

**ADDIS ABABA UNIVERSITY  
SCHOOL OF COMMERCE**



**ASSESSMENT OF PRODUCT SUPPLY CHAIN MANAGEMENT  
FOR MARKET COMPETATIVE ADVANTAGE IN CASE OF  
YES FOOD AND BEVERAGE PLC  
IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR  
THE AWARD OF MASTER OF ARTS  
DEGREE IN LOGISTICS AND SUPPLY CHAIN  
MANAGEMENT**

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# **ADDIS ABABA UNIVERSITY SCHOOL OF COMMERCE**

## **Assessment of Product Supply Chain for Market Competitiveness**

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## ***DECLARATION***

I, the undersigned, declare that, this study “**ASSESSMENT OF PRODUCT SUPPLY CHAIN FOR MARKET COMPETITIVENESS**” is my original work and has not been presented for a degree in any other university, and that all sources of materials used for the study have been duly acknowledged.

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## **Acronyms**

CLM: - Council of Logistics Management

CR: - Customer Relation

EFA: - Exploratory Factor Analysis

ILP: - Internal Lean Practices

IT: - Information technology

LIQ: - Level of Information Quality

LIs: - Level of Information Sharing

OC: - Organizational culture

OMS:-Outsourcing and Multi-Suppliers

OP: - Operational Performance

OrP: - Organizational Performance

RBV: - Resource-Based View

ROI: - Return on Investment

RV: - Relational View

SCLP: - Strategic Collaboration and Lean Practices

SCM: - Supply Chain Management

SMEs: - Small and Micro Enterprises

SSP: - strategic Supplier Partnership

## ***Abstract***

*Effective supply chain management (SCM) has become a potentially valuable way of securing competitive advantage through enhancing operational and improving organizational performances since competition is no longer between organizations, but among supply chains. This research conceptualizes and develops five dimensions of SCM practice (strategic supplier partnership, customer relationship, level of information sharing, quality of information sharing, and internal lean practices) and tests the relationships between SCM practices, operational performance, and organizational performance. The data for the study was collected from 80 employees of Yes Natural Spring Water. The relationships proposed in the framework were tested using Pearson correlation, and the causal relations were analyzed using regression analysis. From the result of the analysis it is concluded that there is strong relationship between SCM practices, operational performance and organizational performance. Besides, SCM practices have an influence both on operational performance and organizational performance. On the other hand, operational performance has also an influence on organizational performance. Therefore, in order to achieve advancement in marketing and financial performance in the long-run through enhancing organizational performance, it is better for the organization to give due emphasis to the constructs of SCM practices and the measures of operational performance.*

***Keyword:*** *supply chain management, operational performance, organizational performance*

# CHAPTER ONE

## INTRODUCTION

### 1. Background of the Study

One of the most significant changes in the paradigm of modern business management is that individual businesses no longer compete as solely autonomous entities, but rather as supply chains. In this emerging competitive environment, the ultimate success of the business will depend on management's ability to integrate the company's intricate network of business relationships (Hassanzadeh, 2010). Effective supply chain management (SCM) has become a potentially valuable way of securing competitive advantage and improving organizational performance since competition is no longer between organizations, but among supply chains (Niknia, 2007).

The leading companies devise and evaluate their marketing strategy to survive and keep up with the rapid transformations in dynamic and competitive environment. Along with the globalization and the development of technologies, more and more companies have realized how complex the competitive situation is today. Increasingly, in order to respond to the highly competitive environment, many companies have to look for an approach to develop themselves from "inside" to "outside" (Ahmed & Rafiq, 2003).

Bottling industry as one of the manufacturing industries, consists a network of supplier, distribution and logistics facilities of various products. Manufacturing as one of the big industries in Ethiopia plays an important role accounting for merely 13.3% of GDP 2006/07. It is mainly dominated by food, beverage, textile, hide skins and leather industry (MOFED).

The sector is primarily oriented toward processing of agricultural commodities. The major manufactured export products comprise clothing and apparel, canned & frozen meat, semi processed hide and skins, sugar & molasses, footwear, tobacco, beverage, oil palm bees wax and leather and leather products (Rahel 2007).

The sector is still struggling with challenges that gripped it for decades with inadequate and poor quality imported raw materials and technologies along with low level of technical skills topping the list. The immediate consequences of these challenges in the manufacturing industry is low local investment, low productivity, weak international/domestically competitiveness, weak technology transfer, low capacity utilization, high investment and production costs and slow progress in the industrialization (Rahel 2007).

The food and beverages sector is one of the main components of Ethiopia's manufacturing sector. Based on official industrial statistics, total employment can be estimated at some 53,000 while the value of sales is almost 7 billion Birr. Value added generated by the sector is in the order of Birr 3 billion, equivalent to little less than 2% of the GDP. The sector includes a wide variety of activities, mostly linked to the transformation of domestically produced agricultural products. In certain cases, reliance is made on imported products. For the purposes of this study, the attention was focused on one sub-sector, namely: bottled mineral water. It was in 1999 that the first bottled water highland springs, was introduced to Ethiopia, by the Appex bottling company a pioneer in the industry established by ErmiassAmelga partners. Now there are 32 water bottling companies producing either mineral or spring water in all corners of the country. Investors in to the sector claim that there is a huge demand in the market for bottled water, which is what led to the emergence of so many brands (MOFED, 2007).

Investors in the sector claim that there is a huge demand in the market for bottled water, which is what led to the emergence of so many brands. Currently one of the leader brands in the market is YES brand of food and beverage factory. The emergence of this industry is creating competitive market in bottling industry. Competitive market is the effective and dynamic ways of utilizing marketing programs and strategies to achieve marketing goals; the instruments of which include package planning, product designing, pricing, promotion, and distribution. Inter-industry exchange of goods and services was later added with the objectives of achieving greater market shares (London Chartered Institute of Marketing CIM, 2005).

The purpose of this study is to analyze the food & beverage industry in case of YES brand. The study tries to analyze the production and distribution system. Specifically the supply and competitive advantage on the market, are directly related which means when production of supply increase market competitiveness could also increase and vice versa. The study will use quantitative research design and to collect relevant primary data questionnaire will be used by taking a sample of 100-150 from the target population. The study will try to come up with better solution to the company problems and for the improvement of its performance and to increase its market share & profitability.

## **1.2 Statement of the Problem**

Many organizations today are forced to increase their market share in order to survive and sustain growth objectives. At the same time, these same organizations must defend their domestic market share from their competitors. The challenge is how to expand the logistics and distribution network, in order to ship products to customers who demand them in a dynamic and rapidly changing set of channels. Strategic positioning of inventories is essential, so that the products are available when the customer wants them (Handfield, 2002).

Most companies think that selling means getting new customers that are part of the job of course but truly successful companies thrive on their ability to keep the customer they have already acquired. YES Water Company gives priority to new site markets like condominiums in different villages by leaving stable market. This will give opportunity to competitors to strengthen themselves. Most important aspects of the overall marketing environment are competition (Bovee and Thill, 1992). They defined competition as the rivalry among sellers trying to increase sales, profits or market shares while addressing the same set of consumers. Competition is no longer one company against other companies, but one supply chain against other supply chains. Supply chain management is an approach that allows companies to respond to these challenges. The main purpose of any supply chain management system is to get the right product, in the right quantity, to the right place, at the right time.

Long-term competitiveness therefore depends on how well the company meets customer preferences in terms of service, cost, quality, and flexibility, by designing the supply chain, which will be more effective and efficient than the competitors (Longitudes 04, 2004, p.8). In the

case of this study YES bottled water company's product may be substituted with competitors' products due to lack of the availability of the product in some domestic markets like in Merkato ,Kolfe in A.A and Jijiga and Asayita in regional towns.

According to the Customs Authority, External Trade Statistics, 2006 – 2015 and CSA, Statistical Abstract, various years during the period (2006 – 2015) domestic production, imports and total supply averaged at 404,950 hectoliters, 789 hectoliters and 405,740 hectoliters, respectively. Thus, domestic production, on the average, accounted for 99.8 percent of the total supply of purified water in the domestic market, revealing the relatively limited share of imports (0.20%) in the total supply of the product. During the period 2006 – 2015, the maximum total supply (apparent consumption) of purified water was 448,983 hectoliters in the year 2015, while a minimum of 376,755 hectoliters was registered in year 2006. In the remaining years, apparent consumption was fluctuating between these two extremes quantities. In the consumption of purified water is associated with the urban population, the demand for the product grows at the rate of 7% which corresponds to the annual growth rate of urbanization in the Country. Accordingly, the present effective demand for purified water is, thus, estimated at 435,688 hectoliters.

There are six water brands in Ethiopia that are certified for conformity of the standards required for bottled water, out of the 32 bottled water companies in the sector. The certified companies, Great Abyssinia Plc, the bottler of Abyssinia spring water ; AskuPlc, bottler of AquaAddis spring water; Yes Brands Food & Beverage Plc, bottler of Yes spring water; Herbal Trade & Industry Plc, bottler of SPA water, Eden Business S.C, bottler of Eden water and Origin Food & Beverage Factory, the bottler of Origin water.the industry average annual growth rate was 5%. As the Yetneberk Tadele Catalyst Principal Partners has acquired a 50pc stake in the Yes Brands Food & Beverages Plc, bottler of Yes spring water the production growth rate during the year 2015 was 2.2%, on the bases of such information YES bottling company low production rate compare with total growth rate of demands.

According to the research conducted by Ministry of Industry (2003E.C), even though the industry benefits from duty- free privileges for the importation of machinery and spare parts, it has limited value since the manufacturers are not productive enough. This shows that the food and beverage industries are facing problems beyond finance or capacity. Among the major

problems contributing for the poor performance of this industry are mismanagement and lack of adequate knowledge of managers in supply chain management.

To alleviate problems facing the company market competitiveness, supply chain integration needs to be considered as a performance- improving approach and its effect needs investigation on supply chain performance. As far as the knowledge of the researcher is concerned, there is no empirical study that is conducted in the area of SCM practices and firms performance (i.e. from perspectives of strategic suppliers partnership, customers relationships, level and quality of information sharing, and internal lean practices on operational and organizational performances) which incorporate upper and down streams on water packing firms in Ethiopia particularly on Yes Natural spring water. Therefore, since the effort to achieve generalization of the causal relationship between SCM practices and performance calls for empirical confirmation in diverse environments, especially emerging economies, this paper is to contribute to the debate by testing the relationship between SCM measurements and operational and organizational performance in the case company.

### **1.3. Research Question**

The purpose of this thesis paper is to investigate the effect of supply chain integration that is; internal, supplier, and customer integration on company's product quality and competitive position. Therefore, the following research questions are developed to be answer as a result of the study:

- How does the integration of supply chain within the trade partners?
- How does the supply chain integration (internal, supplier and customer integration) affect the company's product quality?
- How does the supply chain integration (internal, supplier and customer integration) affect the company's competitive position?

## **1.4 Objectives of Study**

### **1.4.1 General Objective**

The purpose of this study is to determine the underlying dimensions of supply chain management (SCM) practices and to empirically test a framework identifying the relationships among SCM practices, operational performance and SCM-related organizational performance with special emphasis on the case company.

### **1.4.2 Specific Objectives**

The specific objectives of the study are:-

1. To assess the relationship between supply chain management practices and operational performance.
2. To assess the relationship between supply chain management practices and organizational performance.
3. To assess the relationship between operational performance and long-term organizational performance.

## **1.5 Research Hypotheses**

Prior studies have indicated that the various components of SCM practices (such as information sharing) have an impact on organizational performance. For example, Information sharing leads to high levels of supply chain integration (Li *et al.*, 2006) by enabling organizations to make dependable delivery and introduce products to the market quickly. The higher level of information sharing is associated with the lower total cost, the higher-order fulfillment rate and the shorter-order cycle time (Moslem, 2013). Based on these arguments it is hypothesized that:

**Hypothesis1:** There is relationship between SCM practices and organizational performance.

Others studies have indicated that the various components of SCM practices (such as strategic supplier partnership) have an impact on various aspects of operational performance which is source of competitive advantage (such as price/cost) Moslem *et al.* (2013). For example, strategic supplier partnership can improve supplier performance, reduce time to market Moslem *et al.* (2013) and increase the level of customer responsiveness and satisfaction Power (2005). Based on this arguments it is hypothesized that.



**Hypothesis 2:** There is relationship between SCM practices and operational performance.

Having a competitive advantage generally suggests that an organization can have one or more of the following capabilities when compared to its competitors: lower prices, higher quality, higher dependability, and shorter delivery time. These capabilities will, in turn, enhance the organization's overall performance (Mentzer *et al.*, 2001) Based on this it is hypothesized that:

**Hypothesis 3:** There is relationship between operational performance and organizational performance.

### **1.6 Significance of the Study**

First and foremost this study was important to the student researcher in doing the cross match of the theoretical aspect with the real practices. It will also be useful for other researchers who may be interested to conduct research in similar topics. In addition as a research, the primary merits of the study goes to the university academics. Since there are few studies in the area, it gives additional insight to distribution system in the supply chain process. The organization, which is taken up as a case study, get ideas on gaining market share through improved. And it helps the organization to identify the dimensions that need further improvement so as to benefit more from the demand of domestic market. The study creates awareness to the organization about strength, weakness, opportunity and threat to improve overall distribution system in order to gaining better market share than competitors.

### **1.7 Scope of the Study**

SCM encompasses vast areas of managerial practices. However, it is difficult and Unmanageable to conduct the study in all areas that summarizes SCM in terms of time, finance, and research manageability. Therefore, the scope of this study is delimited to SCM practices and firm performance of one selected tannery processing firm in terms of topic.

The subject scope of this study is also delimited to the company's point of reference towards strategic supplier partnership, customer relationship, level of information sharing, quality of information sharing and internal lean practice. In terms of firm performance the study was delimited to operational (which was measured by price/ cost, quality, delivery dependability and time to market) and organizational performance (which incorporate market share, return on investment, the growth of market share, the growth of sales, growth in return on investment, profit margin on sales and overall competitive position).

The area of the study is also delimited to the case company i.e., YES food & beverage plc, through assessing how the company interact with their upper stream (suppliers) and the down streams of the supply chain.

