BUSINESS INTEGRATION AND SUPPLY CHAIN PERFORMANCE AMONG COMMERCIAL BANKS IN KENYA

BY

MARY WANJIKU GICHUHI

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SUPERVISOR

MICHAEL K. CHIRCHIR

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DECLARATION

I declare that this research project is my original work and has never been submitted to any other University for assessment or award of a degree.

Signature…….. Date……

Mary Wanjiku Gichuhi

This project has been submitted with my authority as the university supervisor.

Signature……. Date ……

Michael K. Chirchir

University of Nairobi, School of Business

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABSTRACT

A study was conducted to establish the relationship between business integration and supply chain performance among commercial banks in Kenya. The study had two objectives to achieve: to establish the extent to which commercial banks have integrated their business functions and to find the relationship between business integration and supply chain performance. The research design involved a cross sectional survey of all commercial banks in Kenya. Data was collected using a questionnaire that was administered through drop and pick later method. Percentages and frequencies were used to analyze objective one whereas regression analysis was used to analyze the relationship between business integration and supply chain performance. The findings were presented in tables and pie charts. The study established that most of the commercial banks in Kenya integrated their business functions ten years ago. It was also clear that there was a very significant relationship between business integration and supply chain performance represented by R^2 value of 0.789 which translates to 78.9% variance explained by the four independent variables of information sharing improves supply chain performance; on time supply chain decisions; better supplier relationship management and efficiency in supply chain management.

Further research on the same study can be done in other countries to establish whether business integration is able to yield the same effect on supply chain performance of commercial banks.It has also been recommended that all banks and other organizations should be advised to embrace business integration so that they can reap the benefits.Business integration relies on ERP system as the primary integration too.IT is very dynamic and keeps on changing hence need to replicate the study in line with trends that may affect supply chain performance in commercial banks.

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

Many organizations around the globe have found it necessary to integrate their functions because of a number of reasons. The most important of these reasons is the need to ensure that each business department is linked with others so that flow of information can be faster and efficient. It is therefore evident that through business integration, organizations are determined to avoid a situation where various departments have to run separate applications that cannot add value to the organization (Camden, 2004). The need for business integration has resulted from the need to make organizations more responsive and reduce costs of operation and because the separate applications have limited interoperability and inter-application communications capabilities, making it difficult to leverage them to add new business value, such as by offering new revenue opportunities, streamlining inefficient or noncompetitive procedures, or reducing costs by exploiting modern technology (Camden, 2004).

Business integration is one of the ways through which organizations can make their supply chains more competitive. When the functions of an organization are integrated, there is an element of cost reduction that is achieved and it is beneficial to the supply chain activities handled by the organization. As they become more global, and search for the best operating model to streamline and consolidate business units, concerns for consistency around functional direction can lead to structures that provide clarity on cost drivers while at the same time negatively impact performance (Verlezza, 2012). Integration of the supply chain into the

business model provides a platform for overall success in a way that isolating the function cannot. When the entire company understands the linkages between business capabilities, innovation objectives, and customer requirements, it stands to reason that superior decisions and direction will be taken. It also provides for a clearer view of risk taking and risk management (Verlezza, 2012).

Verlezza (2012) further states that the supply chain, its capabilities and limitations, should never by itself dictate to the business. It is by weaving the supply chain into the fabric of the business that a company can wring the most value from its internal workings to enable on-going external and financial performance initiatives. Putting the supply chain at the core of the business allows the right combination of understanding and cost control while optimizing customer service and satisfaction. A company should strive for functional excellence, but not at the expense of co-existing departments. Just as we emphasize the view that a business who integrates its supply chain directly into its operating model stands the best chance to optimize its overall costs by improving communication and forecasting, while buying, scheduling and utilizing its manufacturing network most efficiently, so too do we believe that the best model for supply chain success is to fully integrate all its components into one comprehensive set of intimately linked processes (Verlezza, 2012).

1.2.1 Business Integration

Wang and Miller (2005) define business integration as the process of merging elements from two similar antecedent processes to create a single process that can be used to replace the original processes. Integration is broken into two parts, aggregation and regression. Aggregation is the process of combining data elements after detecting common elements or common relations. This

is done in its simplest form by combining common elements from two antecedent processes. Wang and Miller (2005) further indicate that the aim of business integration is to investigate relationships across a business compendium to produce classifications and merge activities into a standardized system. This involves both matching and merging methods. The process of integrating various activities relies heavily on matching criteria. Once objects are considered close enough to integrate with one another, and if each object is not equal to the other, then the merging process will begin.

Zeichick (2004) indicates that there are a number of benefits that firms get from business integration. These benefits include: revenue enhancement through real time processing; cost reduction through elimination of manual processes; improved efficiency in the functioning of departments in the firm and better future planning by laying an architectural framework that will provide the firm with greater agility.

1.2.2 Supply Chain Performance

Supply chain performance is define as the entire chain's ability to meet end-customer needs through product availability and responsive, on-time delivery. Supply chain performance crosses both functional lines and company boundaries.

Improving supply chain performance is a continuous process that requires both an analytical performance measurement system, and a mechanism to initiate steps for realizing key performance indicators (KPI) goals. The mechanism to achieve KPI goals can be referred to as "KPI accomplishment", which connects planning, and execution, and builds steps for realization of performance goals into routine daily work. To measure supply chain performance, there are a

set of variables that capture the impact of actual working of supply chains on revenues and costs of the whole system. These variables as drivers of supply chain performance are always derived from supply chain management practices. After identifying KPIs, managers have to achieve improvement in them, through continuous planning, monitoring and execution. According to the results of selected KPIs' accomplishment, managers may create current reports on KPIs, to compare multiple plans of supply chain management. In this performance management cycle, there are many challenges, both in performance measurement and its improvement (Cai et al, 2008)

Supply Chain Performance can be measured in the context of the following supply chain activities/processes: (1) plan, (2) source, (3) make/assemble, and (4) delivery/customer. These activities are considered at various levels of management - strategic, tactical, and operational levels (Stewart, 1995; Gunasekaran et al., 2004).

Many metrics used in supply chain performance evaluation have been designed to measure operational performance, evaluate improved effectiveness, and examine strategic alignment of the whole supply chain management (Cuthbertson & Piotrowicz, 2011). Individual measures of supply chain performance have usually been classified into four categories: quality, time, cost and flexibility Furthermore, they have also been grouped by quality and quantity, cost and noncost, strategic/operational/tactical focus, and supply chain processes. However, since many measurement systems lacked strategy alignment, a balanced approach and systemic thinking, they had difficulty in systematically identifying the most appropriate metrics. To address this problem, the Balanced Scorecard (BSC) and Activity Based Costing (ABC) methods have been used to evaluate supply chain performance (Shepherd and Günter,2006).

The other model that has been developed is the Supply Chain Operations Reference (SCOR). This model has been developed to facilitate construction of a systematic supply chain performance measurement and improvement tool; it has often been recognized as a systematic approach for identifying, evaluating and monitoring supply chain performance. In the SCOR model, a balanced performance measurement system at multiple levels, covering five core supply chain processes (i.e. Plan, Source, Make, Deliver, and Return), was developed (Lockamy and McCormack, 2004). Outsourcing is also considered as one of the ways through which organizations can be able to improve their supply chain performance.

1.2.3 Commercial Banks in Kenya

The Banking industry in Kenya is governed by the Companies Act, the Banking Act, the Central Bank of Kenya Act and the various prudential guidelines issued by the Central Bank of Kenya (CBK). The banking sector was liberalised in 1995 and exchange controls lifted. The CBK, which falls under the Minister for Finance docket, is responsible for formulating and implementing monetary policy and fostering the liquidity, solvency and proper functioning of the financial system (PWC, 2012). The banking industry in Kenya has been very dynamic hence has undergone various changes. For instance several mergers and acquisitions took place between 1994 and 2001. The central bank is the regulator of commercial banking in Kenya and is in the process of ensuring that there is stability in the industry through enacting appropriate policies. Clients in the banking industry can be either retail or corporate. Retail clients usually refer to small depositors who are usually individuals or small organizations while corporate refer to bigger organizations (CBK, 2003).

As at December 2008 there were forty six banking and non-bank institutions, fifteen micro finance institutions and one hundred and nine foreign exchange bureaus. The banks have come together under the Kenya Bankers Association (KBA), which serves as a lobby for the banking sector's interests .The KBA serves a forum to address issues affecting members.

Over the last few years, the Banking sector in Kenya has continued to growth in assets, deposits, profitability and products offering. The growth has been mainly underpinned by; an industry wide branch network expansion strategy both in Kenya and in the East African community region. Automation of a large number of services and a move towards emphasis on the complex customer needs rather than traditional ‘off-the-shelf' banking products (PWC, 2012). Players in this sector have experienced increased competition over the last few years resulting from increased innovations among the players and new entrants into the market. Among these innovations include moving from the traditional decentralized banking to one branch banking that has been enabled by integration of various business functions (PWC, 2012).

