SCM system. It can easily be found that extending the capabilities of the existing ERP systems by adding certain SCM capabilities now becomes a new trend in the marketplace. The major system

providers have realized the feasibility and potential benefits of the integration of SCM and ERP systems (Zheng et al., 2000).

The integration of SCM and ERP applications will generate a single and seamless system that is more capable of increasing efficiency and productivity of an enterprise. Take digital telephone maker Qualcomm as an example. With the implementation of PeopleSoft's manufacturing applications, which include SCM functionality developed by Red Pepper Software, the company has achieved a seamless integration that is extremely important to this global organization. To be more specific, all business activities now are conducted within the same system rather than two separate ones, that is an SCM system and an ERP system. The company does not have to manually extract data generated in the SCM system and put it back to the ERP system (Information Week, January 1998).

The integrated system also allows the company to have a more comprehensive view of its overall operations, to coordinate the inflow of raw materials from suppliers, and to optimize its production schedules. The integration of SCM and ERP will also generate complete information sharing across the entire supply chain and thus better respond to customers' needs (Information Week, November 1998).

Furthermore, the integration of SCM and ERP systems will reduce corporate overhead significantly. First, with a single, integrated system, firms will be able to tightly tie together its front- and back-end operations, better connect with suppliers and customers, and improve manufacturing and logistics. The cost savings generated from avoiding switching disparate systems could be tremendous. Second, the maintenance cost for a single system will be much lower than that for two separate systems. Finally, the integration of SCM and ERP systems can protect organizations from dual investment in both systems. This is truly beneficial to organizations that have already implemented ERP systems but need additional SCM capabilities to ensure business success (Zheng et al., 2000).

However, Akkermans et al. (2003), second main finding from the panel of experts conducting a survey of European firms saw only a modest role for ERP in improving future supply chain effectiveness and a clear risk of ERP actually limiting progress in SCM. ERP was seen as offering a positive contribution to only four of the top 12 future supply chain issues: (1) more customization of products and services; (2) more standardized processes and information; (3) the need for worldwide IT systems; and (4) greater transparency of the marketplace.

The following key limitations of current ERP systems in providing effective SCM support emerge as the third finding from this exploratory study done in Europe: (1) their insufficient extended enterprise functionality in crossing organizational boundaries; (2) their inflexibility to ever-changing supply chain needs, (3) their lack of functionality beyond managing transactions, and (4) their closed and non-modular system architecture (Akkermans et al, 2003).

In summary, a positive direction between ERP and SCM is that the integration of supply chain capabilities with ERP systems will continue to be enhanced and commercialized in the near future. This is because cross-enterprise integration will continue to be one of the major organizational goals, especially for those whose business success is directly dependent upon the success of their supply chains. Driven by the market forces such as shifting channel power and demand for fast cycle-time-to-market, SCM has become a critical and influential factor to business success. Consequently, organizations begin to rely on SCM systems as a new source of competitive advantage (Zheng et al., 2000).

## **2.5 SUPERMARKETS**

### **2.5.1 DEFINITION OF SUPERMARKETS**

There is no universally accepted definition of the term, “supermarket”, but it is generally used to describe a self-service departmentalized food store with a minimum sales volume of U.S \$ one million (1,000,000) per year (Hasty, 1983).

Barker et al. (1956) acknowledged the fact that the term, “supermarket”, is difficult to define. They argue that supermarkets are basically grocery stores but usually have departments’ of non-food items, and at least the grocery department is operated on a self-service basis. The minimum sales necessary for a supermarket varies from an arbitrary one million, United States Dollars (U.S \$ 1,000,000), specified by the Supermarket Institute (a trade association) to three hundred and seventy five thousand United States Dollars (U.S \$ 375,000) specified by “ The Progressive Grocer”, (a grocery trade publication).

Philpott (1963) defines, “supermarkets”, using their characteristics. It is a cross between the specialist and the department store. A self-service shop should have at least two thousand (2,000) square feet of selling space to justify the term and a fair proportion (up to 25% of non-food items). The layout of merchandize is usually in rows of “gondolas”, and most supermarkets promote sales by “loss-leaders”.

Pickering (1966) defines a, “supermarket”, as, “a store with at least two thousand (2000) feet sales area, with three or more check-outs and operated mainly on a self-service basis, whose range of merchandize comprises all food groups, including fresh meat, fresh fruit and vegetables plus basic household requirements such as soaps and cleaning materials.”

Gillespie & Hetch (1977) noted that the term “supermarket” defies precise definition because of the popular trend to mix food and non-food products. Today’s supermarkets are a combination of food and variety stores. With this in mind, some analysts have described supermarkets as, “ a departmentalized retail store having annual sales of one million United States Dollars (U.S \$ 1,000,000) or more in a variety of merchandize and in which the sales of food, much of which is of self-service basis, plays the major role”.

Kotler & Armstrong (1993) agree with Gillespie & Hetch (1977) argument that the term, “supermarket”, defies precise definition because of the popular trend to mix food and non-food products. Kotler & Armstrong (1993) observe further, that today supermarkets are a combination of food and a variety of stores.

A “supermarket”, may be defined as a relatively large, low-cost, low-margin, high-volume, self-service operation designed to serve total needs for food, laundry and household maintenance products. Supermarkets earn an operating profit of only one percent of sales and ten percent on net worth. (Kotler, 2003)

## **2.5.2 SUPERMARKETS WORLDWIDE TODAY**

Most supermarkets today are facing slow sales growth because of slower population growth and an increase in competition from convenience stores; discount food stores and superstores (Davidson et al., 1988). Kotler & Armstrong (1993) concur with Davidson et al. and argue further that supermarkets have been hit by the rapid growth of the out-of-home eating. As a result, they have moved in all directions to improve their competitiveness. Some of these movements include:

- Opening large stores with selling space of about twenty five thousand (25,000) square feet.
- Carrying a large number and variety of items, typically over twelve thousand (12,000) with the largest increase being in non-food items.
- Moving to prescriptions, appliances, hardware and sporting goods, hoping to find high- margin lines to improve profitability. “supermarketing” as a method of doing business has recently spread to other types of businesses particularly in the drug, home improvement, and sporting goods field.
- Upgrading their facilities through having better locations, larger parking lots décor, air conditioning, check cashing, delivery, and longer opening hours.
- Increasing their promotional budgets and moving heavily to private brands to reduce their dependence on national brands.

Although consumers have always expected supermarkets to offer good prices, convenient locations and speedy checkouts, today’s more affluent and sophisticated buyers want more. More supermarkets therefore are moving upscale with the market providing, “from scratch”, bakeries, gourmet deli counters and seafood departments (Schwartz, 1988).

To attract more customers, large supermarket chains are starting to customize their stores for individual neighborhoods. They are tailoring store size, product assortment, prices and promotions to the economic and ethnic needs of local markets. (Gerry, 1987; Davidson et al., 1988; Kotler & Armstrong, 1993).

Although most goods and services are sold through stores, non-store retailing has been growing much faster than the store retailing as notes Kotler (2003) due to technological advancement. The major types of non-store retailing are direct selling ( one-to-one selling, one-to –many party selling, and multilevel network marketing); direct marketing (which includes e-commerce and Internet retailing); automated vending; and buying services.

The IT revolution has affected many industries in dramatic ways. Its impact on retailing seems at first sight less profound but this is a superficial view. Technology has affected decisions on stocking, store position and pricing of brands, as well as on the terms demanded by customers. The retailers therefore, will be in a better position to understand sales trends and customers needs (Randall, 1990).

Technology too is becoming critical as a competitive tool. Retailers are using computers to produce better forecasts, control inventory costs, order electronically from suppliers, send e-mail between stores and even sell to customers within stores. They are adopting checkout-scanning systems, EFT, EDI, in-store television and improved merchandize-handling systems (Kotler, 2003).

However, despite spending billions of dollars on POS scanners and other new computer and communication systems, retailers continue to pay high costs for their inability to get the right goods to the right places at the right prices at the right times. It is estimated that 8% of the items customers buy are out of stock, and that a third of all goods are sold at marked-down prices (Scott & Patricia 2001).