### **1.8 Limitations of the Study**

It is difficult to cover entire domain of supply chain just in one study. The research sample didn't incorporate all the supply chain participants namely: the suppliers and customers due to time constrained so that it couldn't be generalized/applied to the complete chain of the company under investigation. On the other hand constructs of SCM are not only limited to SCM practices selected in this study. Therefore it is not representing all constructs that could explain SCM practices.

### **1.9 Organization of the Study**

The study was divided into five chapters in order to provide clarity and coherence on the discussion of the study. The first part of the dissertation was discussing the background, problem statement, questions and objectives and the significance and limitations.

The second chapter shall be discussing the relevance of the study in the existing literature. After the presentation of the existing related literature, the researcher shall provide a synthesis of the whole chapter in relation to the study.

The third part of the study was discussed the methods and procedures used in the study. The chapter shall comprise the presentation of the utilized techniques for data collection and research methodology. Similarly, it shall also contain a discussion on the used techniques in data analysis as well as the tools used to acquire the said data.

The fourth chapter shall be discussion of the results of the study. Data to be presented statistically treated in order to uncover the relationship of the variable involved in the study. With the said data, the chapter seeks to address the statement of the problem noted in the first chapter.

The last chapter shall comprise three sections: the summary of the major findings, conclusions of the study, and the recommendations. With the three portions, the chapter shall be able to address the problem stated in the initial chapters of the study.

Reference and annex also was provides in the final part of the paper.

## **1.10. Operational Definition of Terms**

**Supply chain management:** concept used in the research in its essence assumes that firms set up alliances with members of the same chain (i.e., upward stream, supplier, and downward stream, customer) to improve its competitive advantage revealed by superior operational performance of all chain members.

**Competitive advantage:** is directly related to desired value of the customer. Competitive advantage includes set of capabilities and factors that always demonstrated better performance of company than competitors. In other words, competitive advantage is factors or a combination of factors that led to very successful organization than other organizations in a competitive environment and competitors cannot easily imitate it.

## **CHAPTER TWO**

### **REVIEW OF THE RELATED LITRATURE**

#### **Theoretical literature**

##### **2.1 Supply Chain Management**

This chapter reviews different literatures related to the main focus of the study mainly, practice of supply chain, supply chain flexibility, competitive advantage, supply chain responsiveness, etc. The supply chain management (SCM) literature offers many variations on the same theme when defining a supply chain. The most common definition [Houlihan (1985), Stevens (1989), Lee and Billington (1993), and Lamming (1996)] is a system of suppliers, manufacturers, distributors, retailers, and customers where materials flow downstream from suppliers to customers, and information flows in both directions.

A supply chain is also a network of facilities and distribution options that functions to procure materials, transform these materials into intermediate and finished products, and distribute these finished products to customers. Supply chains exist in both service and manufacturing organizations, although the complexity of the chain may vary greatly from industry to industry and firm to firm. Realistic supply chains have multiple end products with shared components, facilities and capacities. Various modes of transportation may be considered, and the bill of materials for the end items may be both deep and large.(Duclos et al,2003)

Traditionally, marketing, distribution, planning, manufacturing, and the purchasing of organizations along the supply chain operate independently. These organizations have their own objectives and they are often conflicting. Marketing objective are high customer service and maximum sales dollars conflict with the manufacturing and distribution goals. Many manufacturing operations are designed to maximize throughput and lower costs with little consideration for the impact on inventory levels and distribution capabilities. Purchasing contracts are often negotiated with very little information beyond historical buying patterns. The result of these factors is that there is not a single, integrated plan for the organization. Clearly, there is a need for a mechanism through which these different functions can be integrated

together. Supply chain management is a strategy through which such integration can be achieved.(Van Hoek et al,1998)

Supply chain management is typically viewed to lie between fully vertically integrated firms, where the entire material flow is owned by a single firm, and where each channel member operates independently. Therefore, coordination between the various players to the chain is a key in its effective management. (Chopra S, Meindl 2004.)

The Council of Supply Chain Management Professionals (CSCMP) (2004), (formerly The Council of Logistics Management (CLM)), a leading professional organization promoting SCM practice, education, and development, defines SCM as: “SCM encompasses the planning and management of all activities involved in sourcing and procurement, conversion, and all logistics management activities, including coordination and collaboration with suppliers, intermediaries, third-party service providers, and customers” (Thus the supply chain encompasses all activities involved in the production and delivery of a final product or service, from the supplier’s supplier to the customer’s customer). In essence, supply chain management integrates supply and demand management within and across companies. CSCMP emphasizes that SCM encompasses the management of supply and demand, sourcing of raw materials and parts, manufacturing and assembly, warehousing and inventory tracking, order entry and order management, and distribution and delivery to the customer. Cooper et al. (1997) define SCM as the management and integration of the entire set of business processes that provides products, services and information that add value for customers.

Christopher (1998), New and Payne (1995), and Simchi-Levi et al. (2000) define supply chain management as “the integration of key business processes among a network of interdependent suppliers, manufacturers, distribution centers, and retailers in order to improve the flow of goods, services, and information from original suppliers to final customers, with the objectives of reducing system-wide costs while maintaining required service levels” (as cited in Stapleton et al., 2006, p. 108). The Global Supply Chain Forum (GSCF) defines supply chain management as “the integration of key business processes from end user through original suppliers, that provides products, services, and information that adds value for customers and other stakeholders” (as cited in Lambert et al., 1998, p. 1). The APICS dictionary (1995)

describes SCM as – “the processes from initial raw materials to the ultimate consumption of the finished product, linking across supplier-user companies”.

A supply chain is a network of organizations performing various processes and activities to produce value in the form of products and services for the end customer (Christopher, 1992). SCM concerns the integrated and process-oriented approach to the design, management and control of the supply chain, with the aim of producing value for the end customer, by both improving customer service and lowering cost (Bowersox and Closs, 1996; Giannoccaro and Pontrandolfo, 2002).

Lummus and Vokurka (1999) summarize SCM as “all the activities involved in delivering a product from raw material through to the customer, including sourcing raw materials and parts, manufacturing and assembly, warehousing and inventory tracking, order entry and order management, distribution across all channels, delivery to the customer, and the information systems necessary to monitor all of these activities”.

According to Li et al. (2006) the dual purpose of SCM is to improve the performance of an individual organization as well as that of the entire supply chain. CLM definitions clearly establish that SCM is more broadly conceived than merely "logistics outside the firm" (Lambert, 2004; Lambert et al., 1998, p. 2). Recent research supports this conception, portraying SCM as a strategic level concept (Stank et al., 2005). Mentzer et al. (2001) consider SCM as a systemic, strategic coordination of business functions within an organization and between organizations within the supply chain, for improving the long-term performance of individual companies and the supply chain as a whole. The emphasis of each of these definitions is on the objective of SCM to create a distinctive advantage by maximizing the total value of products and services (Stank et al., 2005).

SCM is a discipline in the early stages of evolution (Gibson et al., 2005). SCM gives a concrete form to the so called “business ecosystem idea” and provides a framework of processes for firms to engage in co-existence rather than competition (Bechtel and Jayaram, 1997). Consultants proposed the term and educators proposed the structure and theory for executing SCM. The term "supply chain management" first appeared in 1982. Around 1990, academics first described SCM from a theoretical point of view to clarify the difference from more traditional approaches

and names (such as logistics), to managing material flow and the associated information flow (Cooper et al., 1997). Cooper et al. (1997) provide a valuable review of 13 early SCM definitions: a solid argument that SCM and logistics are not identical. The term supply chain management has grown in popularity over the past two decades, with much research being done on the topic. SCM is widely being talked about in various journals and magazines related to manufacturing, distribution, marketing, customer management, or transportation (Ross, 1998).

Furthermore, Lummus and Vokurka (1999) add that SCM links all the departments within an organization as well as all its trading partners (viz: suppliers, customers, 3PL providers, and information systems providers). There is mutual collaboration and companies work together to make the whole supply chain competitive. Information technology is widely used to share information and generate demand forecasts. The underlying idea in SCM is that the entire process must be viewed as a single system. The core competencies of individual organizations are determined and are cashed on, to create enhanced competitive advantage for the supply chain.

By the 1990s, firms recognized the necessity of collaboration with suppliers and customers in order to create superior customer value. This movement titled supply chain management or value chain management shifted a company's focus from within an enterprise to managing across firm boundaries.(Waller et al,1993).

Boddy et al. (1998) found that more than half of the respondents to their survey considered that their organizations had not been successful in implementing supply chain partnering; Spekman et al. (1998), noted that 60% of supply chain alliances tended to fail. Deloitte Consulting survey reported that only 2% of North American manufacturers ranked their supply chains as world class although 91% of them ranked SCM as important to their firm's success (Thomas, 1999). Thus, while it is clear that SCM is important to organizations, effective management of the supply chain does not appear to have been realized.

Bowersox and Closs, (1996) argued that to be fully effective in today's competitive environment, firms must expand their integrated behavior to incorporate customers and suppliers. This extension of integrated behaviors, through external integration, is referred to by Bowersox and Closs, (1996) as supply chain management. In this context, the philosophy of SCM turns into the

implementation of supply chain management: a set of activities that carries out the philosophy. This set of activities is a coordinated effort called SCM between the supply chain partners, such as suppliers, carriers, and manufacturers, to dynamically respond to the needs of the end customer (Greene, 1991).

Thus SCM integrates both information flow and the flow of goods seamlessly between trading partners as an effective competitive weapon (Childhouse and Towill, 2003; Feldmann and Muller, 2003). SCM has been receiving increased attention from all fronts, namely academicians, consultants, and business managers (Tan et al., 2002; Croom et al., 2000; Van Hoek, 1998) since the early 1990s. Organizations have recognized that SCM is the key to building sustainable competitive edge (Jones, 1998) in the 21<sup>st</sup> century. SCM has been widely talked about in prior literature from various viewpoints (Croom et al., 2000) such as purchasing, logistics/distribution/transportation, operations and manufacturing management, organizational behavior, and management information systems. Industrial organization and transaction cost analysis (Ellram, 1990; Williamson, 1975), resource-based and resource-dependency theory (Rungtusanatham et al., 2003), competitive strategy (Porter, 1985), and social-political perspective (Stern and Reve, 1980) are some of the aspects of SCM that have been discussed in past literature. However, in spite of the increased attention paid to SCM, the literature has not made a significant contribution to aid the practice of SCM (Cigolini et al., 2004) and to respond to environmental uncertainty on supply and demand sides of the supply chain. Due to its interdisciplinary origin and evolutionary nature, there is no generally accepted definition of SCM in literature (Feldmann and Muller, 2003).

The concept of SCM has been studied from two perspectives, namely purchasing (supply management), and logistics (transportation, distribution, warehousing, and inventory management) (Tan et al., 1998). According to the purchasing perspective, SCM is synonymous with supplier integration and has evolved from traditional purchasing and materials functions (Banfield, 1999; Lamming, 1993). From the logistics management perspective, SCM is synonymous with distribution, logistics, inventory management, and customer relationships (Alvarado and Kotzab, 2001; Bechtel and Jayaram, 1997; Romano and Vinelli, 2001; Rudberg and Olhager, 2003; Van Hoek, 1998). In due course, these two perspectives evolved into one



single philosophy of SCM with integrated systems, processes, and practices between trading partners.

To better understand the influence of SCM practices and modularity based manufacturing practices on supply chain responsiveness, and the effect of supply chain responsiveness on competitive advantage, four constructs have been identified through a comprehensive literature review. A research framework is then developed that depicts the various causal relationships between these constructs.

The four proposed constructs are include: 1) *SCM Practices*: “A set of activities undertaken by an organization to promote effective management of its supply chain” (Li et al., 2006, p. 108); 2) *Modularity Based Manufacturing Practices*: The application of unit standardization or substitution principles to product design, production process design and organizational design (Tu et al., 2004); 3) *Supply Chain Responsiveness*: The capability of promptness and the extent to which the supply chain addresses changes in customer demand; 4) *Competitive Advantage*: “The extent to which an organization is able to create a defensible position over its competitors” (Li et al., 2006, p. 111).

All the constructs are higher-level constructs and are represented by several sub-constructs. SCM practices includes three sub-constructs (strategic supplier partnership, customer relationship, and information sharing; modularity based manufacturing practices contains three sub-constructs (product modularity, process modularity, and dynamic teaming); supply chain responsiveness comprises of (operations system responsiveness, logistics process responsiveness, and supplier network responsiveness); competitive advantage is represented by five sub-constructs (price, quality, delivery dependability, time-to-market, and product innovation). For descriptive purpose, all of them, including high-level constructs and sub constructs, are called constructs in later discussion.

First define and discuss these constructs. The next section will present a detailed review of existing literature concerning each of the three constructs proposed above. In the next chapter, five research hypotheses are then developed based on this review.

## 2.2 SCM Practices

‘SCM practices’ is defined as “the set of activities undertaken by an organization to promote effective management of its supply chain” (Li et al., 2006, p. 109).

Li et al. (2005, 2006) proposed ‘SCM practices’ as a multi-dimensional construct that includes both upstream and downstream sides of the supply chain. Donlon (1996) considered outsourcing, supplier partnership, information sharing, cycle time compression, and continuous process flow, as SCM practices. Tan et al. (1998) used quality, purchasing, and customer relations to represent SCM practices, in their empirical study. Alvarado and Kotzab (2001) focused on inter-organizational system use, core competencies, and elimination of excess inventory through postponement, as SCM practices. Using factor analysis, Tan et al. (2002) identified: supply chain integration, information sharing, customer service management, geographic proximity, and JIT capability, as the key aspects of SCM practice. Lee (2004) in his case study based research identified five practices at the supply chain level that are a key to creating supply chain responsiveness.

They are: outsourcing, strategic supplier partnerships, customer relationships, information sharing, and product modularity. Chen and Paulraj (2004) used long-term relationship, cross-functional teams, supplier base reduction, and supplier involvement. Min and Mentzer (2004) identified long-term relationship, information sharing, vision and goals, risk and award sharing, cooperation, process integration, and supply chain leadership underlying the concept of SCM. Li et al. (2005, 2006) identified strategic supplier partnership, customer relationship, and information sharing as key SCM practices. This study adopts the same practices (viz: strategic supplier partnership, customer relationship, and information sharing) as sub-constructs for the SCM practices construct. Li et al. (2005) developed a valid and reliable instrument to measure SCM practices. The same instrument has been adopted in this study. Thus the literature depicts SCM practices from different perspectives with a common goal of improving organizational performance. In reviewing and consolidating the literature, three distinct dimensions of SCM practice that are perceived to lead to supply chain responsiveness, have been identified. These are strategic supplier partnership, customer relationship, and information sharing.