The banking industry in Kenya has found it necessary to embrace business integration as one way of responding to the changing needs of the customers. Contemporary customers are more informed and require efficient and faster service delivery that before. Nyaoke 2007 indicates that there are some challenges that are encountered by the banking industry in Kenya such as money laundering. Such kind of challenges are easily overcome once banks embrace integration since various departments are able to share real time information.

1.2 Research problem

Business integration entails linking the various functions of a business or organization. This integration is made possible through technologies such as the Enterprise Resource Planning

(ERP) systems that enable various departments in an organization to link and share information. Contemporary business organizations are finding it essential to integrate their functions if they need to reduce costs and remain competitive. One of the most important achievements of business integration is the reduction of supply chain costs and real time transaction processing that has largely enhanced the performance of supply chains.

Commercial banks in Kenya have in the recent past been faced by stiff competition due to globalization and advancement in technology. This has forced most of the banks to abandon their traditional banking systems thus adopting systems that are able to integrate all the functions so as to provide them with real time transaction processing. This form of integration is likely to lead to a drastic reduction in the supply chain costs of these banks. A close examination into studies on integration and supply chain performance confirm that there is research that has been carried out in this field. For example McAdam and McCormark (2001) carried out a study on integrating business processes for global alignment and supply chain management. The study concluded that while there is little evidence of research exploring the integration of processes extending throughout supply chains, some businesses are gaining competitive advantage by maximising the efficiency of their ``global'' supply chains or ``virtual'' organisations. Another study was also conducted by Taco et al. (nd) on supply chain integration and performance with specific reference to impact of business conditions. The study established that under environments characterized by high demand and technology uncertainty higher levels of integration lead to improvements in performance, while under low uncertainty environments very few integration practices lead to performance improvements. Thus, the main conclusion is that supply chain integration needs a more tailored approach in order to be successful. Another study was also carried out by Smith (2012) on the effect of outsourcing on supply chain performance among

mobile companies in Kenya. The study established that outsourcing plays a significant role in uplifting the supply chain performance of the mobile phone companies. Another study was also carried out by Osumo (2012) on the lead time variability and supply chain performance in Kenya. It was established that lead time variability has an impact on the performance of supply chains both in the public and private sector.

It is evident from the studies that have been carried out that the main focus has been on supply chain integration and not business integration. Businesses integrate their functions in order to achieve real time processing in other areas including supply chains. This study therefore sought to bridge this gap by investigating how integration of various business functions among commercial banks in Kenya can impact on the performance of their supply chains. The study sought to answer the following questions: What is the extent of business integration among commercial banks in Kenya? And what is the relationship between business integration and supply chain performance among commercial banks in Kenya?

1.3 Research objectives

This study sought to achieve two objectives:

i. To establish the extent of business integration among commercial banks in Kenya

ii. To determine the relationship between business integration and supply chain performance

1.4Value of the study

The findings of this study will provide more knowledge for researchers and academicians who may be interested in studying business process integration and supply chain performance.

Commercial banks in Kenya will also be able to find out how business process integration affects the performance of their supply chains

Other non-banking institutions will also benefit from the findings of this study since it will shed more light on the relationship that exists between business process integration and supply chain performance.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter focuses on the literature review conducted by the researcher. It includes a review of the various studies that have been conducted by other researchers on business integration and supply chain performance. Among the areas reviewed include: The drivers of business integration; the benefits of business integration; supply chain performance as well as business integration and supply chain performance. The chapter also provides the research gaps identified and a conceptual framework to show the relationship between the dependent and independent variables.

2.2 Overview of Business Integration

Information technology has fundamentally altered the business landscape. In the 1960s and 1970s businesses automated accounting, billing, and other back-end functions. This was the era of the mainframe and the database. In the 1980s information technology provided tools that enhanced the capabilities of workers to be more productive, whether through spreadsheets, word processors, or graphics applications. This was the era of the personal computer and desktop applications. The 1990s opened up communications inside an organization as well as with customers and suppliers. This was the era of the network and the Internet. The business environment is now moving into an era driven by the need to improve business processes and to provide increasingly sophisticated capabilities to customers and suppliers to improve how business is conducted (Awad & Nassar, 2010a).

Processing transactions without human intervention, gathering data from multiple sources, and integrating it together or reengineering business processes are the basic requirements for success in today's environment. The implementation of these applications and systems will be enabled through enterprise integration. In the same way that organizations have mastered mainframes, databases, back-office applications, personal computers, desktop applications, networks, and the Internet, it will be necessary for them to master enterprise integration (Power, 2005).

Business and IT success are dependent upon integration solutions to enable this business change. As business problems have different requirements, there are literally hundreds of integration solutions available today. The problem is not whether the technology exists; it's which technology to use to solve the business problem (Awad & Nassar, 2010a).

2.2.1 Drivers of Business Integration

Competitive advantage requires making the end-to-end process across the value chain from requisition to payment as fast and efficient as possible. There are two concepts that are gaining popularity in business integration in the modern business environment. Zero latency and the need for an enterprise that is able to achieve real time processing of transactions are gaining popularity as companies seek to accelerate business processes and reduce business cycle times. Real time is a term that is used to indicate the ability of an organization to view, manage, and control business processes in business time, rather than responding to end-of-month or quarter reports after the fact. This includes integrating, monitoring, managing, and optimizing the end-to-end process across applications, business units, and the entire value chain. Optimization may be based on different metrics, such as time or cost. Automating business processes can also go a

long way towards reducing business cycle times. For instance Cisco Systems has applied this concept to its finance operations to achieve dramatic increases in performance (Powell, 2003).

The other important driver for business integration is the need for business agility. Business agility requires an integrated infrastructure that enables rapid deployment of new solutions while leveraging existing IT investments. An agile business can't afford to rip and replace business systems. It requires real-time connectivity between people, systems, and business entities. Accelerating business processes requires process automation. Although some processes will require human intervention at certain points, especially authorizations and exception handling, increasing the velocity of business requires automating as much as possible; even after automating processes, companies need to monitor and manage them in real time to continually improve and optimize the processes (Fabbe-Costes, & Jahre, 2008).

Fortunately, advances in technology are enabling business agility. Integration technology, including messaging, application integration, workflow, business process modeling, automation and management, mobile integration, enterprise portals, business-to-business (B2B) integration, Web services, and eXtensible Markup Language (XML) are all helping organizations tie their systems together and manage the processes across them. Enterprise integration is the underlying enabler of business agility. It provides the infrastructure that supports rapid change. Without enterprise integration, companies will continue to be constrained by the inability to communicate and manage the flow of information and business processes across the enterprise. The real-time enterprise is not possible without enterprise integration (Fabbe-Costes, & Jahre, 2008).

The need for cost reduction is also a very important driver of business integration. Enterprise integration reduces personnel, IT, and business costs and increases revenues. Two other important benefits that companies gain from integration are increasing customer satisfaction and improving overall quality and efficiency through optimizing business processes. Personnel costs can be reduced through automating business processes and reducing head count; providing self-service interfaces for customers, thereby reducing customer support costs; and making information easily and readily available, thereby reducing training costs (Power, 2005).

Businesses are also forced to integrate so that they can be able to increase their revenue. Enterprise integration can increase revenue by increasing market share and creating new market opportunities. Increased market share is the result of retaining and increasing revenue from existing customers by increasing customer satisfaction and attracting new customers by bringing new products and services to market rapidly in response to emerging opportunities. New opportunities are created by integrating with partners and suppliers, bringing products and services to market more quickly, and creating new sales or distribution channels through on-line capabilities (Zailani & Rajagopal, 2005).

According to Power, D. (2005) customer satisfaction is also one of the reasons why businesses seek to integrate their processes. Customer satisfaction is increasingly becoming an important area of focus and spending for many organizations. Enterprise integration can increase customer satisfaction by making information easily available and responding to customer requests and complaints more quickly. For example, online customer self-service systems enable customers to view their account balances on demand, track orders, and change information. The customer is more satisfied because needs are met immediately, and the company saves money on personnel

costs. Integrating customer information from disparate back-end systems enables improving customer interactions at every stage of a transaction, through every channel used for a customer interaction. Companies investing in Customer Relationship Management (CRM) systems are finding that integration is a large part of the implementation process.

Businesses also integrate because they need to collaborate with other businesses. Collaboration enables a supply chain to focus on joint planning, coordination, and process integration between the firm and its suppliers, customers, and other partners such as the logistics providers. In addition to cost reduction, collaboration offers the advantages of business expansion to other areas, increased return on assets, improved customer service, reduced lead times, increased reliability and responsiveness to market trends, and a shorter time to market. Several options are available for achieving collaboration in a supply chain. These include: systems that transmit information between partners using technologies such as fax, e-mail, electronic data interchange (EDI), or extensible markup language (XML); systems such as electronic hubs and portals that facilitate the procurement of goods or services from electronic marketplaces, catalogs, and auctions; systems such as collaborative planning, forecasting and replenishment (CPFR) that permit shared collaboration rather than just a simple exchange of information amongst the supply chain partners (Lall, n.d).