Yes, technology can help any business operate more effectively, but many new advances are still poorly understood and in any case, retailing can't be reduced to tools and techniques (Leonard, 2001).

Retailing is and has always been an inefficient business. Retailers, particularly those that operate large chains, have to predict the desires of fickle customers, buy and allocate complex sets of merchandise, set the right prices, and offer the right promotions for each individual item. Inevitably there are gaps, often wide ones, between supply and demand, which leaves stores holding too much of what customers do not want and too little of what they do. As product life cycles have collapsed and the mass market has fragmented, merchandising decisions have become even more complex, and the penalties for errors even steeper (Scott & Patricia 2001).

### **2.5.3 SUPERMARKETS IN KENYA TODAY**

While about three decades ago, only Uchumi and Ebrahims were the only known supermarkets, in the last two decades (1980's and 1990's) several supermarkets such as Jack and Jill, Shaflus, Vijico, Sippy and Nakumatt have been established, and especially in Nairobi. According to the Kenya Business Directory (1993) there were 97 registered supermarkets in Kenya among which, seventy-four percent (74%) are located in Nairobi and that seventy percent (70%) of all supermarkets in Nairobi were established after 1980 (Munyoki, 1997).

Uchumi, Nakumatt and Jack & Jill, the three leading supermarkets are the key players. Others are Ushirika, Ebrahims, Jamia, Shaflus, Makro and Tusker Mattresses. Uchumi Supermarket Ltd still has the largest number of outlets within prime commercial areas with 18 branches in Nairobi, 2 in Mombasa, 2 in Nakuru, 1 in Eldoret and 1 in Meru. Nakumatt has 6 outlets in Nairobi, 2 in Mombasa and 1 in Kisumu. It goes without say that; this is an area that has experienced rapid growth. The reasons advanced for these are:

- *Competition:* This has been allowed (liberalization of trade), as long as it is fair. Competition is getting stiffer in this sector, and with the decontrolled prices, price competition may set in with a bid to win customers. Munyoki (1997), concluded his research by asserting that competition was the most important factor affecting pricing strategies, followed by handling and selling costs & demand considerations respectively.
- *Population increase:* Due to the increase in the city's population estimated at a staggering four million (4,000,000), there is a ready market for the supermarket products. Sailewu (2001), concurs with this and further argues that changing lifestyles of the residents has also contributed to the increase and concentration of supermarkets in Nairobi.
- *Customers:* Demand for effective and efficient services by customers', has led to the following. First, Nairobi shoppers have increasingly shown preference for supermarkets because of increased variety of imported and locally made household items. The mushrooming of shopping malls, a current trend among the up market shopping outlets in the city, especially in the affluent suburbs where everything is sold under one roof, reflect this. Such outlets include, the Mall and Sarit Center in Westlands, Yaya Center, The Village at Gigiri, The Esso Plaza at Muthaiga and the Karen Shopping Complex. The drive-by shopping centers are mainly in the upper middle and the high-class neighborhoods. The aim is to cater for as wide a clientele as possible, including foreigners living in Kenya, who can afford the higher prices of imported goods. Secondly, an increase in the number of supermarkets means shorter queues, which saves customers a lot of time. Evidence of this can be shown by the fact that despite the opening of several branches by Uchumi Supermarkets Limited recently, the queues have remained quite long during such times as end of the month, weekends and after five o'clock on weekdays. Finally, Nairobi shoppers have increasingly shown preference for supermarkets because of lower prices. (Munyoki, 1997; Karemu, 1993; Sailewu, 2001)

According to K'obonyo (2001), the retail landscape has undergone major revolutionary changes over the last ten decades or so. The evolutionary process has been characterized by distinct and sequential changes from small/grocery stores to supermarkets to departmental stores, to hyper-markets/ superstores, and shopping malls in that order.

The industry has also witnessed significant technological changes, involving increased use of electronic price scanners in place of cash registers, EFT systems, among others. This has improved the efficiencies and speed of service eliminating the long queues that were synonymous with supermarkets to suite the changing lifestyles of the customers. The use of the electronic scanners has reduced pilferage, which was a key challenge to all the self-selected stores (K'obonyo, 2001).

With the advancement in technology and new ways of doing business, the traditional distribution systems, is no longer effective. The adoption of the JIT supply chain system, has resulted in reduced stock-out, cost cut downs and ultimately increased the margins. Products also reach the store in good condition and in time as well (Kithua, 2002).

For example, today, Uchumi Supermarkets Limited aims at giving its customers' a world-class ambience partly through investing in leading-edge technology and delivering best-in-class efficiency across all its operations. Uchumi Supermarkets Limited has realized the strategic importance of IT in its business and has chosen ERP systems as a potential tool for propelling its competitive advantage to greater heights. The focus is to present better customer services, increase efficiency levels and cut down on operational costs (Instore, 2002).

### **3.0 RESEARCH METHODOLOGY**

#### **3.1 RESEARCH DESIGN**

The research was descriptive in its framework and was based on a cross-sectional research design. In this study a survey of the practice of integrating SCM and ERP systems among supermarkets was done. This was done through monitoring, how organizations are utilizing ERP systems to improve their supply chains over the study period.

#### **3.2 POPULATION**

The target population of interest for this study comprised of all supermarkets in Nairobi as listed in the yellow pages of the Nation Business Directory, 2003. There was no comprehensive list of the supermarkets in Nairobi. Ngatia (2000) and Sailewu (2001) used lists compiled from the Dairy Industry, but the Nation Business Directory provided the most comprehensive listing of one hundred and forty five (145) supermarkets in Nairobi and was therefore adopted as the basis of defining the population for this study. Appendix 1 provides that list.

#### **3.3 SAMPLE AND SAMPLING TECHNIQUE**

Ngatia (2000), used a sample size of fifty (50) supermarkets. Similarly, Sailewu (2001), used a sample size of fifty (50) supermarkets. Both studies consisted of a population of all supermarkets in Nairobi, similar to this study. Therefore, a sample size of fifty (50) supermarkets was deemed fit and adopted as sufficient for purposes of this study.

In order to select the fifty (50) supermarkets from a sampling frame consisting of one hundred and forty five (145) sampling units, stratified random sampling was used. Two homogenous groups of supermarkets emerged from the sample. These were those supermarkets that consisted of a single branch as one category and those with more than one branch as the other category.

For those supermarkets with several branches, the information required for the study was collected from the head-office thus the supermarket was treated as one organization.

### **3.4 DATA COLLECTION**

The data required for this study was primary data, which was collected using a semi-structured questionnaire. Semi-structured in the sense that both open ended questions intended to elicit qualitative responses about respondent(s) views and close ended questions intended to elicit quantitative data for statistical analysis were used in the questionnaire. Piloting of the questionnaire was done to help the researcher identify any ambiguous and unclear questions. After making amendments to the questionnaire, these questionnaires were administered using drop and pick method. The researcher was available to clarify any questions that were not clear to the respondents. Appendix 2 provides the data collection instrument (questionnaire) used for the interview and Appendix 3 shows the letter of introduction used by the researcher to invite respondents to participate in the research. The researcher targeted the operations managers or ERP systems specialists or their equivalents at the various supermarkets.

### **3.5 DATA ANALYSIS**

Data analysis began by checking the questionnaires for correct completion and entries checked for consistency and accuracy. Data coding and computer inputs were then done to enable responses to be statistically analyzed. Descriptive statistics was used by way of percentages, proportions and frequency distributions to analyze the data. Factor analysis was used to identify the factors hindering full integration of SCM and ERP among supermarkets in Kenya.

## 4.0 RESEARCH FINDINGS

This chapter presents the profiles of the respondents, their perceptions to integrating SCM and ERP systems and the factors hindering SCM and ERP systems integration as elicited from 36 out of the expected 50 respondents for this study.

### 4.1 PROFILE OF RESPONDENTS

This part of the analysis presents the profile of the respondents in terms of the sizes of the supermarkets and computer usage that the researcher surveyed.