This study aims at studying the effect of supply chain responsiveness on competitive advantage of a firm by the implementation of a set of SCM practices - by an organization.

SCM has been supported as a strategic level concept in prior literature (Bowersox et al., 1999; Cooper et al., 1997; Mentzer, 2001), with a “multi-firm focus” on creating competitive advantage “by maximizing the total value delivered to end-customers” (Defee and Stank, 2005, p. 30). Supply chain responsiveness focuses on not just creating value but maintaining the value or customer service level by being responsive to any turbulence or uncertainty on both sides of the value chain (i.e. supply as well as demand). This study focuses only on the customer side turbulence.

***Strategic supplier partnership*** is defined as “the long term relationship between the organization and its suppliers. It is designed to leverage the strategic and operational capabilities of individual participating organizations to help them achieve significant ongoing benefits” (Li et al., 2006, p. 109). Gunasekaran et al. (2001) assert that a strategic partnership emphasizes long-term relationship between trading partners and “promotes mutual planning and problem solving efforts” (as cited in Li et al., 2006, p. 109). Strategic partnerships between organizations promote shared benefits and ongoing collaboration in key strategic areas like technology, products, and markets (Yoshino and Rangan, 1995). Strategic partnerships with suppliers facilitate organizations to work closely and effectively with a few suppliers rather than many suppliers that have been selected solely on the basis of cost. Some of the advantages of including suppliers early in the product-design process as mentioned by Tan et al. (2002) are that suppliers can offer cost effective design alternatives, assist in selecting better components and technologies, and aid in design assessment.

Porter (1980) suggested that co-operation can enable partners to achieve a stronger position together than they can alone.

Globalization (includes global sourcing) has forced companies to manage their supply, manufacturing, and logistics more effectively. Mentzer et al. (2001) suggests that the key to effective management in the global environment is to have closer relationships with suppliers. Cooperation among the supply chain members is required for effective SCM (Tyndall et al., 1998; Boddy et al., 2000; Ellram and Cooper, 1990).

The past two decades have seen an increasing trend in long term, collaborative relationships by organizations with a few trusted suppliers (Anderson et al., 1994; Wilkinson and Young, 1995; Ford, 1990; Sheth, 1996; Sheth and Sharma, 1997). Kalwani and Narayandas, (1995) add that firms are moving from the traditional approach of a onetime cost based relationship with many suppliers to long term relationships with a few good suppliers. Dwyer et al. (1987) and Spekman (1988) concur with the above argument. Tomkins (2001) explored the role of trust and information-sharing in inter-organizational relationships.

The role of “commitment” and “trust” in relationship marketing and inter-organizational collaboration has been widely talked about since the late 80s (Morgan and Hunt, 1994; Dwyer et al., 1987; Young and Wilkinson, 1989). The purpose of strategic partnerships is to enable enhanced coordination in operations, R & D, product launching, and the like, between partners (Fulconis and Paché, 2005). There has been abundant literature since the 1990s on strategic supplier partnership in strategy literature.

In some industries, startups and partnership changes are expensive and time consuming and long-term contracts are preferred (Mason et al., 2002). Vonderembse & Tracey (1999) conducted a research study on the impact of supplier selection and involvement on manufacturing performance. They concluded that the level of supplier involvement in continuous improvement activities and in product development efforts is low in North American supply chains. Although many managers acknowledge the need for enhanced relationships in the channel, it is not being implemented consistently in the manufacturing sector. They also conclude that increased company/supplier involvement may have significant impact on supply chain performance.

Immediate supplier relationship activities play a vital role in developing effective SCM strategies (Wisner, 2003). Long-term relationship does not refer to any specific period of time, but rather, to the intention that the arrangement is not going to be temporary (Chen and Paulraj, 2004). Through close relationships supply chain partners are willing to (1) share risks and reward and (2) maintain the relationship on a long term basis (Landeros and Monczka, 1989; Cooper and Ellram, 1993; Stuart, 1993).

Furthermore, a considerable amount has been written documenting the integration of suppliers in the new product development process (Burt and Soukup, 1985; Clark and Fujimoto, 1991;

Helper, 1991; Hakansson and Eriksson, 1993; Lamming, 1993; Hines, 1994; Ragatz et al., 1997; Dowlatshahi, 1998; 2000; Swink, 1999; Shin et al., 2000). De Toni and Nassimbeni (1999) found that a long-term perspective between the buyer and supplier increases the intensity of buyer–supplier coordination.

The Japanese supplier partnership system is widely discussed in the literature (Webster, et al., 2000; Gilbert, et al., 1994; Nishiguchi, 1994; Morris and Imrie, 1993; Schoenberger, 1982). Japanese companies in electronics, automobiles, and machinery industries began involving their suppliers in joint design with their customers (Nishiguchi and Brookfield, 1997). To create a competitive advantage, SCM is increasingly emphasizing Interorganizational co-ordination of activities (Sheth and Sharma, 1997; Ballou et al., 2000).

***Customer relationship*** is defined as “the entire array of practices that are employed for the purpose of managing customer complaints, building long-term relationships with customers, and improving customer satisfaction” (Li et al., 2006, p. 109). Noble (1997) and Tan et al. (1998) consider customer relationship management as an important component of SCM practices. Croxton et al. (2001) consider customer relationship and supplier partnership practices as key SCM practices.

An organization’s customer relationship practices can affect its success in SCM efforts as well as its performance (Scott and Westbrook, 1991; Ellram, 1991; Turner, 1993). Successful SCM involves customer integration at the downstream and supplier integration at the upstream, considering that each entity in a supply chain is a supplier as well as a customer (Tan et al., 1999).

In this global competition and mass customization era, personalized attention and better relationship management with individual customers is of utmost importance for organizational success (Wines, 1996). Good relationships with trading partners, including customers are a key to successful SCM efforts by organizations (Moberg et al., 2002). Customer relationship has long been recognized as an internal component of an organization’s marketing strategy to increase sales and profits (Bommer et al., 2001). Close customer relationship allows product differentiation from competitors, helps sustain customer loyalty, and elevates the value provided to customers (Magretta, 1998).

Immediate customer relationship activities have played a crucial role in developing effective SCM strategies (Wisner, 2003).

**Information sharing** refers to “the extent to which critical and proprietary information is communicated to one’s supply chain partner” (Li et al., 2006). Mentzer et al. (2000) mention that shared information can vary from strategic to tactical in nature. It could be pertaining to logistics, customer orders, forecasts, schedules, markets, or more.

Information sharing refers to the access to private data between trading partners thus enabling them to monitor the progress of products and orders as they pass through various processes in the supply chain (Simatupang and Sridharan, 2002). Simatupang and Sridharan (2005) bring forth some of the elements that comprise information sharing, including data acquisition, processing, storage, presentation, retrieval, and broadcasting of demand and forecast data, inventory status and locations, order status, cost-related data, and performance status. They further add that information sharing pertaining to key performance metrics and process data improves the supply chain visibility thus enabling effective decision making. Information shared in a supply chain is of use only if it is relevant, accurate, timely, and reliable (Simatupang and Sridharan, 2005). Information sharing with trading partners enables organizations to make better decisions and to take actions on the basis of greater visibility (Davenport et al., 2001).

In recent years, uncertainties have become a greater concern in supply chains. The direct consequences are increased inventories and the distortion of demand forecasts. Moreover, the distortion propagates through the supply chain and is amplified at each stage—the well known bullwhip effect (Lee et al., 1997). Through information sharing, the demand information flows upstream from the point of sales, while product availability information flows downstream (Lee and Whang, 2001; Yu et al., 2001) in a systematic manner. Moreover, information sharing ensures that the right information is available for the right trading partner in the right place and at the right time (Liu and Kumar, 2003).

According to Lummus and Vokurka (1999), in order to make the supply chain competitive, a necessary first step is to acquire a clear understanding of supply chain concepts and be willing to openly share information with supply chain partners. Availability of accurate and up-to-date marketing data at every node within the supply chain is a key to create a seamless supply chain

(Childhouse and Towill, 2003; Balsmeier and Voisin, 1996; Towill, 1997; Turner, 1993). Lalonde (1998) regards information sharing as one of key element that characterizes a strong supply chain relationship. Yu et al. (2001) point out that the negative impact of the bullwhip effect on a supply chain can be reduced or eliminated by sharing information with trading partners. Lalonde (1998) regards information sharing as a key to creating strong supply chain relationships.

Lau and Lee (2000) maintain that creating an environment for controlled sharing of business data and processes, improves information sharing effectiveness among trading partners. However, there is the reluctance on the part of organizations in the supply chain to share information with each other. Information is generally viewed as providing an advantage over competitors, and organizations resist sharing with their partners (Vokurka&Lummus, 2000) due to the fear of giving away competitive and sensitive information such as inventory levels, production schedules (Lancioni et al., 2000; Ballou et al., 2000; Croom et al., 2000).

### **2.3 Supply Chain Responsiveness**

Supply chain responsiveness is defined as the capability of promptness and the degree to which the supply chain can address changes in customer demand (Holweg, 2005; Prater et al., 2001; Lummus et al., 2003; Duclos et al., 2003). In a rapidly changing competitive world, there is a need to develop organizations and supply chains that are significantly more flexible and responsive than the existing ones (Gould 1997, James-Moore, 1996). Firms need to aptly respond to changing customer needs so as to succeed in today's uncertain environment (Gerwin, 1987; Huber, 1984; Narasimhan and Das, 1999; Ward et al., 1998) as well as any disruptions in supply (Germain, 1989; Lee, 2004; Christopher and Peck, 2004). Although it would be interesting to study supply chain responsiveness from supply disruption perspective also, the current study focuses mainly on customer demand perspective.

To review the concept of supply chain responsiveness, we first need to review the supply chain flexibility concept. The supply chain flexibility has its roots in manufacturing flexibility of an organization. So we begin by a brief review of the manufacturing flexibility literature. Manufacturing flexibility is defined as the ability of the manufacturing system of an organization to adapt to change (Upton, 1994; Parker and Wirth, 1999; Lau, 1999).

Manufacturing flexibility has been considered as a major competitive weapon for manufacturing organizations due to its ability to help cope with uncertain environments and turbulent markets. It has been argued in past literature that manufacturing flexibility is capable of providing organizations with the ability to change volume and mix of production, to rapidly and frequently develop new products, and to better respond to competition (Oke, 2005). Manufacturing flexibility has also been said to focus on the ability to adjust to changes in uncertainty with least penalties in time.

There has been extensive literature on the manufacturing flexibility concept and the survey reported by Sethi and Sethi, (1990) lists more than 200 references. Some of the basic dimensions of manufacturing flexibility in the prior literature are - volume flexibility (the ability of the manufacturing system to vary aggregate production volume economically) (Slack, 1983; Browne et al., 1984; Sethi and Sethi, 1990; Gerwin, 1993), mix flexibility (the ability of the manufacturing system to switch between different products in the product mix) (Browne et al., 1984; Gerwin, 1993; Gupta and Somers, 1996), new product flexibility (the ability of the manufacturing system to introduce and manufacture new parts and products) (Browne et al., 1984; Gerwin, 1987; 1993; Taymaz, 1989; Gupta and Somers, 1996), process flexibility (the ability to change between the production of different products with minimal delay) (Parker and Wirth, 1999), and material handling flexibility (the ability of the material handling system to move material through the plant effectively) (Sethi and Sethi, 1990; Gupta and Somers, 1992). Slack (1983, 1987), Browne et al. (1984), Hyun and Ahn (1992), Suarez et al. (1996), Zhang et al. (2003), and Koste et al. (2004) are some of the studies on taxonomies of manufacturing flexibility. There is considerable disagreement among researchers on the definition of manufacturing flexibility.

The fact that a large amount of literature is available on flexibility and responsiveness of manufacturing systems, yet there been very little discussion on the relationship between these two concepts has been criticized in literature (Kritchanchai and MacCarthy, 1999; Matson and McFarlane, 1999). Some questions such as is a flexible manufacturing system also by default responsive, and what types of flexibility are needed for responsiveness have not been clearly addresses in prior literature (Holweg, 2005). This argument is also true for the distinction



between supply chain responsiveness and supply chain flexibility. In this study we extend the definition of responsiveness to the supply chain level.

The supply chain flexibility concept focuses on the ability of the firm / supply chain to adapt to changes in business conditions (Gosain et al., 2004). Although the literature in the flexibility area (at logistics and supply chain levels) is accumulating over the past decade, including case study based research (Ferrin, 1994; Cunningham, 1996; Juga, 1996; Van Hoek et al., 1998), conceptual contributions (Lummus et al., 2003; Duclos et al., 2003; Andries and Gelders, 1995; Van Hoek, 2001), mathematical models (Garg and Tang, 1997; Waller et al., 2000), and survey research (Sanchez and Perez, 2005; Zhang et al., 2005; Daugherty et al., 1996; Emerson and Grimm, 1998), more work is required.

Supply chain flexibility refers to the ability of the supply chain to adapt to internal or external influences, whereas supply chain responsiveness is the ability of the supply chain to rapidly address changes and requests in the marketplace (Holweg, 2005). Supply chain flexibility extends the concept of flexibility of manufacturing systems to the entire supply chain. It encompasses not only the manufacturing (operations) flexibility, but also the flexibility of the different supply chain functions and processes, ex: supply, distribution and transportation (Lummus et al., 2003). Where “flexibility is the ability to switch between tasks” (Vokurka et al., 2002, p. 21), responsiveness is the ability to rapidly respond to unanticipated market changes (Goldman et al., 1994; Vokurka and Fliedner, 1998). Supply chain flexibility is a complex and multi-dimensional concept difficult to summarize (De Groote, 1994; Sarker et al., 1994; Upton, 1994; Gupta and Buzacott, 1996). The current study focuses on the – speed of response – in addition to the flexibility which is widely known as supply chain responsiveness (Holweg, 2005).