Business integration is also important in the reduction of cycle times. Reduced cycle time can translate into increased customer satisfaction. Quick response companies can launch new products earlier, penetrate new markets faster, meet changing demand, and can deliver rapidly and on time. They can also offer their customers lower costs because quick response companies have streamlined processes with low inventory and less obsolete stock. According to empirical

studies, halving the cycle time (and doubling the work-in-process inventory can increase productivity. With reduced cycle times, quality improves too. Faster processes allow lower inventories which, in turn, expose weaknesses and increase the rate of improvement. After eliminating non-value added transactions (as opposed to value added transformations), there are fewer opportunities for defects. Fast cycle time organizations experience more rapid feedback throughout the Supply chain as downstream customers receive goods closer and closer to the time they were manufactured. Moreover, quartering the time for one step typically reduces costs by 20%. (Heze, 2006).

2.3 Supply Chain Performance

The supply chain performance items represent a broad range of supply chain characteristics including cycle times, delivery accuracy, delivery timeliness, and return costs. When measured in aggregate, these measures provide an indication of the level of supply chain performance across an organization. One of the most critical tasks during the planning phase is developing performance measurements and reporting methods.

Gunasekaran et al (2004) presents a number of characteristics that are found in effective performance measurement systems, and can therefore be used in evaluation of these measurement systems. These characteristics include: inclusiveness (measurement of all pertinent aspects), universality (allow for comparison under various operating conditions), measurability (data required are measurable), and consistency (measures consistent with organization goals). Besides analyzing the measures based on their effectiveness, benchmarking is another important method that is used in performance measure evaluation. Benchmarking can be useful in that it can serve as a means of identifying improvement opportunities.

In order to study the large number of performance measures available, researchers have categorized them. Neely et al. (1995) present a few of the categories in the literature, including: quality, time, flexibility, and cost. This categorization is a useful tool in systems analysis. For example, a model may be developed to improve one characteristic of a system, for example, time. The model may then compare manufacturing lead time or due-date performance by changing the system's configuration. In this way, a single type of measure has been chosen, time, but within this category, many different specific measures of time may be used. Thus, measures within a category can be compared and analyzed, so that performance measure selection within a category may be easier. Although with this approach, the performance category is already determined.

Gunasekaran (2004) also argues that a supply chain performance measurement system that consists of a single performance measure is generally inadequate since it is not inclusive, ignores the interactions among important supply chain characteristics, and ignores critical aspects of organizational strategic goals. Strategic goals involve key elements that include the measurement of resources, output and flexibility. Resources measures (generally cost) and output measures (generally customer responsiveness) have been widely used in supply chain models. Although flexibility has been limited in its application to supply chains, many advantages exist to a flexible supply chain.

The use of resources, the desired output and flexibility (how well the system reacts to uncertainty) have been identified as vital components to supply chain success. They suggest that a supply chain measurement system must place emphasis on three separate types of performance

measures: resource measures (R), output measures (O), and flexibility measures (F). Each of these three types of performance measures has different goals. The supply chain performance measurement system must measure each of the three types (R, O and F), as each type is vital to the overall performance success of the supply chain. Therefore, the supply chain performance measurement system must contain at least one individual measure from each of the three identified types. The individual measures chosen from each type must coincide with the organization's strategic goals. This measurement system can then allow study of the interactions among the measures or can at least ensure a minimum level of performance in different areas.

Gunasekaran (2004) indicate that there are three levels of supply chain measures. Strategic level measures include lead time against industry norm, Quality level, Cost saving initiatives, and supplier pricing against market. Tactical level measures include the efficiency of purchase order cycle time, booking in procedures, cash flow, quality assurance methodology and capacity flexibility. Operational level measures include ability in day to day technical representation, adherence to developed schedule, ability to avoid complaints and achievement of defect free deliveries.

In conclusion, the growth of outsourcing has led outsourcing strategies to become an increasingly important component of firm success (Gottfredson et al., 2005). While the purported goal of outsourcing in supply chains is to derive a competitive advantage, it is not clear whether the outsourcing decisions of firms are always strategically aligned with their overall competitive strategy. There is outsourcing congruence across all five competitive priorities (cost, flexibility, innovativeness, quality and time) to be positively and significantly related to supply chain

performance. It has also been found that the level of supply chain performance in a firm is positively and significantly associated with the firm's business performance.

2.4 Business Integration and Supply Chain Performance

The integration of technology, people, business and processes is crucial for survival and competitive edge in the current digital age and this is not important only within a firm but also across extended enterprises (Awad & Nassar, 2010a). Supply chain management is one of the most strategic functions of an organization which can be exploited to gain a sustainable competitive advantage in the marketplace. The revolutions in technology and business practices have also brought a revolution in the world of supply chain management by organizations.

It is important now for corporations to search for new business paradigms to gain a sustainable competitive advantage in the marketplace. There are different examples available such as Total Quality Management (TQM), Theory of Constraints (TOC), Supply chain management practices adopted by corporations for cutting costs, increasing performances, and beating the competition. Information is now a competitive advantage as well as a "challenge" for corporations in the marketplace. Information has enabled firms to reengineer activities and practices for being competitive in the marketplace. The above revolutions have led to supply chain integration among channel partners where supply chain consists of all the processes directly or indirectly involved in providing solutions to customer problems by firms. A supply chain of an organization includes manufacturer, supplier, and channel intermediaries like wholesalers/retailers. (Awad & Nassar, 2010a)

Today, firms tend to integrate their supply chain systems with the channel partners to increase performance. Awad & Nassar (2010a) claimed that the developments in supply chain

management in the form of supply chain integration had not only offered the potential to reduce costs but also to increase revenues, profits and performance of the firms. But he also stated that there were some challenges associated with the integration of supply chain management by the channel members. It was also argued in the paper of Awad & Nassar (2010a) that the most significant form of supply chain integration was information sharing.

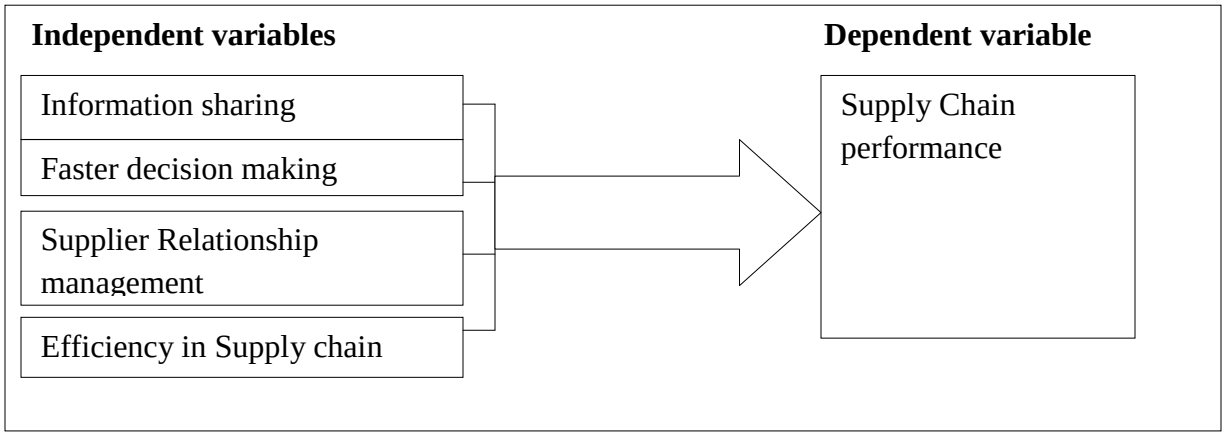
Trkman & Groznik (2006) describe the benefits that a supply chain can gain from business integration. They state integration enhances the process of information sharing within the organization and outside the organization (suppliers, channel partners, customers and other stakeholders). They further argue that information technology had made it possible for organizations to integrate their supply chains while it was also an advantage in terms of cost because information technology solutions for any business process were always cost effective. Therefore, integration has decreased the supply chain costs. They recommend that information technology must be effectively utilized in integration to enhance the process of information sharing and cost reduction for gaining a sustainable competitive advantage in the marketplace.