#### 4.1.1 SIZE OF SUPERMARKETS

The size of the supermarkets was evaluated using variables such as the number of branches of the respondents, the trading floor space in square feet, the number of employees, the number of categories of items found in the supermarket, the total number of items, the number of check out counters and the estimated annual sales volume.

TABLE 4.1.1: NUMBER OF BRANCHES OF THE RESPONDENTS

	Frequency	Percent
ONE	28	78%
MORE THAN ONE	8	22%
Total	36	100%

Table 4.1.1 above shows 78% of the respondents indicated that their establishments have only one branch while 22% have more than one branch. Table 4.1.2 below shows 85% of the respondents indicated that their trading floor space is less than 4000 square feet.

TABLE 4.1.2: TRADING FLOOR SPACE OF RESPONDENTS

Square feet	Frequency	Percent
LESS THAN 2000	16	44%
2001 TO 4001	15	41%
4001 TO 6000	2	6%
6001 TO 8000	1	3%
MORE THAN 8000	2	6%
TOTAL		100%

TABLE 4.1.3: NUMBER OF EMPLOYEES IN THE ORGANIZATION

	<b>Frequency</b>	<b>Percent</b>
LESS THAN 50	31	86%
51 TO 100	1	3%
101 TO 150	1	3%
MORE THAN 200	3	8%
Total	36	100%

Table 4.1.3 shows that 86% of the respondents indicated that they have less than 50 employees while, those with more than 50 only consisted of 14%.

TABLE 4.1.4: NUMBER OF CATEGORIES OF ITEMS IN THE SUPERMARKET

	<b>Frequency</b>	<b>Percent</b>
LESS THAN 5	4	11%
5 TO 10	3	8%
10 TO 15	16	44%
15 TO 20	3	8%
MORE THAN 20	10	28%
Total	36	100%

Table 4.1.4 shows that 11% of the respondents indicated that the number of categories of items found in their supermarket was less than 5, 8% indicated that they have 5 to 10 categories of items while, 44% indicated that they have 10 to 15 categories of items, 8% indicated that they have 15 to 20 items categories and 28% indicated that they have more than 20 items category in their business establishment.

TABLE 4.1.5: NUMBER OF ITEMS FOUND IN THE SUPERMARKET

	<b>Frequency</b>	<b>Percent</b>
LESS THAN 2000	8	22%
2001 TO 4000	17	47%
4001 TO 6000	6	17%
6001 TO 8000	1	3%
MORE THAN 8000	4	11%
Total	36	100%

Table 4.1.5 shows that 47% of the respondents indicated that the total number of items found in their supermarket is 2001 to 4000, 22% indicated that they had less than 2000 number of items, 17% indicated they had 4001 to 6000 items while, 3% indicated they had 6001 to 8000 items and 11% of the respondents indicated they had more than 8000 items in the supermarket.

TABLE 4.1.6 NUMBER OF CHECK OUT COUNTERS

	Frequency	Percent
LESS THAN 5	28	77%
5 TO 10	6	17%
10 TO 15	1	3%
15 TO 20	0	0%
MORE THAN 20	1	3%
Total	36	100%

Table 4.1.6 shows that 77% of the respondents indicated that they have less than 5 checkout counters, 17% of the respondents have 5 to 10 checkout counters and 6% had more than 10.

TABLE 4.1.7: ESTIMATED ANNUAL SALES VOLUME OF SUPERMARKET

Kshs "000,000"	Frequency	Percent
LESS THAN 100	28	77%
100 TO 200	5	14%
200 TO 300	1	3%
300 TO 400	1	3%
400 TO 500	0	0%
MORE THAN 500	1	3%
Total	36	100%

From the findings shown in Table 4.1.7, the majority of the respondents (77%) indicated that they had an annual sales volume of less than 100 million Kenya Shillings. 14% had an annual turnover of 100 to 200 million Kenya Shillings and 9% had a turnover of more than 200 million.



Kenyan supermarkets are mainly made up of single branches, with less than 4000 square feet of trading floor space, less than 50 employees in the organization, less than 5 checkout counters and annual sales of less than Kshs 200,000,000. Although small, these supermarkets have a variety of items mainly about 10-15 categories of items with over 4000 items. The findings imply Although majority of supermarkets have variety in terms of the categories of items they have, the results have consistently shown that majority of the supermarkets are small in size.

#### 4.1.2 COMPUTERS IN THE SUPERMARKETS

From the Tables 4.1.8, 4.1.9 and 4.1.10, 64% of the respondents indicated that they used computers in their supermarkets and 36% indicated that they did not use computers. Of those with computers, 80% indicated that they had less than 5 computers, 12% had 5 to 10 computers, and 8% had more than 20 computers. Of the respondents with computers, only 37% of them indicated that they were networked. Those respondents that indicated that they have networked computers, 73% indicated that they are networked departmentally and 27% indicated that they are networked inter departmentally.

TABLE 4.1.8: SUPERMARKETS WITH COMPUTERS

	Frequency	Percent
YES	23	64%
NO	13	36%
Total	36	100%

TABLE 4.1.9: RESPONDENTS WITH NETWORKED COMPUTERS

	Frequency	Percent
YES	10	37%
NO	17	63%
Total	27	100%

TABLE 4.1.10: DEGREE OF COMPUTER NETWORKING

	Frequency	Percent
DEPARTMENTALLY	8	73%
INTER DEPARTMENTALLY	3	27%
Total	11	100%

In ranking the uses of the computers, the respondents indicated that they either highly use or moderately use the computers for several functions, as Table 4.1.11 shows below.

**TABLE 4.1.11: RANKING OF USES OF COMPUTERS BY RESPONDENTS.**

	<b>Mean Score</b>	<b>Rank of Use</b>
Customer Billing	2.7	High Use
Financial Report Preparation	2.4	High Use
Maintenance Of Stock Records	2.3	High Use
Performance Appraisal	1.9	Medium Use
Payroll Preparation	1.9	Medium Use
Email	1.9	Medium Use
Replenishment Decisions	1.8	Medium Use
Internet	1.8	Medium Use
Pricing Decisions	1.7	Medium Use
Demand Forecasting	1.5	Medium Use
Stock Distribution Among Branches	1.4	Medium Use

From the findings the respondents on average indicated that they put their computers to high use in customer billing, financial report preparation, and maintenance of stock records. The respondents indicated that they put their computers to medium use for performance appraisal, payroll preparation, email, replenishment decisions, Internet, pricing decisions, demand forecasting, and stock distribution among branches. Other uses of the computers the respondents had include daily sales summary, (33%), departmental communication (33%) and communication among branches (33%).

The results above indicate that the extent of computerization at the supermarkets is still minimal. It also indicates that these computers are mainly used for operational rather than tactical or strategic purposes. This is because they are mainly used to enhance efficiency of routine functions such as payroll preparation or stocks management.

#### **4.2. SCM AND ERP SYSTEMS PERCEPTIONS**

From the findings, 94% of the respondents consider the operations function important in enhancing their companies' competitiveness.

TABLE 4.2.1: GROUPS CREATING COMPETITIVE ADVANTAGE

	Mean Score	Rank of Use
CUSTOMERS	1.5	Very important
EMPLOYEES	1.6	Very important
SUPPLIERS	1.6	Very important
CUSTOMERS' SATISFACTION	2.2	Important
SUPPLIERS' SUPPLIER	2.4	Important

For those companies who consider the operations function important, they indicated that they considered customers, employees and suppliers very important in the creation of competitive advantage and they considered customers' satisfaction and supplier's supplier only important. Table 4.2.2 below shows the individual level of importance.

TABLE 4.2.2: LEVEL OF IMPORTANCE OF GROUPS & COMPETITIVE ADVANTAGE

	Very Important	Important	Indifferent	Less Important	Not Important	Total
Customers	75%	14%	3%	0%	8%	100%
Customers' Satisfaction	36%	28%	22%	6%	8%	100%
Suppliers	64%	28%	3%	0%	6%	100%
Suppliers	64%	28%	3%	0%	6%	100%

On the importance of SCM in enhancing competitiveness as indicated in Table 4.2.3, 42% of the respondents indicated that it is very important and another 42% indicated that it is important. Only 16% were indifferent.