As obvious from the above discussion responsive comprises of both flexibility as well as speed. This fact has been strongly supported in prior literature (Fisher, 1997; Lee, 2002; Olhager, 1993, D’ Souza and Williams, 2000, Holweg 2005; Holweg and Pil, 2001; Meehan and Dawson, 2002; Williamson, 1991; Prater et al., 2001; Towill and Christopher, 2002; Christopher and Peck, 2004; Gunasekaran and Yusuf, 2002; Christopher, 2000). Prater et al. (2001) further maintain that as the level of speed and more importantly flexibility increase, the level of supply chain responsiveness increases. Based on Prater et al. (2001), Duclos et al. (2003), and Lummus et al. (2003) who have identified the various components of supply chain flexibility and agility, we

extend and modify those components to develop the construct supply chain responsiveness. We identify operations system responsiveness, logistics process responsiveness, and supplier network responsiveness as the three main components of supply chain responsiveness. Literature (ex: Christopher, 2000), emphasizes the need for supply chains (instead of individual organizations) to be responsive in order to attain competitive advantage. This was the prime motivation behind this study of supply chain responsiveness.

Aquilano et al. (1995) contend that “low cost, high quality and improved responsiveness (both delivery time and flexibility of product delivery)” are the three main strategic imperatives to stay competitive in this century (as cited in Duclos et al., 2003). Gupta and Goyal (1989), contend that being responsive is normally considered as an adaptive response to the environmental uncertainty. Bowersox et al. (1999) advocate the need for organizations to be responsive when the penalties associated with uncertainty are higher. These penalties for an organization could include costs of stocking out or carrying the wrong inventory and which can be mitigated through a responsive system, by adopting effective SCM practices as indicated and proposed in this study.

*Operations system responsiveness* is defined as the ability of a firm’s manufacturing system to address changes in customer demand. Operations system responsiveness includes both manufacturing and service operations. Duclos (2003) and Lummus (2003), in a conceptual study, emphasize that operations responsiveness at each node of the chain is an integral component of supply chain responsiveness. They further argue that in order to meet the end customer’s needs, each entity in the supply chain must deliver the product or service in a timely and reliable manner.

The dimensions under this category would measure the responsiveness associated with a specific node (company) in the supply chain (Duclos et al., 2003; Lummus et al., 2003). This could be a supplier, a manufacturer, or a customer (or distributor). Anderson and Lee (2000) identified - the ability to be operationally responsive - as one of the components of successful supply chain strategy that add value to a firm. This includes the ability to rapidly configure or reconfigure assets and operations of the manufacturing system to react to consumer trends (Wu, 2001; Lummus et al., 2003), respond rapidly to changes in product volume and product mix demanded by customers, and effectively expedite emergency customer orders.

As the supply chain responds to customer demand, supply chain member companies may be required to move quickly from the production of one product to another, or quickly change production levels for a given product. The responsiveness of the operations system would be the ability of the manufacturing and production to rapidly respond to unexpected events, and ability to rapidly accommodate special or non-routine customer requests. In doing so the vital ingredients needed are flexibility and speed of response (Holweg 2005; Holweg and Pil, 2001; Meehan and Dawson, 2002; Williamson, 1991) of the manufacturing system of each of the organizations operating within a supply chain. Some of the operations system responsiveness measures that have been identified to operationalize the construct include: operations system's ability to - rapidly adjust capacity to address demand changes, rapidly change manufacturing processes to address demand changes, rapidly reallocate people to address demand changes, rapidly reconfigure equipment to address demand changes, effectively expedite emergency customer orders, make rapid changes in product mix demanded by customers, and respond rapidly to changes in product volume demanded by customers.

***Logistics process responsiveness*** is defined as the ability of a firm's outbound transportation, distribution, and warehousing system (including 3PL/4PL) to address changes in customer demand. The responsiveness in the logistic processes is a vital component in the success of a responsive supply chain strategy (Fawcett, 1992). Logistics and distribution management includes the activities of transportation of goods from suppliers to manufacturer to distribution centers to final point of consumption (Ricker and Kalakota, 1999; Duclos et al., 2003; Lummus et al., 2003). These activities include warehousing, packing and shipping, transportation planning and management, inventory management, reverse logistics, and order tracking and delivery. This study focuses on the outbound logistics of the focal firm. Fuller et al. (1993) suggest that a firm's logistics system is instrumental in creating value for its customers. This value creation for a firm's customers implies ensuring logistics flexibility (Duclos et al., 2003; Lummus et al., 2003) and speed within the supply chain to serve each distinct customer's needs. A typical response to uncertainty is to build flexibility into the supply chain. However being flexible needs to be supplemented by being apt in responding too. Responsiveness components in the logistics system include selecting logistics components that accommodate and respond to wide swings in demand over short periods, adjust warehouse capacity to address demand changes, handle a wide range of products, vary transportation carriers, have the ability to pack product-in-transit to suit

discreet customers' requirements, and have the ability to customize products close to the customer (i.e. postponement); and do all of these speedily in order to gain a competitive advantage. It is vital that the firm has easy access to and is able to utilize different modes of transportation to be logistically flexible and thus responsive (Prater et al., 2001). Hise (1995) argues that flexibility is the key component of any logistics system configured to achieve responsiveness. He further states that companies need the capability to adjust logistic systems quickly to respond to changes in market needs and the necessitated product assortment.

Prater et al. (2001) in his case study research presents the case study of Hewlett Packard, which reduced the uncertainty by designing the product appropriately so as to customize it only when individual orders arrive. Lummus et al. (2003) put forth some of the critical logistics process flexibility aspects of a supply chain, which are vital for supply chain responsiveness. These aspects have been adapted for logistics process responsiveness and are as follows: logistics system's ability to - rapidly respond to unexpected demand change, rapidly adjust warehouse capacity to address demand changes, rapidly vary transportation carriers to address demand changes, accommodate special or non-routine customer requests, and effectively delivers expedited shipments.

***Supplier network responsiveness*** is defined as the ability of a firm's major suppliers to address changes in the firm's demand. A key to responsiveness is the presence of responsive and flexible partners upstream and downstream of the focal firm (Christopher and Peck, 2004). The ability of firms to react quickly to customer demand is dependent on the reaction time of suppliers to make volume changes.

Whenever disruptive causes such new technology, terrorist threats (Walker, 2005) or cut-throat competition tend to throw the supply chain haywire, the supply chain networks must be ready to react to any ripple effect. Slack (1991) argues that supplier networks are the essential building blocks of a flexible system. Some interviews with operations managers conducted at the European vehicle assembly plants of Volvo revealed that the lack of supplier network flexibility hampered the company's responsiveness (Holweg, 2005). Supplier network flexibility (Slack, 1991) and thus supplier network responsiveness is an important part of the supply chain responsiveness. Holweg and Pil (2001) argue that flexibility in the supplier network is an important ingredient of being responsive to changes in customer demand. Thus supplier network

responsiveness is believed to be a dimension of supply chain responsiveness in this study. In order to have a competitive advantage, organizations need to meet the changing needs of customers by being able to rapidly supply products, including any demand changes in terms of product volume, mix, product variations, and new product introductions. Meeting these needs requires responsiveness in the supply chain at various stages from the raw materials to finished products to distribution and delivery. In order to be responsive the organizations should be able to select suppliers who can add new products quickly, and have suppliers make desired changes. Selecting suppliers who can introduce new products quickly can add responsiveness to a supply chain. Burt and Soukup (1985) suggested that failure to include suppliers' inputs in product development is a vulnerable aspect of supply chain management.

Ginnis and Vallopra (1999), found that involving suppliers could make new product development a success. Fisher et al. (2000) found that for short lifecycle products, such as fashion apparel, retailers are most successful if they can work with suppliers who can provide initial shipments of product based on forecasts, but then rapidly increase production to the right style, color, size, etc. based on actual sales. They note that fast supply chains can produce products as they sell rather than worrying about accurate forecasts. These studies suggest that supplier selection based on product development capabilities and rapid deployment capabilities positively impact the delivery time of new products. Choi and Hartley (1996) found that the capability of suppliers to make product volume changes was a significant factor in supplier selection in the automotive industry. In certain industries, e.g. electronics; demand volatility poses a unique challenge to suppliers to vary output in line with demand. The increases or decreases in demand may come at a short notice and need to be sustained over some time period. Some of the measures of supplier network responsiveness include: major suppliers' ability to - change product volume in a relatively short time, change product mix in a relatively short time, consistently accommodate the firm's requests, provide quick inbound logistics to the firm, have outstanding on-time delivery record, and effectively expedite emergency orders.

## **2.4. Modularization**

Modularity is an approach for managing and developing complex products and processes efficiently by decomposing them into simpler subsystems without compromising the system's integrity. It is also considered as a new product development strategy in which interfaces shared among components in a given product architecture become specified and standardized to allow for "greater substitutability" of the components across product families. Therefore, Modular product architectures are used as flexible platforms for leveraging a large number of product variations (Mikkola, 2001).

Product modularity provides flexibility and responsiveness that enables firms to serve a variety of customer needs. An advantage of modularity in relation to supply chain design is that pursuing product variations has only a limited impact on production and assembly processes. Modular design allows a firm to differentiate its product to a high degree by combining a limited number of standard parts. There has been a considerable body of knowledge investigating the development of product modularization, the impact of buyer-supplier relationships. Modular design can be viewed as the process of producing discrete functional units that are connected together to provide a variety of product functions. Modular design emphasizes the minimization of interactions between components in order to design and produce those components independently. Each component, designed for modularity, is supposed to support one or more functions. When components are structured together to form a product, they will support a larger or general function (Sanchez, 1999).

Modularity is an example of architectural innovation that enables greater flexibility for mass customization but "without changing its components". Modularization enables mass customization not only by providing a means for the repetitive production of components. One of the great advantages of modularization is the ability to assemble repetitive units in controlled conditions. Modular product architectures require physical independence and functional independence. Simply splitting up a product for later assembly is not necessarily termed a modular approach; there need to be a certain level of flexibility in the way that parts are recombined. Modularization requires standardized interfaces to provide embedded coordination that greatly reduces the need for overt exercise of managerial authority to achieve coordination of the product development process states that a modular product or subassembly has "a one-to-one mapping from functional elements in the function structure to the physical components of

the product” and that all interfaces between the components of different modules are decoupled. Modularized product architecture can be disintegrated into loosely coupled components offering high possibility to outsource design to suppliers (Robertson and Ulrich, 1998).

Three rules that define Product architecture are: (1) Architecture, which specifies what modules, will be part of the system and what their functions will be. (2) Interfaces, describe in detail how they will fit together, connect, and communicate. (3) Standards, for testing a module’s conformity to the design rules and for measuring one module’s performance to another. Two types of macro types of modular product architecture are function-based and manufacturing-based. Function-based is partitioning a product into discrete scalable, reusable modules consisting of isolated, self-contained functional elements. Manufacturing – based modularity is the application of unit standardization or substitution principles to create modular components and processes that can be configured into a wide range of end products to meet specific customer needs (Salhieh and Kamrani, 1999).

Besides reduction in cost (due to lesser customization, and less learning time), and flexibility in design, modularity offers other benefits such as augmentation (adding new solution by merely plugging in a new module), and exclusion. Examples of modular systems are automotive industry [22], computers and high rise buildings. Earlier examples include looms, railroad signaling systems, telephone exchanges, pipe organs and electric power distribution systems. Computers use modularity to overcome changing customer demands and to make the manufacturing process more adaptive to change (see modular programming) Modular design is an attempt to combine the advantages of standardization (high volume normally equals low manufacturing costs) with those of customization. A downside to modularity (and this depends on the extent of modularity) is that modular systems are not optimized for performance. This is usually due to the cost of putting up interfaces between modules (Sanchez and Mahoney, 1996).

## **2.5 Competitive Advantage**

Competitive advantage is defined as the “capability of an organization to create a defensible position over its competitors” (Li et al., 2006). Tracey et al. (1999) argues that competitive advantage comprises of distinctive competencies that sets an organization apart from competitors, thus giving them an edge in the marketplace. They further add that it is an outcome of critical management decisions. Competitive advantage traditionally involved the choice regarding the markets in which a firm would compete, defending market share in clearly defined

segments using price and product performance attributes (Day, 1994). Today, however, competition is considered a “war of movement” (p. 62) that depends on anticipating and quickly responding to changing market needs (Stalk et al., 1992). Competitive advantage emerges from the creation of superior competencies that are leveraged to create customer value and achieve cost and/or differentiation advantages, resulting in market share and profitability performance (Barney, 1991; Coyne, 1986; Day and Wensley, 1988; Prahalad and Hamel, 1990).

Sustaining competitive advantage requires that firms set up barriers that make imitation difficult through continual investment to improve the advantage, making this a long-run cyclical process (Day and Wensley, 1988). Porter's approach to competitive advantage centers on a firm's ability to be a low cost producer in its industry, or to be unique in its industry in some aspects that are popularly valued by customers (Porter, 1991). Most managers agree that cost and quality will continue to remain the competitive advantage dimensions of a firm (D' Souza and Williams, 2000). Wheelwright (1978) suggests cost, quality, dependability and speed of delivery as some of the critical competitive priorities for manufacturing. There is widespread acceptance of time to market as a source of competitive advantage (Holweg, 2005).

Price/cost, quality, delivery dependability, and time to market have been consistently identified as important competitive capabilities (Vokurka et al., 2002; Fawcett and Smith, 1995; White, 1996; Skinner, 1985; Roth and Miller, 1990; Tracey et al., 1999). ‘Time’ has been argued to be a dimension of competitive advantage in other research contributions (viz: Stalk, 1988; Vesey, 1991; Handfield and Pannesi, 1995; Kessler and Chakrabarti, 1996; Zhang, 2001). In a research framework, Koufteros et al. (1997) describe the following five dimensions of competitive capabilities: competitive pricing, premium pricing, value-to-customer quality, dependable delivery, and product innovation. These dimensions were further described and utilized in other contributions as well (Koufteros et al., 2002; Tracey et al., 1999; Rondeau et al., 2000; Roth and Miller, 1990; Cleveland et al., 1989; Safizadeh et al., 1996; Vickery et al., 1999; Li et al. 2006). Based on these studies, the five dimensions of competitive advantage construct used in this study are price/cost, quality, delivery dependability, product innovation, and time to market.