Trkman & Groznik (2006) also discuss certain other benefits of supply chain integration as it enables the organization to do effective business renovation and business process modeling that increases the efficiency and profitablity of a business. Different benefits of supply chain integration were also presented by several other researchers. Li, Ragu-Nathan, Ragu-Nathan, & Rao (2006) stated that supply chain integration enabled the organization to gain a sustainable competitive advantage in the marketplace and it enhances organizational performance by enabling it to reach its goals and objectives effectively and efficiently

2.5 Research Gap

The literature review confirms that a lot has been done on supply chain integration and its benefits to the organization. Whereas supply chain integration may cut across several enterprises, it may not be the case with business integration which focuses on the internal functions of the organization. It is therefore clear that there is need to find out the effect of integration of an organization on its supply chain performance.

2.6 Conceptual Framework



An efficient and effective supply chain will depend on real time processing of transactions and inventories; reduction in costs at various levels of the supply chain; ensuring that there is high customer satisfaction, revenue enhancement, the need to collaborate with other stakeholders, reduction in cycle time and the need for quality improvement.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the research methodology that was applied in conducting the study. It discusses the research design, target population, sampling design and sample size, data collection procedures and instrument, determination of reliability and validity as well as data analysis techniques.

3.2 Research Design

The study involved a descriptive research design of cross sectional type. Tanur (1982) asserts that a survey is a means of collecting information about a large group of elements referred to as a population. A survey has three characteristics: to produce quantitative descriptions of some aspects of the study population in which case it is concerned either with relationships between variables, or with projecting findings descriptively to a predefined population; data collection is done by asking people structured and predefined questions and data is collected from a fraction of the target population (Pinsonneault and Kraemer, 1992).

3.3 Population and Sampling

The population of the study in this research included all the commercial banking institutions operating in Kenya. Central Bank of Kenya (2013) indicates that there were 43 licensed commercial banks as at 13th December 2012. The 43 banks will therefore be the target population of the study. It involved a census of commercial banks in Kenya. One respondent was picked from each of the 43 banks to participate in the study.

3.5 Data Collection

The researcher collected primary data from supply chain managers of all the 43 commercial banks in Kenya or other persons carrying the same responsibility. Supply chain managers or their equivalents were considered appropriate since they understand better the effect of integration on the functions they carry out. The data was collected by use of a structured questionnaire that was administered by drop and pick method. The questionnaire was in the form of Likert scale where respondents were required to indicate their views on a scale of 1 to 5. The questionnaire contained 3 sections: Section A sought data on the company profile; section B sought data on the extent to which commercial banks in Kenya have done integration whereas section C sought data on the relationship between integration and supply chain performance.

3.6 Data Analysis

The data collected was sorted and coded then entered into the Statistical Packages for Social Sciences (SPSS). Frequencies were used to show the extent to which commercial banks in Kenya have attained business integration and regression analysis was used to explain the relationship between integration and supply chain performance. The findings were presented in tables and histograms. The following model was used to show the integration and supply chain performance $\mathbf{S=a + b_1 x_1 + b_2 x_2 + b_3 x_3 + b_4 x_4 + e.}$ Where: S= Supply chain performance; a= the S intercept when x is zero; b_1, b_2, b_3, and b_4, are regression weights attached to the variables; x_1 = Information sharing; x_2 = faster decision making; x_3 = Supplier relationship management and x_4 = Efficiency in supply.

CHAPTER FOUR

DATA ANALYSIS AND INTERPRETATION

4.1 Introduction

This study was carried out to establish the effect of business integration on supply chain performance among commercial banks in Kenya. Data was collected from supply chain managers, procurement managers and operations managers who were in charge of supply chain functions in the respective banks. The findings are presented next.

4.2 Response Rate

A total of 43 questionnaires were distributed to commercial banks through their headquarters based in Nairobi. Out of the 43 questionnaires, 31 were returned to the researcher. This represents a response rate of 72%. This percentage was considered sufficient for this study. The 28% who never returned the questionnaires cited busy schedules as the main reason for lacking time to fill them.

Table 4.1: Duration of operation

Duration bank has operated

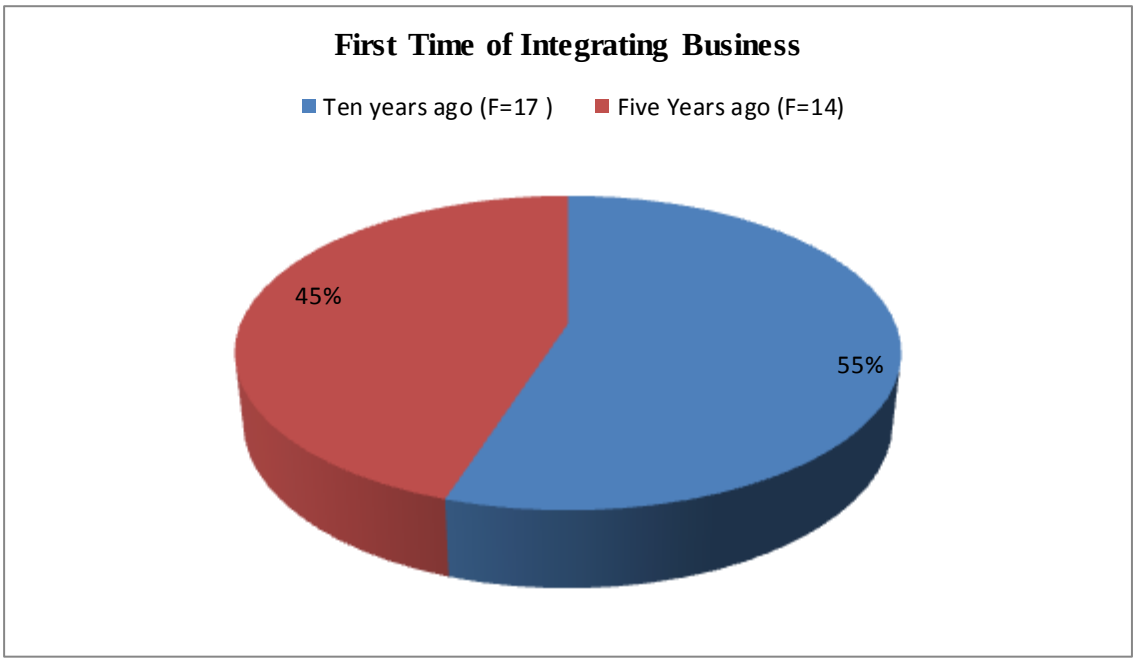
	Frequency	Percent
Less than 10 years	1	3.2
More than 10 years	30	96.8
Total	31	100.0

The researcher sought to establish the duration the respective commercial banks had been in operation. The findings as illustrated in Table 4.1 above confirm that 96.8% of the commercial banks in Kenya have been in operation for more than 10 years. This is an indication that the

banks have interacted with integration technology for more than 10 years since the same has been available for more than two decades now.

Figure 4.1: First time of Integrating Business

4.3 General Information



It was necessary for the study to establish the first time the various commercial banks in Kenya integrated their business functions. This was to assist the researcher to establish whether the banks have implemented integration for a duration long enough to be able to monitor its effects on the performance of their supply chains. The findings represented in the pie chart above confirm that 55% of the respondents indicated that commercial banks had integrated their business functions for more than 10 years. It is also clear that 45% of the respondents confirmed that their banks had integrated for more than 5 years. However, there were no banks that had

integrated for more than 15 years. This is an indication that integration among commercial banks in Kenya is less than 15 years old.

Table 4.2: Position of the respondent

Position of Respondent

	Frequency	Percent
Supply chain manager	16	51.6
Assistant supply chain manager	7	22.6
Supply chain officer	5	16.1
Operations manager	2	6.5
Procurement manager	1	3.2
Total	31	100.0