TABLE 4.2.3: IMPORTANCE OF SCM IN ENHANCING COMPETITIVENESS

	Frequency	Percent
VERY IMPORTANT	15	42%
IMPORTANT	15	42%
INDIFFERENT	6	16%
Total	36	100%

In placing the organizations in the phases of SCM integration, as seen in Table 4.2.4, 61% of the respondents indicated that their organizations are beginning to be functionally integrated into a single system/process within the organization. 24% indicated that SCM system is fully integrated internally and connected to a few suppliers and a few customers, 6% indicated that, SCM system is fully integrated with all suppliers and all customers on the main issues, and 9% indicated that their entire SCM system is operating as one broad/extended enterprise with all the trading partners in all aspects.

TABLE 4.2.4: PHASES OF SCM INTEGRATION

	<b>Frequency</b>	<b>Percent</b>
Beginning to be functionally integrated into a single system/process within the organization	20	61%
SCM system fully integrated internally and connected to a few suppliers and a few customers	8	24%
SCM system fully integrated with all suppliers and all customers on the main issues.	2	6%
Entire SCM system operating as one broad/extended enterprise with all the trading partners in all aspects	3	9%
Total	33	100%

The respondents also indicated whether their organizations had found it necessary to carry out employee training on SCM philosophy with 36% indicating that they carry out the training while 64% do not. This implies that only a third of the organizations and their employees understand SCM philosophy. All the organizations that train their employees on the philosophy indicated that they train less than 50% of each of the cadres in the organization from top management, senior managers, supervisors, clerical and others.

Table 4.2.5 below shows, 42% of the respondents indicated that ERP is very important in leading to enhanced competitiveness. 33% indicated that it is important, 14% were indifferent, and 11% indicated that it is less important in enhancing competitiveness.

TABLE 4.2.5: IMPORTANCE OF ERP IN ENHANCING COMPETITIVENESS

	Frequency	Percent
VERY IMPORTANT	15	42%
IMPORTANT	12	33%
INDIFFERENT	5	14%
LESS IMPORTANT	4	11%
Total	36	100%

33% of the respondents indicated that they carry out employee training on ERP systems and 67% indicated that they do not. This indicates that only a third of the organizations and their employees are aware of the ERP philosophy and system.

TABLE 4.2.6: LEVEL OF AGREEMENT AND STATEMENTS ON SCM

	Mean Score	Ranking
Results in more efficient management of inventory	1.5	Strongly Agree
Focuses us on our competitive priorities	1.8	Strongly Agree
Offers us competitive advantage over our competitors	1.8	Strongly Agree
Encourages information sharing, collaboration and cooperation among our supply chain partners	1.9	Strongly Agree
Requires strong commitment and involvement by top management	1.9	Strongly Agree
Results in improved customer services due to its customer based/focused approach	1.9	Strongly Agree
Results in reduction in operating costs & increased profitability for the organization	1.9	Strongly Agree
Results to formation of strategic business alliances	1.9	Strongly Agree
Encourages the adoption of current process technologies in managing business operations	2.0	Strongly Agree
Fosters a spirit of shared ownership of the problems and solutions among supply chain partners	2.3	Agree
Promotes inter-departmental cooperation and collaboration within our business	2.3	Agree
Spurs the organization to rapidly adapt to changes in the external environment	2.5	Agree
Spurs the organization to aim for constant and continuous improvement on a global scale	2.6	Agree
SCM systems are too costly to implement	2.8	Agree
Is heavily reliant on information technology	3.1	Indifferent
SCM benefits are too far in the future	3.1	Indifferent
SCM has no real advantage	3.3	Indifferent

From the analysis on Table 4.2.6, the respondents indicated that they strongly agreed that SCM results in more efficient management of inventory, focuses the organization to its competitive priorities, offers competitive advantage over competitors, encourages information sharing, collaboration and cooperation among supply chain partners, requires strong commitment and involvement by top management, results in improved customer services due to its customer based/focused approach, results in reduction of operating costs and increased profitability for the organization, results to formation of strategic business alliances, and encourages the adoption of current process technologies in managing business operations.

They agreed that SCM fosters a spirit of shared ownership of the problems and solutions among supply chain partners, promotes inter-departmental cooperation and collaboration within our business, spurs the organization to rapidly adapt to changes in the external environment, spurs the organization to aim for constant and continuous improvement on a global scale, and that SCM systems are too costly to implement.

The respondents were indifferent to the facts suggesting that SCM is heavily reliant on IT, SCM benefits are too far in the future, and that SCM has no real advantage.

TABLE 4.2.7: LEVEL OF AGREEMENT AND STATEMENTS ON ERP SYTEMS

	<b>Mean Scores</b>	<b>Ranking</b>
ERP system will greatly improve our supply chain management	2.1	Agree
ERP system will greatly improve communication and co-operation within our business	2.2	Agree
ERP systems require too many components	2.3	Agree
For longer term we can not afford to ignore ERP systems	2.4	Agree
ERP systems are too new for our current analysis	2.4	Agree
An ERP system offers us competitive advantage	2.7	Agree
ERP system benefits are too far into the future	2.8	Agree
ERP systems are too complex to understand	2.9	Agree
ERP systems are too complex to implement	2.9	Agree
We will not reduce our costs by using ERP systems	3.1	Indifferent
ERP systems have no real advantages	3.4	Indifferent

From Table 4.2.7, the respondents indicated that they agreed with the statements that an ERP system would greatly improve the supply chain, communication and co-operation within businesses and offers competitive advantage. They further agreed that ERP systems are too complex to understand, require too many components, are too complex to implement, too new for our current analysis, their benefits are too far into the future and yet for the longer term we can not afford to ignore ERP systems. The mean score ranged from 2.1 – 3.4. The respondents were indifferent to the statements that they will not reduce costs by using ERP systems and ERP systems have no real advantages.

### 4.3 SCM & ERP SYSTEMS INTEGRATION

TABLE 4.2.8: SCM & ERP INTEGRATION AND COMPETITIVE ADVANTAGE

	Mean Score	Importance
Quality Of Service	1.5	Very Important
Customer Satisfaction	1.5	Very Important
Time/Delivery Speed	1.6	Very Important
Technology	1.6	Very Important
Profitability	1.6	Very Important
Concentration On Core Functions	1.7	Very Important
Capacity Utilization	1.7	Very Important
Cost Reduction	1.8	Very Important
Flexibility	1.8	Very Important
Creativity And Innovativeness	1.8	Very Important
Reliability	1.8	Very Important
Effectiveness	1.9	Very Important
Management Focus	1.9	Very Important
Customization	2.0	Important
Market Share	2.0	Important
Dependability	2.0	Important
Organizational Learning	2.1	Important
Business Philosophy And Approach	2.2	Important
Work Atmosphere	2.3	Important
Value Addition	2.4	Important
Corporate Cultural Changes	2.4	Important

From Table 4.2.8, the respondents rated the following factors of integration of SCM and ERP as very important, that integrating ERP and SCM is very important in quality of service, customer satisfaction, time/delivery speed, technology, profitability, concentration on core functions, capacity utilization, cost reduction, flexibility, creativity and innovativeness, reliability, effectiveness, and management focus. The respondents indicated that the following factors were important and ranked in terms of mean scores from between 2 and 3. They indicated that customization, market share, dependability, organizational learning, business philosophy and approach, work atmosphere, value addition, and corporate cultural changes are important in integration of SCM and ERP. Table 4.2.9 below shows other benefits/importance of SCM and ERP systems integration.

TABLE 4.2.9: OTHER BENEFITS/IMPORTANCE OF SCM/ERP INTEGRATION

	<b>Percent</b>
Marketing	41%
Budgeting & resource reservation	15%
Enables distribution management	19%
Customer focused	11%
Faithfulness	7%
Direct contact from suppliers	7%
Total	100%

According to 41% of the respondents the other benefits of SCM/ERP integration is marketing. 15% indicated that it is budgeting and resource preservation, 19% indicated that it enables distribution management, 11% indicated that it is customer focused, 7% indicated that it is the faithfulness of the customers and another 7% indicated that it is the direct contact from suppliers. Table 4.2.10 below presents the respondents reasons why SCM and ERP systems practices are important.