Competitive advantage has been operationalized in the existing literature (Koufteros et al., 1997; Zhang, 2001) and the measures have been adopted in this study with minor modifications. Based



on the study of Koufteros (1995), Zhang (1997), and Li et al. (2006) the following five dimensions of competitive capability are used.

- Price/Cost “The ability of an organization to compete against major competitors based on low price” (Li et al., 2006)
- Quality. “The ability of an organization to offer product quality and performance that creates higher value for customers” (Koufteros, 1995)
- Delivery Dependability. “The ability of an organization to provide on time the type and volume of product required by customer(s)” (Li et al., 2006)
- Product Innovation. “The ability of an organization to introduce new products and features in the market place” (Koufteros, 1995)
- Time to Market. “The ability of an organization to introduce new products faster than major competitors” (Li et al., 2006).

### **2.5.1 Supply Chain Responsiveness and Competitive Advantage**

The improvement of flexibility and speed of response has become increasingly important as a method to achieve competitive advantage (Upton, 1997; Martin and Grbac, 2003). Responsiveness to customer is critical to gaining competitive advantage (Williamson, 1991; Martin and Grbac, 2003). Ellinger (2000) argues that competitive advantage accrues to those firms who are responsive to the customer needs. Lummus et al. (2003) argue that in the future, as supply chains compete with other supply chains, organizations must understand that responsive supply chains will outperform those that are less responsive. Creating responsive supply chains has become a source of competitive advantage (Lau and Hurley, 2001).

Firms with more responsive supply chains will be more adaptive to demand fluctuations and will handle this uncertainty at a lower cost due to the shorter lead time (Randall et al., 2003). Yusuf et al. (1999) argues that lean manufacturing compromises responsiveness over cost-efficiencies, however agile manufacturers place equal importance on both cost and responsiveness. Cost and quality have been long incorporated into agile competitive bases (Yusuf et al., 1999). Gunasekaran and Yusuf (2002) emphasize that responsiveness without cost effectiveness is not a real competitive strategy. However Yusuf et al. (2003) found that cost and responsiveness do not go hand in hand. However due to visa-versa arguments, maintain here that - on the whole - supply chain responsiveness and competitive advantage are positively related. Yusuf et al.

(2003) found high correlation between the responsiveness and time to market, dependability, product innovation and quality.

Towill (1996) suggests that the effective engineering of cycle time reduction will lead to significant improvements in manufacturing costs and productivity. Towill (1996) further argues that reduction in lead times is the necessary condition for a responsive supply chain and which further reduces the time to market. Sharifi and Zhang (2001) and Aitken et al. (2002), emphasize that responsiveness in the supply chain is a source of competitive advantage. A 1997 study (Allnoch, 1997) of 225 manufacturers found that average companies required much more time to respond to changes in customer demand than did the leading manufacturers. In some cases, as much as eight times longer was required. The study also found that while leading manufacturers required two weeks to meet increased production requirements per customer demand, average companies required four weeks to four months. The result? These leading companies outperformed their peers and realized huge cost savings and other competitive advantages. Thus we propose here, that supply chain responsiveness shall reduce the costs, while leading to competitive advantage for firms on other dimensions as well.

Being operationally responsive will enable organizations to compete based on cost, quality, time to market, and delivery dependability; responsiveness of a firm's logistics (transportation and distribution) process will enable organizations to introduce new products faster than major competitors (i.e. increasing the time to market), and also lead to greater ability of a firm to provide on time the type and volume of product required by customers (i.e. increasing delivery dependability); responsiveness of a firm's supplier network will improve - the ability of the firm to rapidly introduce new products and features in the market place (i.e. compete based on product innovation and time to market), as well as improve a firm's ability to provide on time delivery (i.e. increase its delivery dependability) as these firms will be endowed with responsive suppliers.

A supply chain characterized by quick responsiveness to customers will be competitive in terms of time and quality (Li, 2002).

### **2.5.2 SCM Practices and Competitive Advantage**

Effective SCM produces competitive advantage for a firm in that it is said to reduce costs (Martin and Grbac, 2003; Sheth and Sharma, 1997; Tan et al., 1998; Araujo et al., 1999). SCM practices have been found to be positively related to competitive advantage (price, quality, delivery dependability, product innovation, and time to market) in prior literature (ex: Li et al., 2006). It has been pointed out that practicing SCM has become an essential requirement to staying competitive and growing profitably in today's global race (Power et al., 2001; Moberg et al., 2002).

Larson and Kulchitsky (1998), in an empirical study found that developing strategic supplier partnerships also lead to cost effectiveness of the focal firm. Christopher (1992) states that, the greater the collaboration, at all levels, between supplier and customer, the greater the likelihood that competitive advantage can be gained by organizations. Extensively coordination with suppliers and involving them in new product development process has been found to enhance the ability of organizations to develop successful new products, and thus gain competitive advantage in the marketplace (Ragatz et al., 2002; Twigg, 1998). Ragatz et al. (2002) found that supplier integration can reduce material costs and quality, product development time and cost, and manufacturing cost while improving functionality. Advantages of supplier participation in new product development include reduced project costs (Kessler, 2000; Clark, 1989), and improved perceived product quality (McGinnis and Vallopra, 1999; Ragatz et al., 1997). A long-term relationship with the supplier will have a lasting effect on the competitiveness of the entire supply chain (Choi and Hartley, 1996; Kotabe et al., 2003). Sharing information (and data) with other parties within the supply chain can be used as a source of competitive advantage (Jones, 1998; Novack et al., 1995). Furthermore, Tompkins and Ang (1999) consider the effective use of pertinent, timely, and accurate information by supply chain members as a key competitive factor. Information sharing with suppliers has given Dell Corp. the benefits of faster cycle times (implying faster time to market), reduced inventory (implying reduced costs), and improved forecasts. Customers, for their part, have benefited by getting a higher-quality product at a lower price (Magretta, 1998; Stein and Sweat, 1998).

## 2.6 Empirical Review of Studies

According Shah *et al.* (2002), much of the current theoretical/ empirical research in SCM focuses on only the upstream or downstream side of the supply chain, or certain aspects/perspectives of SCM. However, there are certain previous researchers have devoted deal of attention to the relationship of supply chain management practice (s) and certain aspects of overall organizational performance from different perspective/dimensions or overall supply chain. Some of these researches finding are discussed as follow:

Alirezaet *al.* (2011) conducted study on Malaysia Electronic Industry to present a model for supply chain performance by employing supply chain design, supply chain information sharing, and flexibility and delivery components as independent variables influencing supply chain performance. The results from this study depicted that supply chain design influences supply chain performance through delivery and information sharing. Furthermore, information sharing and delivery have a direct influence on supply chain performance. The findings also showed that flexibility influences supply chain performance through delivery. Information sharing affects supply chain performance directly and has also an indirect impact on supply chain performance through flexibility. This study elaborates the significant effect of the design of the supply chain on its performance while considering the impact of information sharing.

Moslem (2013), conducted research on impact of supply chain management practices on competitive advantage in manufacturing companies of Khuzestan province (Iran) by using strategic partnerships with supplier, customer relationship, information sharing , Quality of information sharing and internal lean practices as independent variables affecting the competitive advantage. The result from this study was indicates as there is relationships between SCM practices and competitive advantage.

Lenny *et al.* (2007) conducted study on the impact of supply chain management practices on performance of SMEs in Turkey. Based on exploratory factor analysis (EFA), researchers were grouped SCM practices in two factors: outsourcing and multi-suppliers (OMS), and strategic collaboration and lean practices (SCLP). The results indicate that both factors of SCLP and OMS have direct positive and significant impact on operational performance. In contrast, both SCLP and OMS do not have a significant and direct impact on SCM-related organizational performance. Also, as the direct relationship between the two performance-constructs was found

significant, both factors of SCM practices have an indirect and significant positive effect on organizational performance through operational.

On the research topic Supply Chain Management measurement and its influence on Operational Performance conducted by Priscila and Luiz, (2011), SCM measurements were considered as consists of information sharing, long term relations, cooperation and process integration as independent variables influences operational performance in case of Brazilian companies. The empirical results of this study provided evidence of a positive impact of SCM measurements on operational performance.

Supply Chain Management, Product Quality and Business Performance in case of Malaysian manufacturing companies conducted by Arawati, (2011) and the study specifically investigates relationships between SCM, product quality and business performance and these associations are analyzed and the result demonstrates that SCM dimensions namely 'lean production', 'new-technology and innovation', 'strategic supplier partnership' and 'postponement concept' appear to be of primary importance and exhibit significant effects on product quality and business performance.

Adebayo (2012) conducted study on SCM Practices in Nigeria Today: Impact on SCM Performance. The SCM practices considered in this paper were namely strategic supplier partnership, customer relations practices, information sharing, information quality and postponement. This paper provides empirical justification for five key dimensions of SCM practices identified and describes the relationship among SCM practices and SCM performance as well as the impact of these practices on SCM performance. The study thus showed that SCM practices definitely impacts SCM performance.

Mahbubul (2013) conducted research on Effects of Supply Chain Management Practices on Customer Satisfaction in the pharmaceutical industry of Bangladesh: Evidence from Pharmaceutical Industry of Bangladesh. The results of the study indicate that SCM practices as observed in the industry comprise three dimensions, namely, collaboration and information sharing, logistics design and IT infrastructure, and organizational culture (OC). However, while the first two exert their impact on customer satisfaction, OC does not have any influence on it.

Boddy et al. (1998) found that more than half of the respondents to their survey considered that their organizations had not been successful in implementing supply chain partnering; Spekman et al. (1998), noted that 60% of supply chain alliances tended to fail. Deloitte Consulting survey reported that only 2% of North American manufacturers ranked their supply chains as world class although 91% of them ranked SCM as important to their firm's success (Thomas, 1999). Thus, while it is clear that SCM is important to organizations, effective management of the supply chain does not appear to have been realized.

Bowersox and Closs (1996) argued that to be fully effective in today's competitive environment, firms must expand their integrated behavior to incorporate customers and suppliers. This extension of integrated behaviors, through external integration, is referred to by Bowersox and Closs (1996) as supply chain management. In this context, the philosophy of SCM turns into the implementation of supply chain management: a set of activities that carries out the philosophy. This set of activities is a coordinated effort called SCM between the supply chain partners, such as suppliers, carriers, and manufacturers, to dynamically respond to the needs of the end customer (Greene, 1991).

Availability of accurate and up-to-date marketing data at every node within the supply chain is a key to create a seamless supply chain (Childhouse and Towill, 2003; Balsmeier and Voisin, 1996; Towill, 1997; Turner, 1993). Lalonde (1998) regards information sharing as one of key element that characterizes a strong supply chain relationship. Yu et al. (2001) point out that the negative impact of the bullwhip effect on a supply chain can be reduced or eliminated by sharing information with trading partners. Lalonde (1998) regards information sharing as a key to creating strong supply chain relationships.

Lau and Lee (2000) maintain that creating an environment for controlled sharing of business data and processes, improves information sharing effectiveness among trading partners. However, there is the reluctance on the part of organizations in the supply chain to share information with each other. Information is generally viewed as providing an advantage over competitors, and organizations resist sharing with their partners (Vokurka&Lummus, 2000) due to the fear of giving away competitive and sensitive information such as inventory levels, production schedules (Lancioni et al., 2000; Ballou et al., 2000; Croom et al., 2000).

To sum up, this chapter discussed the theoretical foundation of various constructs used in this research: SCM practices, supply chain responsiveness, and competitive advantage. In the next chapter, the researcher present the research methodology used to collect and analyze the data and their reliability and validity.

## 2.7. Conceptual Framework

Based on overall review of related literature, and particularly the work of Li *et al.* (2006), Lenny *et al.* (2007), Priscila and Luiz (2011) and Moslem *et al.* (2013), the following conceptual framework in which this specific study governed was developed as follows

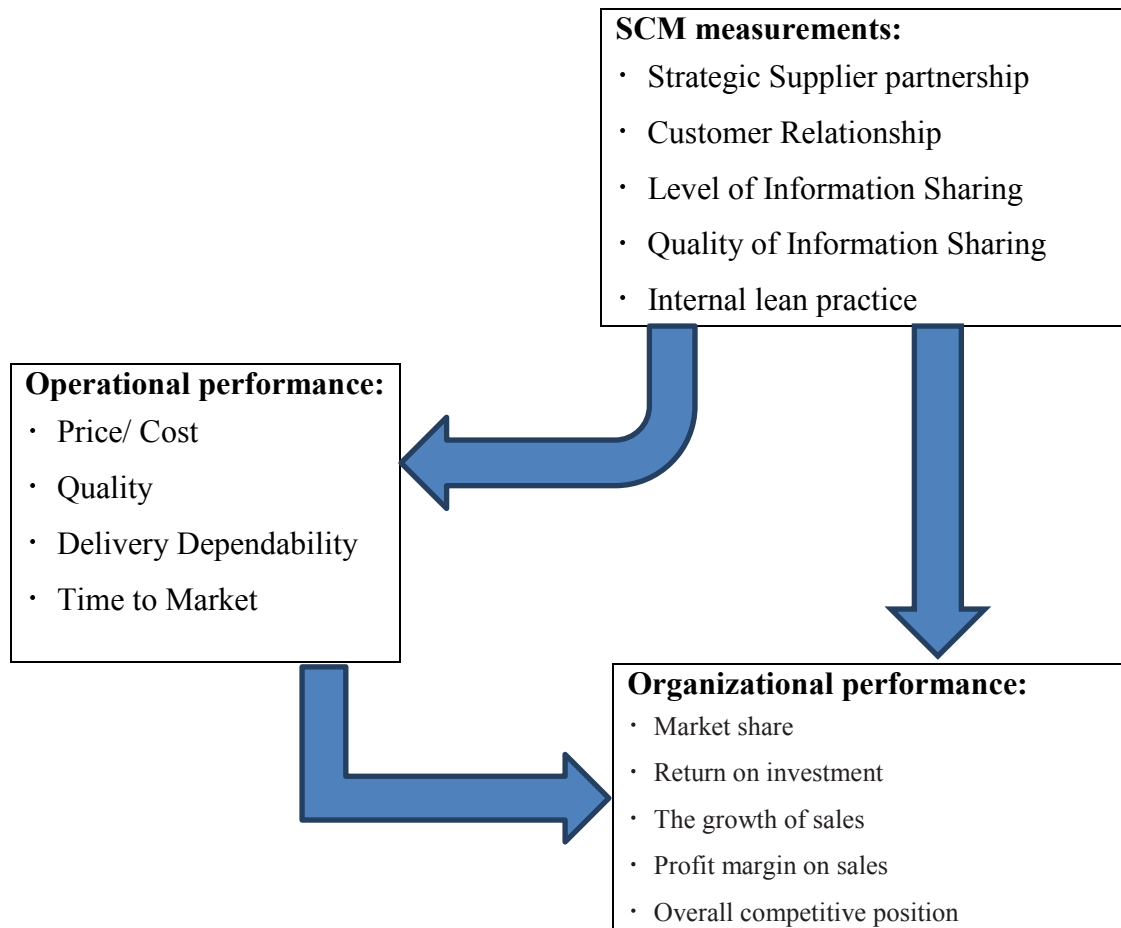


Fig 2.1 Conceptual framework for the study  
Source: adapted from Li *et al.* (2006) and Lenny *et al.* (2007).