Table 4.3: Duration served

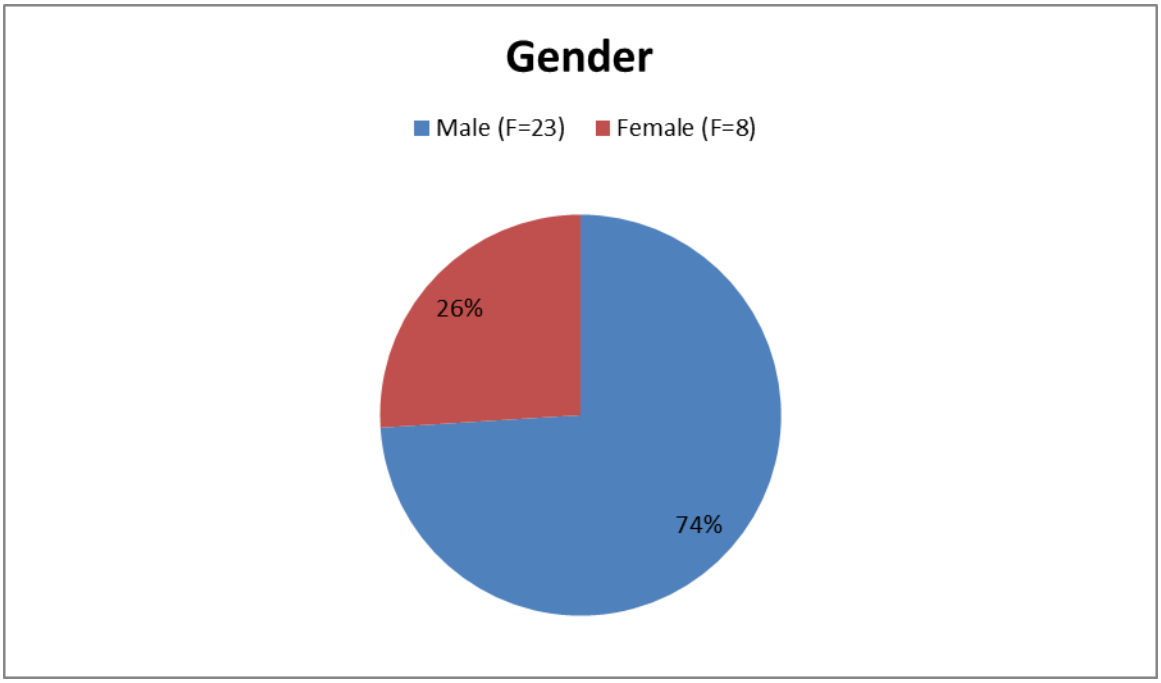
Duration served in position

	Frequency	Percent
Less than 5 years	14	45.2
5-10 years	10	32.3
10-15 years	5	16.1
More than 15 years	2	6.5
Total	31	100.0

The respondents were asked to indicate the positions they held in the respective commercial banks and the duration they had served in those positions. They were provided with options to choose from. The findings in Table 4.2 and 4.3 above confirm that 51.6% of the respondents who

participated in the study are supply chain managers. This confirms that they are well conversant with business integration and supply chain performance issues. It was also evident that 45.2% of the respondents have served in their respective positions for less than five years. The supply chain concept is relatively new in Kenya and this probably explains the reason why most of the respondents had served as supply chain managers for such a short duration of time.

Figure 4.2: Gender of the respondent



It was also evident from the findings of the study that most of the supply chain managers who participated in the study are males as represented by 74% of the respondents as illustrated in the pie chart above. This is a clear indication that most commercial banks in Kenya have more male supply chain managers than females.

4.4 Extent of Business Integration among Commercial Banks in Kenya

The study sought to establish the extent to which commercial banks in Kenya had integrated their business processes. A number of questions were fronted to the respondents who gave their responses on a scale of 1-5 where 1 represents to a very large extent and 5 very small extent.

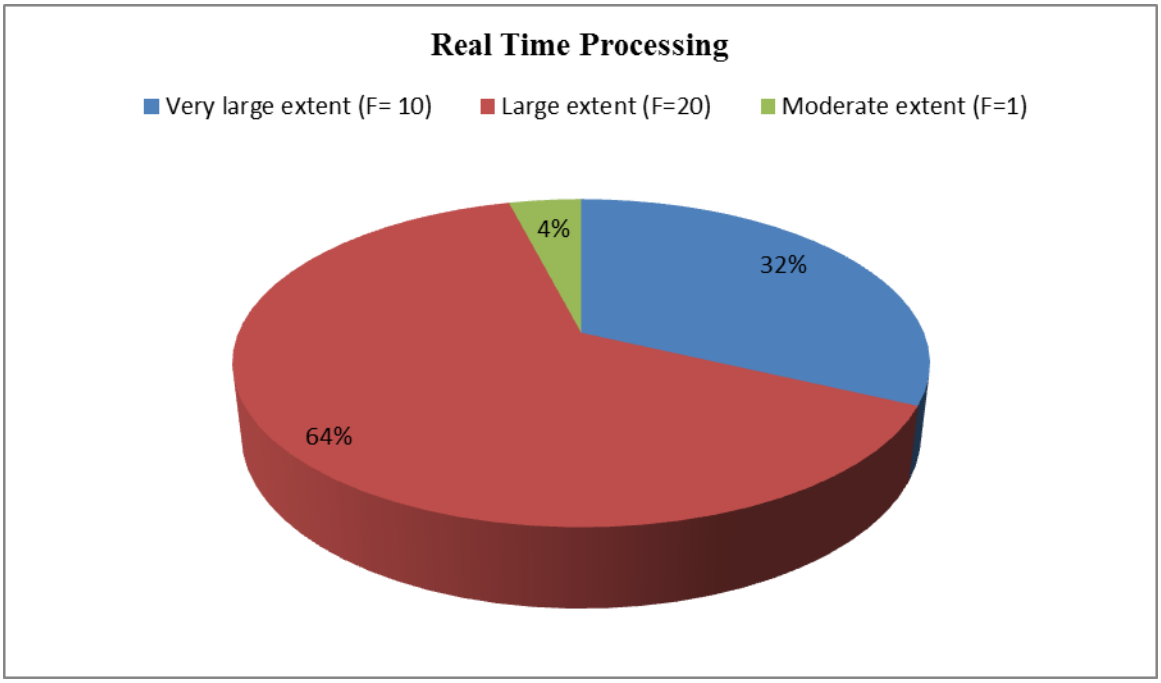
Table 4.4: Information sharing

Departments share information

	Frequency	Percent
To a very large extent	15	48.4
Large extent	14	45.2
Moderate extent	1	3.2
small extent	1	3.2
Total	31	100.0

The study sought to establish whether the system that is installed in the commercial banks enables various departments within the bank to share information. It is clear from the findings in Table 4.4 that 93.6% of the participating respondents indicated that they are able to share information to a very large extent and to a large extent respectively. This confirms that most of the commercial banks in Kenya have integrated their business functions and this has enabled them to share information electronically.

Figure 4.3: Real time processing of transactions



The researcher sought the views of the respondents on whether their respective banks are able to perform real time processing of all business transactions that they undertake. The results as illustrated in figure 4.3 confirm that 64% of the commercial banks in Kenya can perform their transactions in real time to a very large extent, 32% to large extent whereas 4% to a moderate extent. This is an indication that most commercial banks have integrated their business functions that enables them to have real time transactions processing.

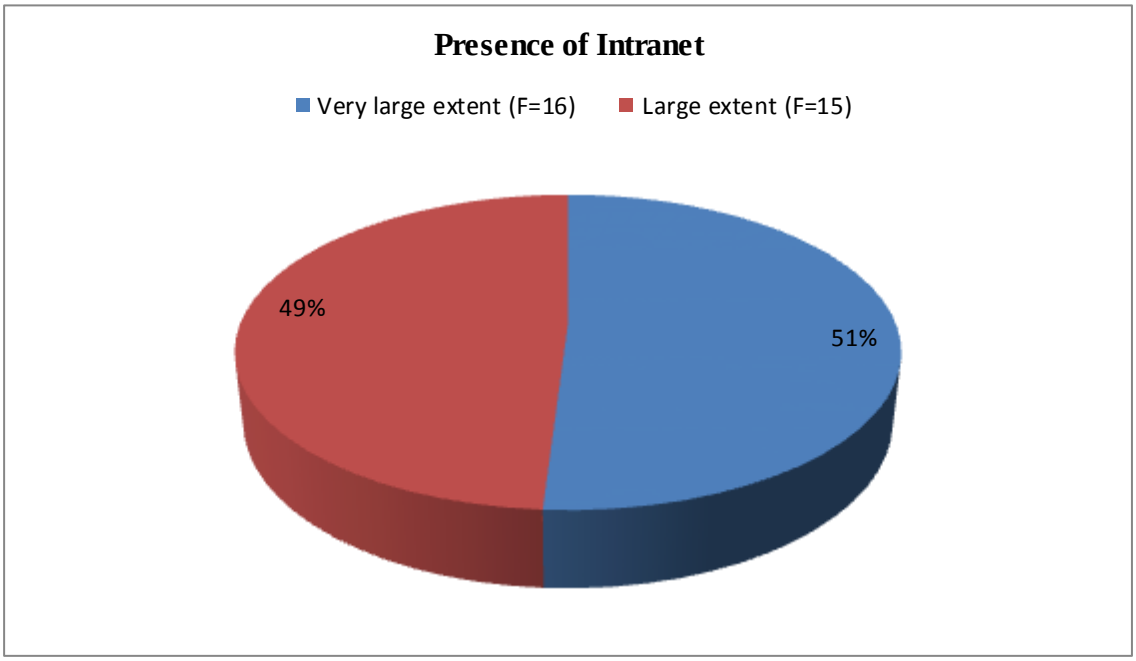
Table 4.5: Enterprise Resource Planning System links departments

There is an ERP that links departments

	Frequency	Percent
To a very large extent	11	35.5
Large extent	19	61.3
Moderate extent	1	3.2
Total	31	100.0

The respondents were also requested to confirm whether there is an enterprise resource planning system in their banks that links all the departments. The findings as seen in Table 4.5 above confirm that 96.8% of the respondents who participated in the study confirmed that they have ERP systems that were performing the function in question. An ERP system is the primary tool that assists organizations to integrate their business functions. It is therefore evident that most of the commercial banks in Kenya have integrated their business functions.