TABLE 4.2.10: WHY SCM/ERP PRACTICES ARE IMPORTANT

	<b>Percent</b>
They target customers	22%
Helps to focus on products	16%
Motivates both suppliers & distributors	12%
It keeps customers and suppliers intact	12%
Minimize budget overruns	8%
Allow faster & easier supply of products	8%
Encourage average spending & resource utilization	6%
Organizational culture	4%
Helps in market study	4%
Resources	2%
Organizational structure	2%
Constant training to keep up with changing times	2%
Total	100%

22% of the respondents indicated that the reason why SCM/ERP practices are important is that they target customers, 16% indicated that it helps to focus on products, 12% indicated that it motivates both suppliers and distributors, 12% indicated that it keeps customers and suppliers intact, 8% indicated that it minimizes budget overruns, another 8% indicated that it allows faster and easier supply of products, 6% indicated that it encourages average spending and resource utilization, 4% indicated that it is in creating the right organizational culture, another 4% indicated that it helps in market study, 2% indicated that it is important in resources, 2% also indicated that it is important for organizational structure, and 2% indicated that it is important for constant training to keep up with the changing environment.

#### 4.4 FACTORS HINDERING SCM AND ERP INTEGRATION

Using factor analysis to determine the factors that hinder the full integration of SCM and ERP, three factors were determined. The factors were extracted using principal component matrix to get a component matrix, which was then rotated to find the rotated component matrix. In total, the nine components that were put into the process of extraction yielded three factors or components. The factors extracted were the ones with initial eigen values of equal to or greater than 1.00. The extraction sums of squared

loadings in the table show that component 1 is composed of 26% of all the variations in the components. Component 2 contains 22% and component 3 contains 13%. These three components contain 61% of the total variations in the extraction.

TABLE 4.3.1: FACTOR ANALYSIS TOTAL VARIANCE EXPLAINED

Component	Initial Eigen values			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Var.	Cum. %	Total	% of Var.	Cum. %	Total	% of Var.	Cum. %
1	2.367	26.296	26.296	2.367	26.296	26.296	2.213	24.592	24.592
2	2.016	22.399	48.694	2.016	22.399	48.694	2.088	23.199	47.791
3	1.132	12.574	61.268	1.132	12.574	61.268	1.213	13.477	61.268
4	0.929	10.322	71.591						
5	0.767	8.526	80.116						
6	0.615	6.829	86.946						
7	0.515	5.724	92.669						
8	0.43	4.782	97.452						
9	0.229	2.548	100						

Extraction Method: Principal Component Analysis.

After extraction using varimax, the sum of squared loadings of the rotated matrix shows that component 1 extracted and rotated contains 25% of all the sums of squared loadings of the extracted components. Component 2 contains 23% and component 3 contains 13%. The total of the three contains 61% of all the variations within the components. This implies that the three factors extracted contain 61% of all the important factors that hinder the integration of SCM and ERP. The factors extracted and rotated are in the rotated matrix table below.

TABLE 4.3.2: ROTATED COMPONENT MATRIX

	<i>Component</i>		
	<b>1</b>	<b>2</b>	<b>3</b>
Infrastructure	-76%	23%	-18%
Size of the firm	-73%	34%	12%
Customers	66%	29%	-5%
Suppliers	63%	32%	16%
Organization culture	2%	79%	-4%
Staff training	-22%	73%	23%
Liberalization	17%	60%	-23%
Financial constraints	3%	-11%	89%
Technology used	43%	44%	50%
Extraction method: principal component analysis.			
Rotation method: Varimax with Kaiser normalization.			
A rotation converged in 6 iterations.			

After rotation, three factors were found. The three factors, each had components within. These are the three factors that hinder the integration of SCM and ERP.

Factor 1, is composed of the following components with the percentage of compositions: Infrastructure (-76%), Size of the firm (-73%), Customers (66%), and Suppliers (63%). The negative signs show that infrastructure is not a hindrance but the lack of infrastructure and that the small size of a firm is a hindrance. Factor 2 is composed of organization culture (79%), staff training (73%) and liberalization (60%). Factor 3 is composed of financial constraints (89%) and technology used (50%).

TABLE 4.3.3: EXTENT OF FACTORS' CONTRIBUTION/IMPORTANCE AS MAJOR BARRIERS TO INTEGRATING SCM AND ERP SYSTEMS.

<b>Contribution to Integration</b>	<b>Mean Scores</b>	<b>Importance</b>
Technology Used	1.5	Very Important
Financial Constraints	1.5	Very Important
Organization Culture	1.8	Very Important
Size Of The Firm	1.8	Very Important
Infrastructure	1.8	Very Important
Liberalization	1.8	Very Important
Staff Training	1.9	Very Important
Customers	1.9	Very Important
Suppliers	2.2	Important

In terms of importance as barriers to the integration of SCM and ERP systems, by using mean scores, the respondents indicated that technology used, financial constraints, organization culture, size of the firm, infrastructure, liberalization, staff training, and customers are very important contributors as barriers to integration of SCM and ERP systems. The mean scores ranged between 1 and 2. They also indicated that suppliers are important barrier with a mean score of 2.2.

TABLE 4.3.4: OTHER FACTORS HINDERING SCM/ERP INTEGRATION

	<b>Percent</b>
Training	22%
Small firm/size of organization	13%
Bureaucracy	12%
Lack of expertise (management skills)	22%
State of technology	10%
Lack of finances	12%
Customers & suppliers resistance to change	9%
Total	100%

The other factors important factors that hinder integration of SCM /ERP according to 22% of the respondents is training, 13% indicated that it is the size of the organization, 12% indicated that it is bureaucracy, another 22% indicated that it is the lack of expertise, 10% said it is the state of technology, 12% indicated that it is the lack of finances, 9% indicated that it is the customers and suppliers resistance to change.

Because of the hindrances to integration the respondents indicated what should be done to integrate SCM and ERP. In Table 4.3.5 below, 24% the respondents indicated that what should be done to assist in the integration is staff training and sensitization, 19% indicated that the systems should just be integrated, 19% indicated that the organizations should embrace technology, 12% called for the expansion of the supermarket business, 9% indicated that they should encourage open sharing of information, 9% indicated that organizations should allocate funds for implementation and equipment, 5% indicated that there should be managerial resource planning, and 3% indicated that thorough put time outcomes be adhered to.

TABLE 4.3.5: WHAT SHOULD BE DONE TO INTEGRATE SCM/ERP

	<b>Percent</b>
Staff training & sensitization	24%
Integrate system	19%
Embrace technology	19%
Expansion of super market business	12%
Open sharing of information	9%
Allocate funds for implementation/equipment	9%
Managerial resource planning	5%
Thorough put time outcomes be adhered to	3%
<b>Total</b>	<b>100%</b>

## 5.0 CONCLUSION AND RECOMMENDATIONS

### 5.1 CONCLUSIONS

Majority of the supermarkets had one branch with less than 4000 square feet of trading floor space and less than 50 employees. This implied that majority of the supermarkets are small outlets. To emphasize the fact about the size of the supermarkets, majority of the supermarkets surveyed had 10 to 15 categories of items in the supermarkets with between 2001 and 4000 items in the shelves. The number of checkout counters in the majority of the supermarkets was less than 5 and an overwhelming majority of them had a turnover of less than 100 million shillings. This is an indication that the supermarkets are small.

In terms of infrastructure, about two thirds of the supermarkets use computers with a majority having less than 5. Of these about two thirds are networked, mainly departmentally as compared to interdepartmentally. The supermarkets on average indicated that they put their computers to high use in customer billing, financial report preparation and maintenance of stock records. They moderately use their computers for performance appraisal, payroll preparation, email, replenishment decisions, Internet, pricing decisions, demand forecasting, and for those with more than one branch, stock distribution among branches. Other uses of the computers included daily sales summary. These results show indicate that these computers are mainly used for operational rather than tactical or strategic purposes. This is because they are mainly used to enhance efficiency of routine functions such as payroll preparation or stocks management.