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

This part describes the methodologies that were used in this study: the choice of particular research designs, data type and source of data, research approach, data gathering technique and instruments, sampling and sampling techniques and data analysis techniques along with an appropriate justification associated with each approach.

#### **3.2 Research Design**

Designing a study helps the researcher to plan and implement the study in a way that will help the researcher to obtain intended results, thus increasing the chances of obtaining information that could be associated with the real situation (Burns & Grove 2001). This study is an applied research which follows a correlation research approach in order to address the aforementioned objectives. It is conducted on one selected area of Yes natural spring water packing firm, in Addis Ababa, Ethiopia. The data used in the study are quantitative in nature which is collected from primary sources. The researcher used the Cross-sectional field survey method to assess the relationship between SCM measurements/practices and operational performance on one hand and SCM practices with organizational performance, and finally the relationship between operational performance and organizational performance of Yes natural spring water. In the cross sectional field survey, independent and dependent variables were measured at the same point in time by using a single questionnaire. In addition the study is also said to be associational in design because there is the intent to establish the relationship between dependent and independent variable of the study. The researcher selected the sample from the target population by using probability sampling particularly stratified sampling technique.

Correlation research aims to ascertain if there is a significant association between two variables (Reid, 1987). Hence, after the data were collected, the researcher analyzed the data by using correlation, particularly Pearson's coefficient of correlation, and regression analysis technique to show the effect of independent variables on the dependent variable.



### **3.3 Data Type and Source**

The researcher used primary data for the entire analysis of this study. The information was gathered through questionnaire from the selected sample of respondents/ employees of Yes natural spring water. The data collected from the respondents through questionnaires was used as primary data. According to Biggam (2008), primary data is the information that the researcher finds out by him/herself regarding a specific topic. It implies that the information resulting from it is more consistent with the research questions and objectives.

### **3.4 Data Gathering Technique and Instruments**

The primary data was gathered particularly using survey questionnaire. The researcher distributed the questionnaire to sampled respondents. For the purpose of this study a quantitative methodology involving a close-ended questionnaire was used as the measuring instrument. The close-ended questionnaires can be administered to groups of people simultaneously, since they are less costly and less time consuming than other measuring instruments. The standard questionnaire used to collect the necessary information regarding the study was adopted from the work of Li et al. (2006), Lenny *et al.* (2007), and Priscila and Luiz (2011). The Likert-type scale method used a range of responses: ‘Strongly Disagree’, ‘Disagree’, ‘Neutral’, ‘Agree’, and ‘Strongly Agree’, with a numeric value of 1-5, respectively. The usage of this particular scaling method ensured that the research study illustrated the ability to assess the responses and measure the responses quantifiably so that a pattern or trend may be produced in order to assess research hypotheses. As Neuman (2003) hypothesize, it is a process of asking many people the same questions and examining their answers.

### **3.5 Sampling and Sampling Techniques**

#### **3.5.1 Target Population**

According to Hair *et al.* (2010), target population is said to be a specified group of people or object for which questions can be asked or observed made to develop required data structures and information. Therefore, for this study, the target populations are employees of Yes natural spring water particularly those their education level is grade ten completed and above because it’s important for the researcher.

### 3.5.2 Sampling Techniques

For the purpose of this study, the researcher was used probability sampling particularly stratified sampling technique. The target population for the study will be classified into five strata based on the departments and section in the firm which is directly related with SC of the organization. Then the samples were selected from each stratum according to their proportion to the total population. Since the information was require for the study needs different people who have knowledge and awareness about different supply chain management practices/dimensions, competitive advantage and organizational performance of the firm. The departments was consider as strata, from which data was collect, were: production department, local sales and purchasing department, general accounts, property administration, general service and technique department.

### 3.5.3 Sample Size

Malhortra and Peterson (2006) and Zikmund (2003) stated that, the larger the sampling size of a research, the more accurate the data generated. However, due to time and financial limitations and the nature of the population, sample determination method will develop by Carvalho (1984) was preferred to be used by researcher as a method to determine a sample size.

Table 3.1: Carvalho's Sample Size Determination

<b>Population size</b>	<b>Small</b>	<b>Medium</b>	<b>Large</b>
51-90	5	13	20
91-150	8	20	32
151-280	13	32	50
281-500	20	50	80
501-1200	32	80	125
1201-3200	50	125	200
3201-10,000	80	200	315
10,001-35,000	125	315	500
35,001-150,000	200	500	800

Source: Carvalho (1984)

As table 3.2 indicates the total numbers of YES mineral water employees are 620, out of this about 125 was not be part of the target population due to education level (not completed grade 10) and some of them are out of the concerned departments. Therefore, from the remaining 495 employees 80 were considered as sample size of the study as per Carvalho's sample determination method.

### **3.6 Data Analysis**

After the data was collected, inferential statistical technique was employed to analyze the information, as this study is quantitative in nature. The data is analyzed using SPSS version 20. The statistical tools were aligned with the objectives of the research. Inferential statistics is particularly the Pearson's correlation was used to show the relationship and the strength/degree as well as direction of associations between variables. The other inferential statistics used is regression analysis so that to show interdependence of independent variables and dependent variable. Thus, both the strength of the relationship between variables and the influence of independent on dependent variable and statistical significance were assessed.

### **3.7 Validity and Reliability**

#### **3.7.1 Assessing Reliability**

According to Bryman and Bell (2007), reliability analysis is concerned with the internal consistency of the research instrument. As multiple items in all constructs were used, the internal consistency/reliabilities of SCM practices, operational performance, and organizational performance were assessed with Cronbach's Alpha and the reliability values for all constructs are confirmed as greater than 0.7, which are considered acceptable (Nunnally, 1978). The following table shows the summary of reliabilities of all constructs.

Table 3.3: Reliability of SCM Practices, Operational Performance and Organizational Performance

<b>Variable</b>	<b>Reliability</b>
<b>a) SCM practices</b>	-
Strategic supplier partnership	.872
Customer relation	.747
Level of information sharing	.747
Level of information quality	.779
Internal lean practices	.846
<b>b) Operational performance</b>	-
Price	.768
Quality	.871
Delivery dependability	.706
Time to market	.774
<b>c) Organizational performance</b>	.788

### 3.7.2 Analysis of Validity

Malhotra (2010) mentioned about three types of validity in his study: content validity, predictive validity, and construct validity. This study addressed content validity through the review of literature and adapting instruments used in previous research.

# **CHAPTE FOUR**

## **DATA PRESENTATION, ANALYSIS AND DISCUSSION**

### **4.1 Introduction**

As discussed in previous chapter, this study attempted to examine the Relationship between supply chain management practices and firm performance in case of Yes Natural Spring Water. Therefore, the findings of the study are presented and discussed in this chapter. The questionnaire were developed in five scales ranging from five to one; where 5 represents Strongly agree, 4 agree, 3 Neutral, 2 disagree, and 1 strongly disagrees. In order to assess the relationship between supply chain management practices and firm's performance, Correlation and regression analysis were conducted for scale typed questionnaire. A total of 80 questionnaires were distributed to employees and all of the questionnaire were obtained valid and used for analysis. The collected data were presented and analyzed using SPSS (version 20) statistical software.

The study used correlation analysis, specifically Pearson correlation to measure the degree of association between different variables under consideration. Regression Analysis was also used to test the effect of independent variable on dependent variable.

### **4.2 Inferential Statistics for SCM Practices and Firm Performance**

#### **4.2.1 Correlation Analysis**

Correlations are the measure of the linear relationship between two variables. A correlation coefficient has a value ranging from -1 to 1. Values that are closer to the absolute value of 1 indicate that there is a strong relationship between the variables being correlated whereas values closer to 0 indicates that there is little or no linear relationship. As described by Andy (2006), the correlation is a commonly used measure of the size of an effect: values of  $\pm 0.1$  represent a small effect,  $\pm 0.3$  is a medium effect and  $\pm 0.5$  is a large effect.

In this section, correlation analysis conducted in the light of each research objectives and hypotheses developed. The relationship between supply chain management practices and firm performance was investigated using correlation analysis. This provided correlation Coefficients which indicated the strength and direction of relationship. The p-value also indicated the probability of this relationship's significance.

#### 4.2.1.1 Correlation Analysis between Construct of SCM Practices and Operational Performance (OP)

Table 4.1: Correlation matrix between constructs of SCM practices and OP

		SSP	CR	LIS	LIQ	ILP	OP
<b>SSP</b>	Pearson Correlation	1	.687**	.528**	.615**	.369*	.752**
	Sig. (2-tailed)		.000	.000	.000	.016	.000
	N	80	80	80	80	80	80
<b>CR</b>	Pearson Correlation	.687**	1	.628**	.656**	.254	.642**
	Sig. (2-tailed)	.000		.000	.000	.104	.000
	N	80	80	80	80	80	80
<b>LIS</b>	Pearson Correlation	.528**	.628**	1	.683**	.456**	.516**
	Sig. (2-tailed)	.000	.000		.000	.002	.000
<b>LIQ</b>	N	80	80	80	80	80	80
	Pearson Correlation	.615**	.656**	.683**	1	.675**	.856**
	Sig. (2-tailed)	.000	.000	.000		.000	.000
	N	80	80	80	80	80	80
<b>ILP</b>	Pearson Correlation	.369*	.254	.456**	.675**	1	.709**
	Sig. (2-tailed)	.016	.104	.002	.000		.000
	N	80	80	80	80	80	80
<b>OP</b>	Pearson Correlation	.652**	.642**	.516**	.656**	.609**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	
	N	80	80	80	80	80	80

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).

The constructs of SCM practices which their relation with operational performance seen in the above table are Strategic supplier partnership (SSP), customer relation (CR), level of information sharing (LIS), level of information quality (LIQ) and internal lean practices (ILP).

The correlation between constructs of SCM practices with operational performance was run as seen in the above table. The result of correlation matrix between each constructs and operational performance are analyzed as follow:

As it is indicated in the table, there is significant positive correlation between strategic supplier partnership (SSP) and operational performance with correlation coefficient of 0.752 ( $r=0.752$ ) and significance less than 0.001. Therefore, strategic supplier partnership and operational performance are genuinely correlated.

Table 4.1 also depict that as there is strong positive relationship between customer relation (CR) and operational performance with a Pearson correlation coefficient of 0.642 ( $r=0.642$ ) and

significance value is less than 0.001. This significance tells that there is genuine relationship between customer relation and operational performance.

As the conducted Pearson correlation test indicated in the table 4.1, also there is significant positive correlation between level of information sharing (LIS) and operational performance. In other words level of information sharing and operational performance are Correlated in high relationship ( $r=0.516$ ) with level of significance less than 0.001.

For Pearson correlation test conducted to know whether there is significant correlation or not between Level of Information Quality (LIQ) and operational performance, table 4.1 clearly indicates that there is strong and positive relation between Level of Information Quality and operational performance. The result of correlation analysis between Level of Information Quality and Operational performance is correlation coefficient of 0.856 ( $r=0.856$ ) and significance value less than 0.001.

For Internal Lean Practices (ILP) and Operational Performance also Pearson correlation test was conducted and the results are shown in table 4.1. As it is shown in the table, there is strong positive significant correlation between Internal Lean practices and Operational Performance. In other words Internal Lean Practices and Operational Performance have strong relationship ( $r=0.709$ ) with significance value less than 0.001.

#### 4.2.1.2 Correlation between SCM Practices and OP

Pearson correlation test was conducted between SCM practices (collective representative of five constructs of SCM practices) and the results are shown in table 4.2. As it is shown in the table, there is significantly strong correlation between SCM practices and operational performance. In other words SCM practices and operational performance have strong positive relationship with correlation coefficient of 0.850 ( $r=0.850$ ) and significance value less than 0.01.

Table 4.2 Correlation between SCM Practices and OP

		<b>SCM practices</b>	<b>OP</b>
<b>SCM practices</b>	Pearson Correlation	1	.850**
	Sig. (2-tailed)	.80	.000
	N		42
<b>OP</b>	Pearson Correlation	.850**	1
	Sig. (2-tailed)	.000	
	N	80	42

\*\* . Correlation is significant at the 0.01 level (2-tailed).