Figure 4.4: Availability of Intranet



The intranet is the internal network of an organization and it plays an important role in providing relevant information to the users. The researcher sought to find out whether commercial banks in Kenya have intranets that provide information to all users. The findings from the study indicate

that all the respondents agree that there is an intranet that provides them with information. This is a clear indication that all employees of commercial banks are able to access the same information at the same time.

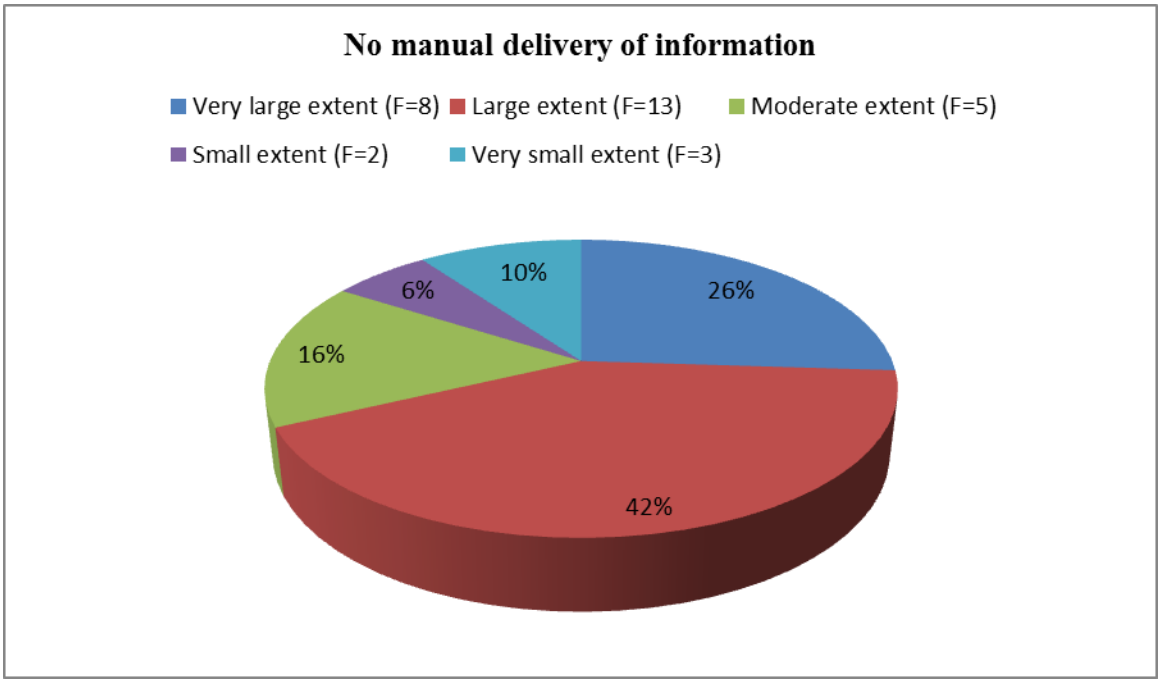
Table 4.6: Passwords to facilitate access

Passwords to facilitate staff access to system

	Frequency	Percent
To a very large extent	14	45.2
Large extent	17	54.8
Total	31	100.0

When integrating business functions through a computer based system, employees must be provided with unique usernames and passwords that will enable them to access the system. The researcher enquired from the respondents whether employees of commercial banks had been assigned usernames and passwords that enabled them to access the system. It is evident from the results that 54.8% of the respondents that at least to a large extent, employees of commercial banks can only access the system through their usernames and passwords and 45.2% agreed that to a very large extent, they can only access the system through passwords.

Figure 4.5: No manual delivery of information



The study sought to establish from the respondents whether manual delivery of information had been completely eradicated from the commercial banks. The findings illustrated in figure 4.5 above show evidence that 42% of the respondents who participated in the study confirm that manual information delivery no longer exists among commercial banks. This is an indication that all information is relayed electronically through the computer systems in place.

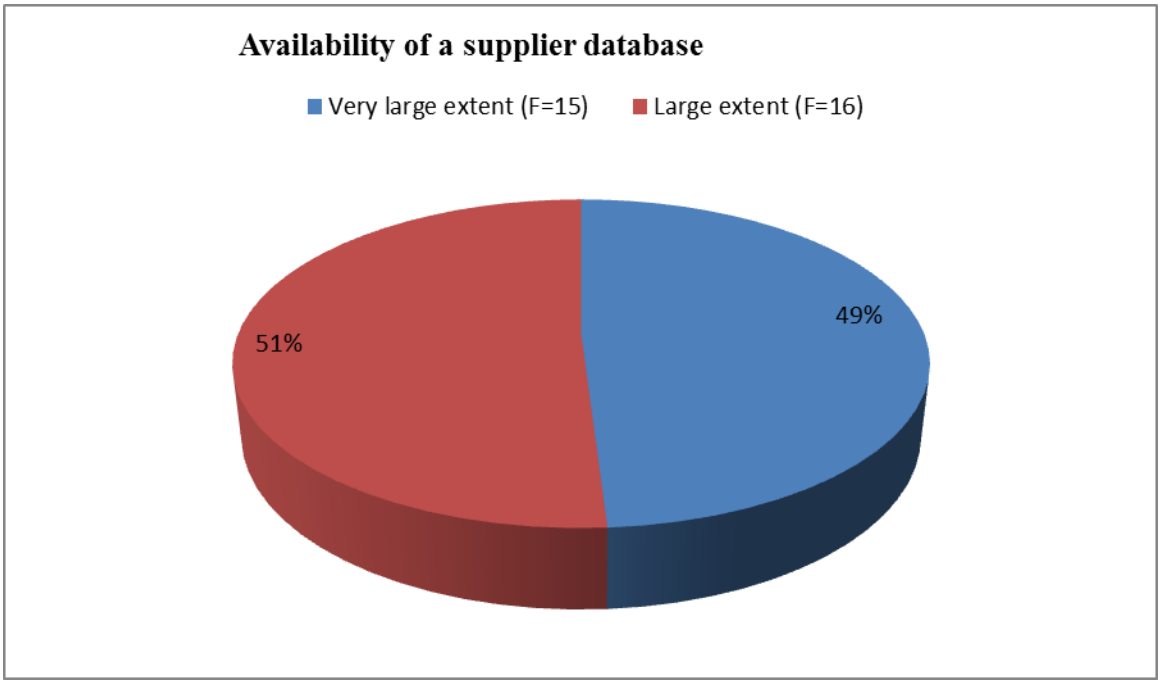
Table 4.7: Online authorization of transactions

Online authorization of transactions

	Frequency	Percent
To a very large extent	9	29.0
Large extent	14	45.2
Moderate extent	2	6.5
small extent	5	16.1
Very small extent	1	3.2
Total	31	100.0

One of the indicators of business integration is the ability of an organization to conduct and authorize transactions online. The study sought the views of the respondents whether commercial banks in Kenya are able to conduct transactions and have them authorized online. The results in Table 4.7 above confirm that 74.2% of the respondents indicate that transactions are authorized online in the respective banks. This implies that most of the commercial banks have in place an integrated system that enables them to process transactions online.

Figure 4.6: Availability of a supplier database



When organizations integrate their business functions, they can easily maintain a database that can provide the required information for decision making. The study sought to know from the respondents whether commercial banks in Kenya maintain a database of suppliers. It is evident from the findings that all the commercial banks in Kenya maintain a supplier database. The pie

chart above confirms this position since 51% of the respondents indicates that at least to a large extent there is a supplier database while 49% indicate that to a very large extent there is a supplier database. This is very significant in supplier relationship management and in achieving efficiency in the supply chain.