An overwhelming majority of the respondents considered the operations function as important in enhancing their companies' competitiveness. Further, these companies indicated that customers, suppliers, suppliers' supplier, employees and customer's satisfaction were important in creating competitive advantage. They notably indicated that customers, suppliers, and employees are very important while customers' satisfaction and supplier's supplier are just important. In creating competitiveness, SCM according to the majority of the respondents was important, if not very important and only a small

percentage were indifferent. In the phases of integration the respondents indicated that slightly more than half of the supermarkets were just beginning to be functionally integrated into a single system/process within the organization and a quarter had fully integrated internally, with few connections to some of the suppliers and customers.

The respondents also indicated whether their organizations had found it necessary to carry out employee training on SCM philosophy with only about one third indicating that they carry out the training while two thirds do not. All the organizations that train their employees on the philosophy indicated that they train less than half of each of the cadres in the organization from top management, senior managers, supervisors, clerical and others. The respondents observed that SCM results in more efficient management of inventory, better focus on the companies competitive priorities, offers competitive advantage over competitors, encourages information sharing, collaboration and cooperation among our supply chain partners, requires strong commitment and involvement by top management, results in improved customer services due to its customer based/focused approach, results in reduction in operating costs & increased profitability for the organization, results to formation of strategic business alliances, and encourages the adoption of current process technologies in managing business operations.

They also agreed that SCM fosters a spirit of shared ownership of the problems and solutions among supply chain partners, promotes inter-departmental cooperation and collaboration within our business, spurs the organization to rapidly adapt to changes in the external environment, spurs the organization to aim for constant and continuous improvement on a global scale, and that SCM systems are too costly to implement.

In terms of ERP systems, up to three-quarters of the respondents indicated that ERP is very important if not important in creating competitiveness. However only one third of the respondents indicated that they carry out employee training on ERP and two thirds indicated that they do not.

Despite the fact that few people in the organization are trained on ERP systems, the respondents generally showed strong levels of agreement in relation to ERP factors that associated it with the creation of competitive advantage for the organization. The respondents indicated that they agreed with the statements that ERP system would greatly improve the supply chain, ERP system would greatly improve communication and cooperation within their business and for longer term we cannot afford to ignore ERP systems because they offer us competitive advantage. However they also noted that ERP systems require too many components, ERP systems are too new for our current analysis, and ERP system benefits are too far into the future, ERP systems are too complex to understand, and that ERP systems are too complex to implement.

The respondents indicated that the two systems integrated are beneficial in marketing, budgeting & resource planning, distribution management, customer focusing and faithfulness, and direct contact from suppliers. In indicating the importance they also indicated the reasons why SCM and ERP are important, that integrating ERP and SCM is very important in improving quality of service, customer satisfaction, time/delivery speed, rate of adopting current technology, profitability, concentration on core functions, capacity utilization, cost reduction, flexibility, creativity and innovativeness, reliability, effectiveness, and management focus. They indicated that customization, market share, dependability, organizational learning, business philosophy and approach, work atmosphere, value addition, and corporate cultural changes are important in integration of SCM and ERP systems.

Focusing on the factors that hinder the full integration of SCM and ERP, the study came up with three factors. Factor 1 comprised of components such as Infrastructure, Size of the firm, Customers, and Suppliers. Factor 2 was composed of components like organization culture, staff training, and liberalization. Factor 3 was composed of financial constraints, and technology used.

The major barriers to the integration of SCM and ERP systems were the technology used, financial constraints, organization culture, size of the firm, infrastructure, liberalization,



employee, customer and supplier resistance to change. Others included, lack of training, size of the organization, bureaucracy and lack of expertise.

Because of the hindrances to integration the respondents indicated what should be done to integrate SCM and ERP. Suggestions made included staff training and sensitization, the systems should just be integrated, organizations should embrace technology, expansion of the supermarket business, encourage open sharing of information and organizations should allocate funds for implementation and equipment for the systems.

## **5.2 RECOMMENDATIONS**

The need to heavily rely on enhanced SCM systems is becoming more crucial. However, the current cost to acquire a SCM system is far beyond what a smaller company can afford, the case of supermarkets in Kenya. The enhancement of the existing ERP systems with the additional supply chain capabilities offers a possible solution. It can easily be found that extending the capabilities of the existing ERP systems by adding certain SCM capabilities could become a new trend in the Kenyan, Retailing Industry.

In this study it was found that majority of the supermarkets are small outlets, which should actually be called supershops rather than supermarkets. They were found to be small in all aspects; number of employees, floor space, and categories of items, number of items or even number of branches.

Secondly, majority of the supermarkets that took part in the study are moderately aware of the use of SCM let alone the integration of SCM and ERP. Slightly more than half of the supermarkets use computers and only a third of these are networked. Majority of the networked computers are departmentally as compared to interdepartmentally. The supermarkets moderately use computers only for customer billing, financial statements and stock control. The rest of the functions, the computers are lowly used. This then indicates that due to the size of the supermarkets, their level of awareness of the SCM and ERP systems is still in developmental stage.

From the findings, it can be concluded that integrating SCM and ERP is very important because it is beneficial in marketing, budgeting & resource reservation, enables distribution management, customer focusing and faithfulness, and direct contact from suppliers. Integration of SCM and ERP is very important in quality of service, customer satisfaction, time/delivery speed, technology, profitability, concentration on core functions, capacity utilization, cost reduction, flexibility, creativity and innovativeness, reliability, effectiveness, and management focus.

The implementation of the integration is however not easy because there are hindrances. The factors that hinder the integration of the SCM and ERP are organizational, environmental and technological in nature.

### **5.3 LIMITATIONS OF THE STUDY**

The study faced some limitations in the collection of data. Supermarkets are very busy places. In some instances the responsible people did not have time to respond and they delegated the exercise to their subordinates who may not necessarily lack the knowledge but are not part of the decision-making hierarchy in the organization. However since the instrument was not very technical they were able to surmount the challenge. The other challenge was the time, which seems to fly. The time to do the project and complete it within the time limit was so tricky.

### **5.4 RECOMMENDATIONS FOR FURTHER STUDY**

This study recommends that since there are challenges and hindrance factors in the implementation of ERP and SCM integration, further research should be done to determine the possible solutions to the hindrances of implementation of SCM and ERP integration. Further study can also be done in the individual hindrances identified in this study to find out why and what can be done to overcome them.

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## APPENDICES:

### Appendix 1: List of Supermarkets in Nairobi:

1. A& D Mini Market
2. Acacia Supermarket Ltd
3. African Grocers Ltd
4. Aliance Supermarket Ltd
5. Alliance Supermarket Ltd
6. Amici Supermarket
7. Andrews Selection Ltd
8. Anil's Shoppe Ltd
9. Armed Forces Canteen  
Organization (AFCO)
10. Baraniki Investments Ltd
11. Betcam Savers Supermarket
12. Broadways Supermarket
13. Buru Buru Mini Market
14. Centaline Supermarket
15. Chandarana Supermarkets Ltd
16. City Mattresses Ltd
17. Clean Way Ltd
18. Clear Cut Supermarket
19. Cobb Supermarket
20. Continental Supermarket Ltd
21. Corner Supermarket
22. Crown Supermarkets Ltd
23. Cyfra Mini Supermarket
24. Davestar Supermarket
25. Dds Supermarket
26. Deep Canal
27. Deepak Cash & Carry Ltd
28. Eagle Supermarket
29. Ebrahims & Co. Ltd
30. Esajo Supermarket
31. Express Supermarket
32. Fairdeal Shop & Save Ltd
33. Fairprice Self Select Store
34. Family Corner Ltd
35. Fairrose Supermarket Ltd
36. Fali Provision Store
37. Fontana Supermarket
38. Food & Trade (K) Ltd
39. GPS Supermarket
40. Gambo Supermarket
41. Gigiri Supermarket
42. Goodfare Stores Ltd
43. Green Forest Supermarket Ltd
44. Guest Care Supermarket
45. Home Bound Supermarket
46. Jack & Jill Extravaganza Ltd
47. Jack & Jill Supermarkets Ltd
48. Jawa's Supermarket
49. Jei Supermarket
50. Jemu Supermarket
51. Jesica Supermarket & Wholesale
52. Jeska Supermarket
53. Jopampa Provision Store
54. Joster Mini Market
55. Juja Road Fancy Store Ltd
56. K & A Self Selection Store
57. Kaaga Mini Market Ltd