#### 4.2.1.3 Correlation Analysis between Constructs of SCM Practices and Organizational Performance (OrP)

Table 4.3 Correlation Matrix between Construct of SCM Practices and Organizational Performance

		<b>SSP</b>	<b>CR</b>	<b>LIS</b>	<b>LIQ</b>	<b>ILP</b>	<b>OrP</b>
<b>SSP</b>	Pearson Correlation	1	.687**	.528**	.615**	.800*	.800**
	Sig. (2-tailed)		.000	.000	.000	.000	.000
	N	80	80	80	80	80	80
<b>CR</b>	Pearson Correlation	.687**	1	.628**	.656**	.763**	.763**
	Sig. (2-tailed)	.000		.000	.000	.000	.000
	N	80	80	80	80	80	80
<b>LIS</b>	Pearson Correlation	.528**	.628**	1	.683**	.727**	.727**
	Sig. (2-tailed)	.000	.000		.000	.000	.000
<b>LIQ</b>	N	80	80	80	80	80	80
	Pearson Correlation	.615**	.656**	.683**	1	.797**	.797**
	Sig. (2-tailed)	.000	.000	.000		.000	.000
	N	80	80	80	80	80	80
<b>ILP</b>	Pearson Correlation	.369*	.254	.456**	.675**	.520**	.520**
	Sig. (2-tailed)	.016	.104	.002	.000		.000
	N	80	80	80	80	80	80
<b>OrP</b>	Pearson Correlation	.652**	.642**	.516**	.656**	1	1
	Sig. (2-tailed)	.000	.000	.000	.000		
	N	80	80	80	80	80	80

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).

The correlation between constructs of SCM practices with organizational performance was run as seen in the above table. The result of correlation matrix between each constructs and organizational performance are analyzed as follow:

As it is shown in the table 4.3 above, strategic supplier partnership positively related to organizational performance with a Pearson correlation coefficient of 0.800 ( $r=0.800$ ) and significance value is less than 0.001. This significance tells that there is genuine relationship between strategic supplier partnership and organizational performance.

Table 4.3 also depict that as there is strong positive relationship between customer relation (CR) and organizational performance with a Pearson correlation coefficient of 0.763 ( $r=0.763$ ) and significance value is less than 0.001. This significance tells that there is genuine relationship between customer relation and organizational performance.



As the conducted Pearson correlation test indicated in the table 4.3, also there is significant positive correlation between level of information sharing (LIS) and organizational performance with a Pearson correlation coefficient of 0.727 ( $r=0.727$ ) and significance value is less than 0.001. This significance tells that there is genuine Level of Information Sharing and Organizational Performance.

For Pearson correlation test conducted to know whether there is significant correlation or not between Level of Information Quality (LIQ) and organizational performance, table 4.3 clearly indicates that there is strong and positive relation between Level of Information Quality and operational performance. The result of correlation analysis between Level of Information Quality and Organizational performance is correlation coefficient of 0.797 ( $r=0.797$ ) and significance value less than 0.001 which indicates as there is genuine relation between them.

For Internal Lean Practices (ILP) and Organizational Performance also Pearson correlation test was conducted and the results are shown in table 4.1. As it is shown in the table, there is positive and significant correlation between Internal Lean practices and Organizational Performance with a Pearson correlation coefficient of 0.520 ( $r=0.520$ ) and significance value is less than 0.001. This significance tells that there is genuine relation between internal lean practices and organizational performance.

#### 4.2.1.4 Correlation between SCM Practices and Organizational performance (OrP)

Table 4.4: Correlation Matrix between SCM Practices and OrP

		SCM practices	OP
<b>SCM practices</b>	Pearson Correlation	1	.864**
	Sig. (2-tailed)		.000
	N	80	80
<b>OP</b>	Pearson Correlation	.864**	1
	Sig. (2-tailed)	.000	
	N	80	80

\*\* . Correlation Is Significant At The 0.01 Level (2-Tailed)

Pearson correlation test was conducted between SCM practices (collective representative of five constructs of SCM) and organizational performance. As it is shown in the table 4.4 above there is strong positive relationship between SCM Practices and organizational performance with a Pearson correlation coefficient of 0.864 ( $r=0.864$ ) and significance value is less than 0.001. This

significance tells that there is genuine relationship between SCM practices and organizational performance.

#### 4.2.1.5 Correlation Analysis between OP Measures and OrP

Table 4.5: Correlations Matrix between OP measures and OrP

		Price	Quality	Delivery Dependability	Time to Market	OrP
<b>Price</b>	Pearson Correlation	1	.633**	.582**	.475**	.747**
	Sig.(2-tailed)		.000	.000	.001	.000
	N	80	80	80	80	80
<b>Quality</b>	Pearson Correlation	.633**	1	.510**	.363*	.704**
	Sig. (2-tailed)	.000		.001	.018	.000
	N	80	80	80	80	80
<b>Delivery Dependability</b>	Pearson Correlation	.582**	.510**	1	.677**	.721**
	Sig. (2-tailed)	.000	.001		.000	.000
<b>Time to Market</b>	N	80	80	80	80	80
	Pearson Correlation	.475**	.363**	.677**	1	.583**
	Sig. (2-tailed)	.001	.018	.000		.000
	N	80	80	80	80	80
<b>OrP</b>	Pearson Correlation	.747**	.704**	.721**	.583**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	80	80	80	80	80

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).

The above table shows the matrix of correlation between operational performance measures (i.e., price, quality, delivery dependability, and time to market) and organizational performance. The analysis of correlation matrix between each measures of operational performance and organizational performance is given as follows:

As shown in table 4.5 above, Pearson correlation test was conducted for price and organizational performance the results indicates as there is strong positive significant correlation between Price and Organizational Performance. In other words Price and Organizational Performance have genuine relationship with correlation coefficient of 0.747 ( $r=0.747$ ) and significance value less than 0.001.

On the other hand, as it is shown in the table 4.5 above there is strong positive relationship between quality and organizational performance with a Pearson correlation coefficient of 0.704 (0.704) and significance value is less than 0.001. This significance tells that there is genuine relationship between quality and organizational performance.

Also for delivery dependability and organizational performance Pearson correlation test was conducted and the results are shown in above table 4.5. As it is shown in the table, there is strong positive significant correlation between delivery dependability and organizational performance. In other words delivery dependability and organizational performance have genuine relationship ( $r=0.721$ ) at significance value less than 0.001. correlation test for between time to market and organizational performance was also conducted as seen in table 4.5 above, the result shows that time to market positively related to organizational performance with a Pearson correlation coefficient of 0.583 ( $r=0.583$ ) and significance value is less than 0.001. This significance tells that there is genuine relationship time to market and organizational performance.

**4.2.1.6 Correlation between OP and OrP.**

As it is shown in the table 4.6 below there is strong positive relationship between operational performance and organizational performance with a Pearson correlation coefficient of 0.814 ( $r=0.814$ ) significance value is less than 0.001. This significance tells that there is genuine relationship between operational performance and organizational performance.

Table 4.6: Correlation between OP and OrP

		<b>OP Performance</b>	<b>OrP</b>
<b>OP</b>	Pearson Correlation	1	.864**
	Sig. (2-tailed)		.000
	N	80	80
<b>OrP</b>	Pearson Correlation	.814**	1
	Sig. (2-tailed)	.000	
	N	80	80

### 4.3 Regression Analysis

This regression analysis is conducted to know by how much the independent variable explains the dependent variable. The regression was conducted between supply chain management practices (independent variable) and operational performance (dependent variable) in the first regression. The second regression was made between supply chain management practices (independent variable) and organizational performance (dependent variable). Finally, the third regression was made between operational performances (independent variable) and organizational performance (dependent variable). The results of the regression analysis are presented as follows.

#### 4.3.1 Multi Collinearity Test

Table 4.7: Multi collinearity test of independent variable

Model	Collinearity	Statistics
	Tolerance	VIF
Strategic supplier partnership	.111	9.021
Customer relation	.184	8.942
Level of information sharing	.236	4.232
Level of information quality	.151	6.620
Internal lean practices	.275	3.632

Dependent Variable: Organizational Performances

The result in table 4.3 show that the co linearity between independent variables has no series problem Since the value of tolerance for all independent variable is greater than 0.1 and all VIF is less than ten (VIF<10).

#### 4.3.2 Regression Analysis between SCM Practices and OP

Table 4.8: Regression Analysis between SCM Practices and OP

Model	B	Std. Error	t-stat	p-value	Adjusted	R Square
1	.850	.804	10	.200	.000	.715

a. Predictor: SCM practices.

b. Dependent variable: Operational Performance

As shown in the table 4.8, there is causal relationship between SCM practices and operational performance. The value of R Square is .715, which implies that SCM practices can account for 71.5% of the variation in operational performance. Although there might be many factors that can explain the variable on operational performance, nearly 71.5% of it is explained by SCM practices. This means that the remaining 28.5% of the variation in operational performance cannot be explained by those dimensions of SCM practices. The significant and positive  $\beta$  coefficient also implies that SCM practices have a positive and significant influence on operational performance.

### 4.3.3 Regression Analysis between SCM Practices and OrP

Table 4.9: Regression Analysis between SCM Practices and OrP

Model	B	Std. Error	t-stat	p-value	Adjusted	R Square
2	.864	.090	10	.874	.000	.777

*Predictor: SCM practices.*

*Dependent variable: Organizational Performance*

As shown in the table 4.9, there is causal relationship between SCM practices and organizational performance. There might be many factors that can explain this variable, but our model, which includes SCM practices, can explain approximately 77.7% of it. This suggests that the remaining 22.3% of the variation in organizational performance cannot be explained by those dimensions of SCM practices. The significant and positive  $\beta$  coefficient also implies that SCM practices have a positive influence on organizational performance.

### 4.3.4 Regression Analysis between OP and OrP

Table 4.10: Regression Analysis between OP and OrP

Model	B	Std. Error	t-stat	p-value	Adjusted	R Square
3	.814	.102	8	.878	.000	.655

*Predictor: Organizational Performance.*

*Dependent variable: Organizational Performance*

As shown in the table 4.10, there is causal relationship between operational performance and organizational performances. The value of R Square in this model is .655, which implies that operational performance can account for 65.5% of the variation in organizational performance. Although there might be many factors that can explain the variable on organizational performance, approximately 65.5% of it is explained by operational performance. This indicates that the remaining 34.5% of the variation in organizational performance cannot be explained by operational performance. The P value and positive  $\beta$  coefficient also implies that operational performance have a positive and significant influence on organizational performance.

#### **4.4 Discussion of the Results**

The objective of this study is to determine the underlying dimensions of SCM practices and to empirically test a framework identifying the relationships among SCM practices, operational performance and SCM-related organizational performance with special emphasis on Yes Natural Spring Water. The literature has suggested that there is a relationship between SCM practices and operational performance, SCM practices and organizational performance, and operational performance and organizational performance. But, the dimensions used in expressing SCM practices and the measures of operational performance, are not directly the same with the framework used in the previous studies.

This study makes contributions by exploring the relationship between SCM practices, operational performance and organizational performance. The results of the study are discussed as follows:

This study revealed that there is significant positive relationship between SCM practices and operational performance. As seen from the results, strategic supplier partnership, which is one of the construct of SCM practices is positively correlated with coefficient 0.752 ( $r=0.752$ ) and significant level less than 0.001 with operational performance. As Li *et.al* (2006) describe, effective partnerships with suppliers can be critical factor to guide effective operational performance of organizations in the supply chain. The finding shows customer relation which is also another construct of SCM practices is correlated with operational performance with correlation coefficient 0.642 ( $r=0.642$ ) and significance value less than 0.001. As pointed out by Day (2000), devoted relationships with customers are the most sustainable advantage because of

their essential barriers to competition. This statement indicates that customer relation plays vital role to enhance operational performance of the organization which enables to be competitive.

The other construct of SCM practices is level of information sharing which is positively correlated with operational performance with correlation coefficient 0.516 ( $r=0.516$ ) and confidence level less than 0.001. As Alireza et al. (2011) stated, integration and coordination across supply chain can be well provided through information sharing. From Alirezas' statement, it is possible to conclude as there is positive relationship between information sharing and operational performance of the firm in the supply chain.

The other construct of SCM practices which is correlated positively with operational performance with correlation coefficient 0.548 ( $r=0.856$ ) and confidence level less than 0.001 is the level of information quality. As Ahmadi (2005) describes, effective use of relevant and timely information by all the functional elements in the supply chain is considered as a competitive factor and distinctive, and this statement is very consistent with the finding of this study.

The last construct of SCM practices is internal lean practices which is positively correlated with coefficient of 0.709 ( $r=0.709$ ) with operational performance at level of significant of less than 0.001. James (2003) stated that internal lean practices as Lean production associated with continuous pursuit of improving the processes, a philosophy of eliminating all non-value adding activities and reducing waste within an organization. Moslem *et al.* (2013), on the other hand, also described that internal lean practice can reduce waste and contribute to lower transaction cost. This realizes that as the organization implement lean practices the firm operational performance will be enhanced.

In general as the finding indicates there is a genuine relationship between SCM practices and operational performance with a Pearson correlation coefficient of 0.850 ( $r=0.850$ ) and significance value is less than 0.001. Moreover, 71.5% of the variability in operational performance originates from SCM practices based on regression analysis result of SCM practices on operational performance. This result is supported by the work of Moslem (2013), which indicates that when the SCM practices are good, the operational performance of supply chain will also become good.

On the other hand, this study also revealed that there is significant positive relationship between SCM constructs and organizational performance. As the test results indicate there is positive

relationship between strategic supplier partnership and organizational performance with correlation coefficient of 0.800 ( $r=0.800$ ) and significance value less than 0.001. The evidence from the review literature shows as strategic partnerships with suppliers enable organizations to work more effectively with a few important suppliers who are willing to share responsibility for the success of the products. Suppliers participating early in the product-design process can offer more cost effective design choices, help select the best components and technologies, and help in design assessment (Tan *et al.*, 2002).

From this discussion it is possible to show as there is a relation between strategic supplier partnership and organizational performance. The other practice of SCM is customer relation, which is positively correlated with organizational performance with Pearson correlation coefficient 0.763 ( $r=0.763$ ) and significant level less than 0.001. The finding of this study is consistent with the work of Carr and Pearson (1999) which describe that focusing and maintaining the customer relationship will enable the organizations to be more responsive towards customers' needs and will result creating greater customer loyalty, repeat purchase and willing to pay premium prices for high quality product that will guaranty in increasing market share.

Level of information sharing is one among the constructs of SCM practices which has strong positive relationship with organizational performance with correlation coefficient 0.727 ( $r=0.727$ ) and significant value less than 0.001. This result is consistent with the work of Lalonde (1998) which describes sharing of information as one of five building blocks that characterize a solid supply chain relationship and have an impact on the performance of organizations in supply chain.