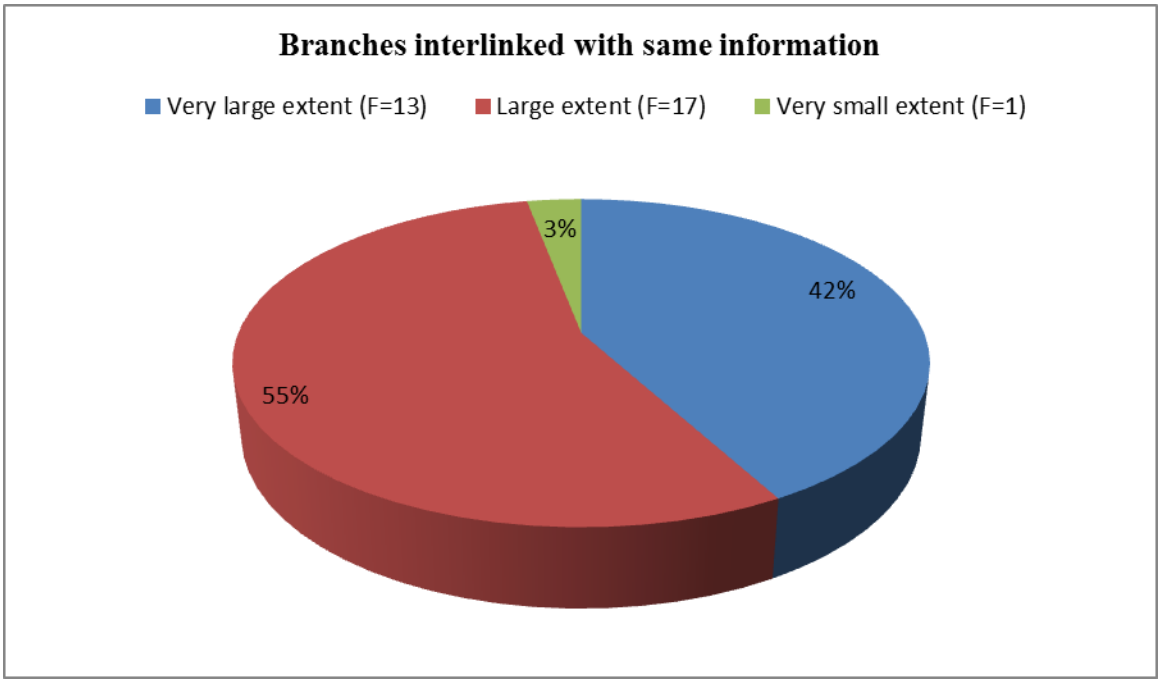
Table 4.8: Non- uniformity of information

No uniformity of information

	Frequency	Percent
To a very large extent	2	6.5
Large extent	3	9.7
Moderate extent	15	48.4
small extent	5	16.1
Very small extent	6	19.4
Total	31	100.0

The essence of business integration is to provide employees of all departments within an organization the opportunity to access uniform information for the purpose of real time processing of transactions. The researcher sought the views of the respondents on whether there was non-uniformity of information. It is evident that 83.9% of the respondents were between moderate extent to very small extent. This is an indication that there is uniformity of information in the commercial banks. However, the respondents indicated that all the users in a bank do not require the same information hence the reason why they will access relevant information only.

Figure 4.7: Branches interlinked with same information



The study sought to establish whether all the branches of respective commercial banks in Kenya are interlinked with the same information. The findings from the study as illustrated above confirm that 97% of the respondents confirm that branches are interlinked with the same information. This is an indication that they are able to share information and make uniform decisions based on the information available.

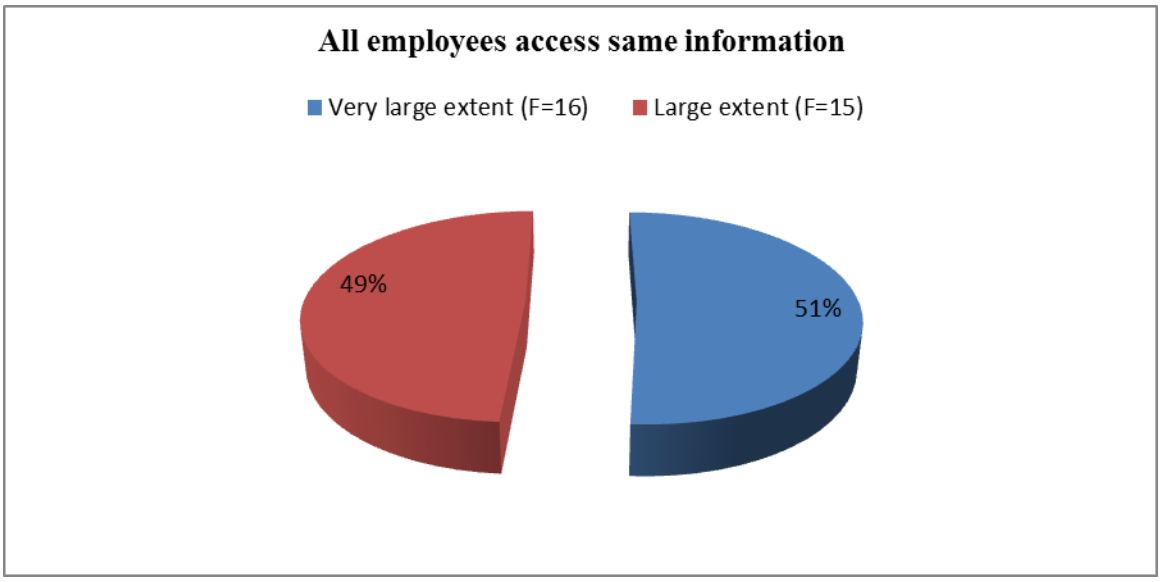
Table 4.9: Decisions made based on available online information

Decisions based on available online data

	Frequency	Percent
To a very large extent	15	48.4
Large extent	16	51.6
Total	31	100.0

Integration of business functions ensures that organizations have accessibility to up to date online information that can assist in the decision making process. The study sought the views of the respondents whether commercial banks make decisions based on the available online information. It is evident that all the respondents agree that banks make decisions to a large extent based on the available online dat. This is an indication that business integration among commercial banks enables them to update their information in real time thus making it valid for decision making.

Figure 4.8: All employees access same information



The researcher sought to find out from the respondents whether all employees of commercial banks are able to access similar information. All the respondents indicate that employees are indeed able to do so. This is evident from the 51% for those who indicated very large extent and 49% who indicated large extent.

4.5 Relationship between Integration and Supply Chain Performance

The study also sought to determine the relationship that exists between integration of business functions among commercial banks in Kenya and the performance of their supply chains. The researcher conducted a regression analysis to assist explain this relationship. The study adopted the following linear regression model to depict the expected relationship between the above variables: $S=a + b_1 x_1 + b_2 x_2 + b_3 x_3 + b_4 x_4 + e$. Where: S= Supply chain performance which was measured using the responses on the effect of integration on supply chain performance. ; a= the S intercept that is the value of Y when x is zero; b_1, b_2, b_3, and b_4, are regression weights attached to the variables; x_1 = Information sharing, x_2 = faster decision making, x_3 = Supplier relationship management and x_4 = Efficiency in supply chain. All the four independent variables were also measured using the responses on each of the variables obtained from the respondents. The results are illustrated and explained next.

4.6 t test for coefficients

Table 4.10: COEFFICIENTS

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations		
		B	Std. Error	Beta			Zero-order	Partial	Part
1	(Constant)	-.011	.185		-.061	.952			
	Information sharing improves supply chain performance	.277	.174	.271	1.592	.124	.743	.298	.143
	On time supply chain decisions	-.030	.144	-.031	-.208	.837	.615	-.041	-.019
	Better supplier relationship management	.137	.123	.138	1.117	.274	.490	.214	.101
	Efficiency in supply chain	.620	.154	.620	4.031	.000	.870	.620	.363

Where: x_1 = Information sharing; x_2 = faster decision making; x_3 = Supplier relationship management and x_4 = Efficiency in supply.

Using a significance level of 5%, any variable having a significant value greater than 5% is not statistically significant. These are x_1 (12.4%), x_2 (83.7%), x_3 (27.4%)x_4 (0%). Only x_4 is statistically significant (0%)

This means that efficiency in supply chain is a suitable predictor of Y. This means that for every unit increase in measure of efficiency, the measure of performance increases by 0.62 units.

4.7 coefficient of determination,r^2

Table 4.11: MODEL SUMMARY

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.888(a)	.789	.757	.250	.789	24.301	4	26	.000

Table 4.12 indicates that there is an R^2 value of 78.9%. This value indicates that the four independent variables explain 78.9% of the variance in the performance of supply chains of commercial banks. These independent variables are the benefits that accrue as a result of business integration. It is clear that they contribute to a large extent to the level of performance that is achieved in the supply chains of commercial banks in Kenya. It therefore suffices to

conclude that business integration is essential in enhancing the performance of supply chains given that the unexplained variance is only 21.1% .

4.8 f test for the full model

Table 4.12: ANOVA TABLE

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6.057	4	1.514	24.301	.000(a)
	Residual	1.620	26	.062		
	Total	7.677	30			

For 5% level of significance, the numerator df=4 and denominator df=26,critical F value is 2.74 ,table 4.11 shows computed F value as 24.301. Hence, the regression model is overally statistically significant, meaning that it is a suitable prediction model for explaining how business integration affects the supply chain performance and the extent.

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CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This study was carried out to establish the effect of business integration on the supply chain performance of commercial banks in Kenya. The study had two objectives: to establish the extent to which commercial banks in Kenya have integrated their business functions and to determine the relationship between business integration and supply chain performance. This chapter presents the summary of findings for the two objectives mentioned above, the conclusions, recommendations made based on .findings and the suggestions on areas that need to be researched as far as this concept is concerned.