- |                                   |                                       |
|-----------------------------------|---------------------------------------|
| 58. Kahawa Gateway Supermarket    | 89. Omisago Supermarket               |
| 59. Kalumos Trading Co. Ltd       | 90. Ongata Rongai Supermarket         |
| 60. Kanyaki Supermarket           | 91. Pakjel Holdings (K) Ltd           |
| 61. Karen Supermarket             | 92. Pals Point                        |
| 62. Kenton Supermarket            | 93. Park & Shop Supermarket Ltd       |
| 63. Kikomba Mattresses Ltd.       | 94. Parklands Pricerite Ltd.          |
| 64. Langata Grocers Ltd           | 95. Pawn Industries Ltd               |
| 65. Leadway Supermarkets Ltd      | 96. Poravim Supermarket               |
| 66. Lucky Stop Supermarket        | 97. Portway Stores Ltd                |
| 67. Makenia Mini Market           | 98. Raken Supermarket Ltd             |
| 68. Marketways Ltd                | 99. Ridgeways Supermarket             |
| 69. Mega market Ltd               | 100. Right Supermarket &<br>Wholesale |
| 70. Mesora Supermarket Ltd        | 101. Rikana Supermarkets Ltd          |
| 71. Metro Cash & Carry (K) Ltd    | 102. Rosjam Supermarket               |
| 72. Midas Touch Supermarkets Ltd  | 103. Rupam Corner Traders<br>Ltd      |
| 73. Mulika Mini Market            | 104. Safeway Hypermarket<br>Ltd       |
| 74. Mumsies Supermarket           | 105. Sainbury Sales Services<br>Store |
| 75. Muthaiga Mini Market Ltd      | 106. Sakim Supermarket                |
| 76. Muthaite Trading Co. Ltd      | 107. Savannah Self Ridges             |
| 77. My Economy Supermarkets Ltd   | 108. Savemore Supermarket             |
| 78. Nafrom (K) Ltd                | 109. Schilada Supermarket Ltd         |
| 79. Nairobi Wholesalers           | 110. Select 'N' Pay<br>Supermarkets   |
| 80. Nakumatt Holdings Ltd         | 111. Seven Eleven                     |
| 81. New Westlands Stores Ltd      | 112. Shahina                          |
| 82. Ngara Road Self Service Store | 113. Sheela Supermarket Ltd           |
| 83. Niches Ltd                    | 114. Shelly Shopping                  |
| 84. Nine to Nine Supermarket      |                                       |
| 85. Njewa Supermarket             |                                       |
| 86. Nova Supermarkets Ltd         |                                       |
| 87. Nuru Supermarkets Ltd         |                                       |
| 88. Nyeri Supermarket Ltd         |                                       |

- |      |                                        |      |                                 |
|------|----------------------------------------|------|---------------------------------|
|      | Complex                                | 129. | Thara Hill Supermarket          |
| 115. | Shop-In-Style<br>Supermarket           | 130. | Three Ways Supermarket          |
| 116. | Shoppers Paradise                      | 131. | Toyo Industries Ltd             |
| 117. | Shoppers Paradise<br>Excitement Stores | 132. | Trolleys & Baskets              |
| 118. | South 'C' Supermarket                  | 133. | Tusker Mattresses               |
| 119. | Spring Valley<br>Supermarket           | 134. | Uchumi Supermarkets             |
| 120. | Stagen Supermarket                     | 135. | Ukwala Supermarkets             |
| 121. | Star Supermarket                       | 136. | Umoja Mini Market               |
| 122. | Starehe Supermarkets                   | 137. | Uncle Jim's Supermarket         |
| 123. | Stellar Supermarkets Ltd               | 138. | Urban Supermarket               |
| 124. | Sterling Supermarket                   | 139. | Uthiru Wayside<br>Supermarket   |
| 125. | Stuarts Supermarket                    | 140. | Venture Supermarket             |
| 126. | Sunshine Supermarket                   | 141. | Vishal Kenya Ltd                |
| 127. | Supervalu Supermarkets                 | 142. | Westlands General Stores        |
| 128. | Supra Self Selection<br>Stores         | 143. | Whitestar Supermarket           |
|      |                                        | 144. | Woodley Grocers (1977) Ltd      |
|      |                                        | 145. | Yetu Supermarkets & Distributor |

## Appendix 2: Data Collection Instrument (Questionnaire):

This is a research aimed at understanding how your supermarket and other supermarkets are *integrating Supply Chain Management and Enterprise Resource Planning systems as a competitive creating tool*. There are no wrong or right answers and the results are confidential and strictly for academic use. Your honest participation in this survey will be highly appreciated.

### SECTION A: COMPANY PROFILE

Please answer each of the following questions. Where there is a choice indicate your answer with a tick. ( )

1.1 Name of the Supermarket \_\_\_\_\_

1.2 Title of Interviewee \_\_\_\_\_

1.3 Number of branches

- (i) One ( )
- (ii) More than one ( )

1.4 Trading floor space in square feet

- (i) Less than 2000 ( )
- (ii) 2001 to 4000 ( )
- (iii) 4001 to 6000 ( )
- (iv) 6001 to 8000 ( )
- (v) More than 8000 ( )

1.5 Number of employees in the organization

- (i) Less than 50 ( )
- (ii) 51 to 100 ( )
- (iii) 101 to 150 ( )
- (iv) 151 to 200 ( )
- (v) More than 200 ( )

1.6 Number of categories of items found in the supermarket

- (i) Less than 5 ( )
- (ii) 5 to 10 ( )
- (iii) 10 to 15 ( )
- (iv) 15 to 20 ( )
- (v) More than 20 ( )

1.7 Total number of items found in the supermarket

- (i) Less than 2000 ( )
- (ii) 2001 to 4000 ( )
- (iii) 4001 to 6000 ( )
- (iv) 6001 to 8000 ( )
- (v) More than 8000 ( )

1.8 Number of check-out counters

- (i) Less than 5 ( )
- (ii) 5 to 10 ( )
- (iii) 10 to 15 ( )
- (iv) 15 to 20 ( )
- (v) More than 20 ( )

1.9 Estimated annual sales volume of the supermarket in Kenya shillings (Kshs).

- (i) Less than 100, 000,000 ( )
- (ii) 100,000,001 to 200,000,000 ( )
- (iii) 200,000,001 to 300,000,000 ( )
- (iv) 300,000,001 to 400,000,000 ( )
- (v) 400,000,001 to 500,000,000 ( )
- (vi) More than 500,000,000 ( )

1.10 Does the supermarket have computers? (if no proceed to section B)

- (i) Yes ( )
- (ii) No ( )

1.11 If yes, how many computers does the supermarket have?

- (i) Less than 5 ( )
- (ii) 5 to 10 ( )

- (iii) 10 to 15 ( )
- (iv) 15 to 20 ( )
- (v) More than 20 ( )

1.12 Are the computers in the supermarket networked? (If no proceed to question 1.14)

- (i) Yes ( )
- (ii) No ( )

1.13 If yes, how are they networked?

- (i) Departmentally ( )
- (ii) Inter-departmentally ( )
- (iii) Externally, with supply chain partners ( )