5.2 Summary of Findings

The study established that most commercial banks that operate in Kenya have been in existence for more than ten years. They were also found to have implemented integration of their business functions for a period of more than ten years. The study confirmed that most commercial banks in Kenya have installed a computer system that enables the various departments within the banks to be able to access and share similar information. This ability has largely assisted the commercial banks to be able to make faster decisions that render timely services to their customers. It also enables the banks to do real time processing of almost all the transactions they carry out. This is in line with the position held by Powell (2003) who indicates that organizations integrate to reap the benefits of real time transactions.

It was also clear from the study that as part of the business integration process, commercial banks in Kenya have been able to introduce intranets that serve as internal communication channels among the employees. The intranets provide information for employees so that they can be able to make informed decisions. This confirms the argument by Awad & Nassar (2010a) who assert that the business environment is now moving into an era driven by the need to improve business processes and to provide increasingly sophisticated capabilities to customers and suppliers to improve how business is conducted through internet and intranets. It was also clear that in order to facilitate access to the computer system, employees are allocated unique passwords and usernames that enable them log into the system. The main purpose of this is to protect the confidentiality of information for the bank clients.

The study established that most of the transactions that carried out by the commercial banks in Kenya are authorized online. This implies that there is a total reduction in paperwork hence transactions can be done electronically and in real time. It was also evident that the commercial banks maintain a database of all their suppliers in order to enhance good supplier relationship management and efficiency in their supply chain. Maintaining such a database has been made possible through business integration. Most of the respondents also confirmed that most of the commercial banks' branches are interlinked with similar information. This enables the branches to carry out transactions using the available online information since it is up to date. Sharing of similar information helps to overcome the challenge stated by Fabbe-Costes, & Jahre, (2008) that without enterprise integration, companies will continue to be constrained by the inability to communicate and manage the flow of information and business processes across the enterprise. The real-time enterprise is not possible without enterprise integration.

The employees of various commercial banks in Kenya were also found to access similar information. This is attributed to real processing of data and dissemination that enables the employees to access uniform information. Most of the decisions within commercial banks are also made based on the available online information since it is believed to be up to date, timely and valid for the decision making process. The study also confirmed that even though business integration enables access to real time information, not everyone can access the same information. Employees only access information that is relevant to their job description. It was also clear that most commercial banks had installed an Enterprise Resource Planning system as primary tool of integrating all the business functions.

It was also clear from the study that the four independent variables of Information sharing improves supply chain performance; on time supply chain decisions; better supplier relationship management and efficiency in supply chain management explain 78.9% of the variance in supply chain management. However, efficiency in supply chain management explains the highest variance since it has a slope that is higher and a sig. value that is equal to zero.

5.3 Conclusions

The study concludes that most commercial banks in Kenya have been embracing business integration for more ten years. Business integration has assisted the commercial banks to enhance the performance of their supply chains. This is supported by the results from a regression analysis conducted that indicated that there is a strong relationship between supply chain performance and business integration.

5.4 Recommendations

The study has confirmed that business integration is very significant in enhancing the performance of supply chains. All banks and other organizations should be advised to embrace the concept so that they can be able to reap the benefits of integrated business functions.

It is also evident that business integration has enabled commercial banks to achieve real time processing of transactions. Other organizations should also be encouraged to adopt the same in order to provide faster and efficient services to their customers.

5.5 Limitations of the Study

It was such an uphill task for the researcher to convince the respondents to participate in the study. Commercial banks are known to work under very strict confidentiality in order to secure any unauthorized access to information. Most of the respondents agreed to participate on condition that the information will not be divulged to any other party other than for academic purposes only.

The findings of this study and application thereof are limited to commercial banks in Kenya. They may not be applicable directly to other organizations operating outside the Kenyan banking industry. It is therefore important to note that they can only be used for comparative purposes and not any direct application in another country.

5.6 Suggestions for Further Research

A comparative study can be carried out to establish whether business integration in other countries is able to yield the same effect on supply chain performance of commercial banks. This will assist in comparing with the Kenyan experience and provide concrete facts upon which reliable conclusions can be made.

Business integration largely relies on the ERP system as the primary integration tool. Information technology is very dynamic and keeps on changing hence he need to replicate this study in line with major trends that may affect the performance of supply chains among commercial banks.

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Appendices

Appendix I: Research Questionnaire

Introduction

This questionnaire has been designed for the sole purpose of collecting data on the effect of business integration on supply chain performance among commercial banks in Kenya. The data collected will be treated with a very high degree of confidentiality and it is meant for academic purpose only.

Section A: General Information

1. Duration bank has been in operation Less than 10 years ☐ More than 10 years ☐
2. When did you first integrate your business processes

   Five years ago ☐ Ten years ago ☐ Fifteen years ago ☐
3. What is your position in this bank
   a) Supply chain manager
   b) Assistant supply chain manager
   c) Supply chain officer
   d) Other (specify)……..
4. How long have you been in this position
   a) Less than 5 years
   b) 5 to 10 years
   c) 10 to 15 years
   d) Above 15 years
5. Gender
   a) Male
   b) Female

Section B: Extent of Business integration among commercial banks in Kenya

Please indicate the extent to which you agree with the following statements on the extent of business integration in your bank. The scale below will be applicable:

1= To a very large extent 2= Large extent 3= moderate extent 4= small extent 5=very small extent.

No	Statement	1	2	3	4	5
1	All departments share same information					
2	Processing of transactions is real time					
3	There is an ERP in place to link all departments					
4	There is an intranet that provides all the necessary internal information					
5	Each staff has a password that facilitates logging in to bank intranet					
6	No manual delivery of information					
7	Authorization of transactions is done online					
8	Bank maintains database of all potential suppliers					
9	Information in the bank has no uniformity nor is it up to date					
10	All bank branches are interlinked with same information					
11	Decisions are made using available accessible information in bank database					
12	All employees access same information regardless of where they are					

13. Any other? Please state

……

……

Section B: Relationship between business integration and supply chain performance

Please indicate the extent to which you concur with the following statements concerning the relationship that exists between integration and the performance of your supply chain.

Use the scale of: 1= Strongly agree 2= Agree 3= Undecided 4= Disagree 5= Strongly disagree

No	Statement	1	2	3	4	5
1	Sharing of information improves supply chain performance					
2	Information moves faster and this reduces lead time in the organization					
3	Orders and deliveries are easily processed to avoid delays					
4	Supply chain decisions are made in time					
5	Organization is able to contact suppliers quickly					
6	Database of suppliers can easily be maintained					
7	Leads to better supplier relationship management					
8	Monitoring stock movement is made easier					
9	It assists in improving the quality of services offered to the customers					
10	There is efficiency in the entire supply chain					
11	In general integration has enhanced the performance of our supply chain					

13. Any other? Please indicate.

……
……
……

Thank you for participating

Appendix II: Commercial Banks in Kenya

COMMERCIAL BANKS IN KENYA	
1	African Banking Corporation Ltd.
2	Bank of Africa Kenya Ltd.
3	Bank of Baroda (K) Ltd.
4	Bank of India
5	Barclays Bank of Kenya Ltd.
6	CFC Stanbic Bank Ltd.
7	Charterhouse Bank Ltd
8	Chase Bank (K) Ltd.
9	Citibank N.A Kenya
10	Commercial Bank of Africa Ltd.
11	Consolidated Bank of Kenya Ltd.
12	Co-operative Bank of Kenya Ltd.
13	Credit Bank Ltd.
14	Development Bank of Kenya Ltd.
15	Diamond Trust Bank Kenya Ltd.
16	Dubai Bank Kenya Ltd.
17	Ecobank Kenya Ltd
18	Equatorial Commercial Bank Ltd.
19	Equity Bank Ltd.
20	Family Bank Limited
21	Fidelity Commercial Bank Ltd

22	Fina Bank Ltd
23	First community Bank Limited
24	Giro Commercial Bank Ltd.
25	Guardian Bank Ltd
26	Gulf African Bank Limited
27	Habib Bank A.G Zurich
28	Habib Bank Ltd.
29	Imperial Bank Ltd
30	I & M Bank Ltd
31	Jamii Bora Bank Limited.
32	Kenya Commercial Bank Ltd
33	K-Rep Bank Ltd
34	Middle East Bank (K) Ltd
35	National Bank of Kenya Ltd
36	NIC Bank Ltd
37	Oriental Commercial Bank Ltd
38	Paramount Universal Bank Ltd
39	Prime Bank Ltd
40	Standard Chartered Bank Kenya Ltd
41	Trans-National Bank Ltd
42	UBA Kenya Bank Limited
43	Victoria Commercial Bank Ltd

Source: Central Bank of Kenya (2013)