1.14 Rank their uses as follows: High =3, Medium= 2, Low=1

- (i) Demand forecasting ( )
- (ii) Pricing decisions ( )
- (iii) Customer billing ( )
- (iv) Maintenance of stock records ( )
- (v) Stock distribution among branches ( )
- (vi) Replenishment decisions ( )
- (vii) Payroll preparation ( )
- (viii) Performance appraisal ( )
- (ix) Financial report preparation ( )
- (x) Internet ( )
- (xi) Email ( )

1.15 For any other uses, please specify in the space provided.

- a) \_\_\_\_\_  
\_\_\_\_\_
- b) \_\_\_\_\_  
\_\_\_\_\_
- c) \_\_\_\_\_  
\_\_\_\_\_

**SECTION B:**

**SUPPLY CHAIN MANAGEMENT AND ENTERPRISE RESOURCE PLANNING PERCEPTIONS**

2.1 Do you consider the operations function important in enhancing your company's competitiveness?

(Please tick one) (yes) (no)

2.2 What relative importance do you give the following groups in terms of creating competitive advantage for your organization? (Please indicate a value from 1= very important to 5= not important)

- |                          |     |     |     |     |     |
|--------------------------|-----|-----|-----|-----|-----|
| (i) Customers            | (1) | (2) | (3) | (4) | (5) |
| (ii) Customer's customer | (1) | (2) | (3) | (4) | (5) |
| (iii) Suppliers          | (1) | (2) | (3) | (4) | (5) |
| (iv) Suppliers' supplier | (1) | (2) | (3) | (4) | (5) |
| (v) Employees            | (1) | (2) | (3) | (4) | (5) |

2.3 In your opinion, do you believe **Supply Chain Management** leads to enhanced competitiveness?

Please give a rank from 1= Very Important to 5= Not important

(1) (2) (3) (4) (5)

2.4 Where would you place your organization in the following phases of **Supply Chain Management**: -

(Please tick one)

- a) Beginning to be functionally integrated into a single system/process within the organization. ( )
- b) Supply Chain Management system fully integrated internally and connected to a few suppliers and a few customers. ( )
- c) Supply Chain Management system fully integrated with all your suppliers and all your customers on the main issues. ( )
- d) Entire Supply Chain Management system operating as one broad/extended enterprise with all the trading partners in all aspects. ( )

2.5 Has your organization found it necessary to carry out employee training on the **Supply Chain**

**Management** philosophy? (Please tick one) (yes) (no)

2.6 If yes to (2.5) above, how many employees have been trained for each of the following cadres:

- |                             |     |
|-----------------------------|-----|
| (i) Top management          | ( ) |
| (ii) Senior managers        | ( ) |
| (iii) Supervisors           | ( ) |
| (iv) Clerical               | ( ) |
| (v) Others (please specify) | ( ) |



the external environment					
SCM has no real advantage					
Is heavily reliant on Information Technology					
SCM systems are too costly to implement.					
SCM benefits are too far in the future.					

2.10 Please indicate the extent to which you agree with the following statements in relation to **Enterprise Resource Planning systems.**

	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
<b>Enterprise Resource Planning (ERP)</b>					
For the longer term we can not afford to ignore ERP systems					
ERP systems are too new for our current analysis					
ERP systems require too many components					
We will not reduce our costs by using ERP systems					
ERP systems are too complex to understand					
ERP systems are too complex to implement.					
ERP systems have no real advantage					
An ERP system offers us competitive advantage					
ERP system benefits are too far into the future					
ERP systems will greatly improve our supply chain management					
ERP systems will greatly improve communication and co-ordination within our business					

**SECTION C: SUPPLY CHAIN MANAGEMENT & ENTERPRISE RESOURCE PLANNING SYSTEMS INTEGRATION**

3.1 Please rank the contribution/importance of integration of **Supply Chain Management** and **Enterprise Resource Planning systems** in the attainment of the following organization – objectives (please indicate a rank from 1 = very important to 5 = not important)

(a) Quality of service (1) (2) (3) (4) (5)



(b) Cost reduction	(1)	(2)	(3)	(4)	(5)
(c) Flexibility	(1)	(2)	(3)	(4)	(5)
(d) Time/delivery speed	(1)	(2)	(3)	(4)	(5)
(e) Creativity and innovativeness	(1)	(2)	(3)	(4)	(5)
(f) Organizational learning	(1)	(2)	(3)	(4)	(5)
(g) Technology	(1)	(2)	(3)	(4)	(5)
(h) Profitability	(1)	(2)	(3)	(4)	(5)
(i) Customer satisfaction	(1)	(2)	(3)	(4)	(5)
(j) Customisation	(1)	(2)	(3)	(4)	(5)
(k) Reliability	(1)	(2)	(3)	(4)	(5)
(l) Dependability	(1)	(2)	(3)	(4)	(5)
(m) Concentration on core functions	(1)	(2)	(3)	(4)	(5)
(n) Capacity utilization	(1)	(2)	(3)	(4)	(5)
(o) Market share	(1)	(2)	(3)	(4)	(5)
(p) Value addition	(1)	(2)	(3)	(4)	(5)
(q) Effectiveness	(1)	(2)	(3)	(4)	(5)
(r) Corporate cultural changes	(1)	(2)	(3)	(4)	(5)
(s) Business philosophy and approach	(1)	(2)	(3)	(4)	(5)
(t) Work atmosphere	(1)	(2)	(3)	(4)	(5)
(u) Management focus	(1)	(2)	(3)	(4)	(5)

**SECTION D: INTEGRATION HINDERING FACTORS**

4.1 Please rank the following factors in terms of their contribution/importance as the major barriers to the integration of **Supply Chain Management** and **Enterprise Resource Planning systems**. (Please give a rank from 1 = very important to 5 = not important)

a) Technology used	(1)	(2)	(3)	(4)	(5)
b) Organization structure	(1)	(2)	(3)	(4)	(5)
c) Staff training	(1)	(2)	(3)	(4)	(5)
d) Size of the firm	(1)	(2)	(3)	(4)	(5)
e) Infrastructure	(1)	(2)	(3)	(4)	(5)
f) Liberalization	(1)	(2)	(3)	(4)	(5)
g) Financial constraints	(1)	(2)	(3)	(4)	(5)
h) Customers	(1)	(2)	(3)	(4)	(5)
i) Suppliers	(1)	(2)	(3)	(4)	(5)
j) Other(s) (please specify).....					

4.2 Please highlight any other **Supply Chain Management** and **Enterprise Resource Planning** practices/issues from your company's experience that can enrich this study\_\_\_\_\_

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---

4.3 Why are these the most important?

(i) \_\_\_\_\_

\_\_\_\_\_

(ii) \_\_\_\_\_

\_\_\_\_\_

(iii) \_\_\_\_\_

\_\_\_\_\_

4.4 Which other factors hinder integration of **Supply Chain Management** and **Enterprise Resource Planning** systems in your company?

(i) \_\_\_\_\_

\_\_\_\_\_

(ii) \_\_\_\_\_

\_\_\_\_\_

(iii) \_\_\_\_\_

\_\_\_\_\_

4.5 What should be done to encourage integration of **Supply Chain Management** and **Enterprise Resource Planning** systems in your organization?

(i) \_\_\_\_\_

\_\_\_\_\_

(ii) \_\_\_\_\_

\_\_\_\_\_

(iii) \_\_\_\_\_

\_\_\_\_\_

**THANK YOU FOR YOUR CO-OPERATION.**



**UNIVERSITY OF NAIROBI**  
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DATE 27<sup>th</sup> AUGUST 2003

TO WHOM IT MAY CONCERN

The bearer of this letter MWANYOTA JOE LEWELA

Registration No: 661/7016/2001

is a Master of Business Administration (MBA) student of the University of Nairobi.

He/she is required to submit as part of his/her coursework assessment a research project report on some management problem. We would like the students to do their projects on real problems affecting firms in Kenya. We would, therefore, appreciate if you assist him/her by allowing him/her to collect data in your organization for the research.

The results of the report will be used solely for academic purposes and a copy of the same will be availed to the interviewed organizations on request.

Thank you.

  
B.A. OFFICE \* CITY  
JACKSON MAALU  
COORDINATOR, MBA PROGRAM  
UNIVERSITY COMMERCE