Level of information quality is the other construct of SCM practices which has positive and strong relation with organizational performance with correlation coefficient 0.792 ( $r=0.792$ ) and significance value less than 0.001. This finding is supported by the work of Child house and Towill (2003). The empirical findings of Child house and Towill(2003) reveal that simplified material flow, including streamlining and making highly visible all information flow throughout the chain, is the key to an integrated and effective supply chain.

Internal lean practice is also one construct of SCM practices which is positively correlated with organizational performance with coefficient 0.52 ( $r=0.520$ ) and significance level less than 0.001. As White (1993) describes, production of lean and timely is a production system that its



aims are to optimize processes and production process by reducing waste and other inefficient factors. This has an impact on the organizational performance in long term. From this discussion, it is possible to conclude that there is relationship between internal lean practices and organizational performance.

In general SCM practices have strong positive relationship with organizational performance with Pearson correlation coefficient 0.864 ( $r=0.864$ ) and significance value less than 0.001. It also explains 77.7% organizational performance. This finding is consistent with Adebayo (2012) who describes SCM practices as ‘the task of integrating organizational units along a supply chain and coordinating materials, information and financial flows in order to fulfill (ultimate) customer demands with the aim of improving competitiveness of the supply chain as a whole’. Thus, the prime aim of realizing the enhancement of organizational performance in supply chain is to produce value whether in the form of products or services to end user.

The research findings also indicate that operational performance is positively correlated with organizational performance. One among measures of operational performance is price, which its test result indicates as it is positively correlated with organizational performance with Pearson correlation coefficient 0.747 ( $r=0.747$ ) and significance value less than 0.001. The finding is consistent with the work of Li *et al.* (2006); price is one component of operational performance which is source of competitive advantage that enables organization to create a state of defense against competitors and includes a feature that allows an organization to distinguish itself from its competitors.

The other measure of operational performance is quality which is also positively correlated with organizational performance with correlation coefficient of 0.704 ( $r=0.704$ ) and significance value less than 0.001. As Koufteros *et al.* (1997) and Li *et al.* (2006) describe quality as one among the measures of operational performance which contributes for competitive capabilities and value-to-customer.

The other way used to measure operational performance is delivery dependability which is also shown as it has positive correlation with organizational performance with correlation coefficient of 0.721 ( $r=0.721$ ) and significance value less than 0.001. Li *et al.* (2006) also describes delivery dependability as one dimension of the competitive advantage which in long contributes for organizational enhancement. This justify as there is a relationship between delivery dependability and organizational performance.

The last measure of operational performance used in the study is time to market which the result indicate as there is positive relationship between time to market and organizational performance with correlation coefficient 0.583 ( $r=0.583$ ) and significance value less than 0.001. Stalk (1988) in his study has identified time-based competition as an important competitive priority which its source is operational performance. In general operational performance is correlated genuinely with organizational performance with a Pearson correlation coefficient of 0.14 ( $r=0.814$ ) and significance value is less than 0.001. Based on regression analysis result of operational performance on organizational performance, 65.5% of the variability in organizational performance originates from operational performance. Identifying price/cost, quality, and delivery, as important competitive priorities which can be conceptualize as measures of operational performance improvement (Roth and Miller, 1990; and Tracey, 1999).

# **CHAPTER FIVE**

## **SUMMARY OF MAJOR FINDINGS, CONCLUSION AND RECOMMENDATION**

### **5.1 Summary of Major Findings**

This study is intended to test if there is a relationship between SCM practices, operational performance and organizational performance. Based on the results of the study the summary of major findings are as follows.

The test result indicates that SCM practices has positive and strong correlation ( $r=0.850$ ) with operational performance at significance level less than 0.001. In other way, SCM practices have also contributed 78.8% for the variability of operational performance. On the other hand, the test result of SCM practices and organizational performance indicates that SCM practices has significant positive correlation ( $r=0.864$ ) at significance level less than 0.001 with organizational performance. In addition, 77.7% of variability of organizational performance explained by SCM practices. Finally, the test result of operational performance and organizational performance indicates that operational performance is positively correlated to organizational performance with correlation coefficient of 0.814 ( $r=0.814$ ) and the significance value is less than 0.001. On the other way, the regression result of operational performance and organizational performance indicates that operational performance can explain approximately 68.4% of organizational performance.

### **5.2 Conclusion**

Based on the results of the study and the summary of findings the following conclusions are given.

There is strong and positive relationship between SCM practices and operational and organizational performance. In addition, SCM practice has strong significant influence on both operational and organizational performance. Operational performance is also positively and genuinely correlated with organizational performance. As far as their causal relationship is concerned, operational performance has an influence on organizational performance.

### **5.3 Recommendation**

On the basis of the finding and the conclusion reached, the following suggestions are forwarded

- So as to be competitive enough, it is better for the organization to give due attention on SCM practices for more improvement of their operational performance.
- In order to achieve advancement in marketing and financial performance in the long run through enhancing organizational performance, it is better for the organization to give due emphasis on SCM practices.
- In order to foster organizational performance, it is also better for the organization to give due emphasis to operational performance measures.

### **5.4 Implication for Future Research**

It should be noted that the SCM practices maybe influenced by contextual factors, such as the type of industry, firm size, a firm's position in the supply chain, supply chain length, and the type of a supply chain. For example, the level of customer relationship practice, measured by customer satisfactions and expectations, maybe higher for company located at the end of a supply chain (close to the consumer). The larger organizations may have higher levels of SCM practices since they usually have more complex supply chain networks necessitating the need for more effective management of supply chain. The level of information quality maybe influenced negatively by the length of a supply chain, information suffers from delay and distortion as it travels along the supply chain, the shorter the supply chain, the less chance it will get distorted.

In another way, the concept of SCM is complex and involves a network of companies in the effort of producing and delivering a final product, it is difficult to cover entire domain just in one study. Future research can expand the domain of SCM practice by considering additional dimensions such as geographical proximity, cross-functional coordination, logistics integration, and agreed supply chain leadership, which have been ignored from this study.

The future study can also test the relationships/dependencies among five dimensions of SCM practices. For example, information sharing may require the establishment of a strategic supplier partnership and customer relation.

This study focus on showing relationship between SCM practices and performance at organizational level, future research can study SCM issues at the supply chain level. It will also be of interest to use the respondents from pairs of organizations at two ends of supply chains. By comparing different view of SCM practices from organizations across the supply chain, it is possible to identify the strength and weakness of the supply chain and also the best common SCM practice across the supply chain.

Future studies can also examine the proposed relationships by bringing some contextual variables into the model, such as organizational size and supply chain structure. For example, it will be intriguing to investigate how SCM practice differs across organization size. It will also be interesting to examine the impact of supply chain structure (supply chain length, organization's position in the supply chain, channel structure, and so on) on SCM practice and operational as well as organizational performance.

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**Appendix**  
**ADDIS ABABA UNIVERSITY**  
**SCHOOL OF COMMERCE**  
**QUESTIONNAIRE**

**Questionnaire to be Distributed for the Employees of the YES Food and Beverage Plc**

Dear Respondents;

My name is Elsabet Endashaw conducting thesis entitled “**Investigate The Effect Of Product Supply Chain For Market Competitiveness in Case of YES Food and Beverage Plc**” for partial fulfillment the University’s (Addis Ababa University) requirement set for awarding of a Master of Arts Degree in Logistics and Supply Chain Management. I would like to extend my deep appreciation to your company and the staff for the willingness in undertaking this valuable research. The information obtained from this questionnaire will be kept confidential and will not be used for any other purposes. Hence, I am kindly asking respondents to give your candid information.

NB:

- It is not necessary to write your name
- Try to address all the question given below
- For the closed ended questions use (√)mark for your choice in the given box

**Contact Address**

If you have any query, please do not hesitate to contact me and I am available as per your convenience at (Mobile: 09-21-23-60-98 or e-mail: *elsabetendad29@gmail.com*)

***Thank you for your cooperation!***

**PART I: Demographic Information**

1 Gender; Male  Female

2. Educational Qualification:

Grade 10 completed  Grade 12 completed  Certificate

College diploma  First Degree  Second Degree and above

3. Job title

CEO/President  Vice President  Director  Sales Manager

Other \_\_\_\_\_

4. Years stayed at the organization:

Under 1 years  1–3 years  4–6 years  over 6 years

**Part II: Questions Directly Related with the Study**

**1. Supply chain management practices**

Here under the questions with regard to SCM practices of your firm, therefore, you are kindly requested to put “√” “X” mark on the box which represents your degree of agreement. 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree, 6 = not applicable.

<b>Strategic supplier partnership:</b>	1	2	3	4	5	6
1. We consider quality as our number one criterion in selecting supplier.						
2. We include our key supplier in our planning and goal-setting activities.						
3. We regularly solve problems jointly with our supplier.						
4. We have been helping our suppliers to improve their product quality.						
5. We have continuous improvement programs that include our key suppliers.						
6. We actively involve our key suppliers in new product development processes						
<b>Customer relationship:</b>						
1. We frequently interact with customers to set reliability, responsiveness, and other standards for us.						
2. We frequently measure and evaluate customer satisfaction.						
3. We frequently determine future customer expectations						
4. We facilitate customers’ ability to seek assistance from us.						
5. We periodically evaluate the importance of our relationship with our customers.						
<b>Level of information sharing:</b>						
1. We inform trading partners in advance of changing needs.						
2. Our trading partners share proprietary information with us.						
3. Our trading partners keep us fully informed about issues that affect our business.						
4. Our trading partners share business knowledge of core business processes with us						
5. We and our trading partners exchange information that helps establishment of business planning.						
6. Exchange of information with our partners (formal or informally) is						

frequent						
7. We and our trading partners keep each other informed about events or changes that may affect the other partners						
<b>Level of information quality:</b>						
1. Information exchange between our trading partners and us is timely.						
2. Information exchange between our trading partners and us is accurate.						
3. Information exchange between our trading partners and us is complete.						
4. Information exchange between our trading partners and us is adequate						
5. Information exchange between our trading partners and us is reliable.						
<b>Internal lean practices</b>						
1. Our firm reduces process set-up time (time required to prepare or refit equipment/workstation for production)						
2. Our firm has continuous quality improvement programs						
3. Our firm produces only what is demanded by customers when needed (e.g. JIT)						

## 2. Competitive Advantage

Here under the questions with regard to competitive advantage of your firm, therefore, you are kindly requested to put “√ ” “X” mark on the box which represents your degree of agreement. 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree, 6 = not applicable.

<b>Price/cost</b>	1	2	3	4	5	6
1. We are able to offer prices as low or lower than our competitors.						
2. Our capacity utilization is very good.						
3. Our Inventory turnover is high.						
4. We run operation with less Production cost.						
5. We offer competitive prices.						
<b>Quality:</b> an organization is capable of offering product quality and performance that creates higher value for customers.						
1. We are able compete based on quality.						
2. We offer products that are highly reliable.						

3. We offer products that are very durable.						
4. We offer high quality products to our customer.						
<b>Delivery dependability:</b> an organization is capable of providing on time the type and volume of product required by customer(s).						
1. We deliver the kind of products needed.						
2. We deliver customer order on time.						
3. We provide dependable delivery.						
4. Time to solve customer complaints is short.						
5. Customer order processing time is short.						
<b>Time to market:</b> an organization is capable of introducing new products faster than major competitors.						
1. We deliver product to market quickly.						
2. We have time-to-market lower than industry average.						
3. We are first in the market in introducing new products.						
4. We have fast product development.						

### 3. Organizational performance

Here under the questions with regard to organizational performance of your firm, therefore, you are kindly requested to put “√ ” “X” mark on the box which represents your evaluation level. With 1 = significant decrease, 2 = decrease, 3=same as before, 4=increase, 5=significant increase, 6 = not applicable.

<b>Organizational performance:</b> how well an organization achieves its market-oriented goals as well as its financial goals in the past five years?	1	2	3	4	5	6
1. Market share						
2. Return on investment.						
3. The growth of market share.						
4. The growth of sales.						
5. Growth in return on investment.						
6. Profit margin on sales.						
7. Overall competitive position.						



**ለየስ ምግብ እና መጠጥ ሀላፊነቱ የተወሰነ የግል ማህበር ሰራተኞች የሚሞላ መጠይቅ**

እኔ ኤልሳቤት እንዳሻው በየስ ምግብ እና መጠጥ ሀላፊነቱ የተወሰነ የግል ማህበር የምርት አቅርቦት ጥምረት እና ለገበያ ተፎካካሪነት ያለው ውጤት ላይ የሚያተኩር ጥናት በአዲስ አበባ ዩኒቨርሲቲ ለማስተርስ ዲግሪ መመረቂያ ጽሑፍ የሚያገለግል ጥናት እየሰራሁ እገኛለሁ። በመሆኑም እናንተም ይህን መጠይቅ በምትችሉት አቅም በመሙላት እንድትተባበሩኝ በትህትና እጠይቃለሁ።

ድርጅታችሁ እንዲሁም የድርጅታችሁ ሠራተኞች ለዚህ ጥናት መሳካት ፈቃደኛ በመሆናቸው ልባዊ አድናቆቴንና ምስጋናዬን እየገለጽኩ ከመጠይቁ የሚገኙ መረጃዎች ለሌላ ዓላማ እንደማይውሉ ከወዲሁ አረጋግጣለሁ። በመጨረሻም ለቀረቡት ጥያቄዎች ትክክለኛውን መረጃ እንድትሰጡ በትህትና እጠይቃለሁ።

**መሟላት ያለባቸው ነገሮች**

- ስምዎን መጻፍ አያስፈልግም
- ሁሉንም ጥያቄዎች ይመልሱ
- ምላሾን ✓ ምልክት በማስቀመጥ ይግለጹ

አድራሻ:- ለማንኛውም አስተያየት 0921 23 60 98 E-mail: [elsabetendad29@gmail.com](mailto:elsabetendad29@gmail.com)

**ክፍል 1. የመላሽ የግል መግለጫ**

1. የትምህርት ደረጃ  
 10ኛ ክፍል     12ኛ ክፍል     ሰርተፍኬት     ዲፕሎማ   
 የመጀመሪያ ዲግሪ     ሁለተኛ ዲግሪና ከዚያ በላይ
2. ጾታ  
 ወንድ     ሴት
3. ድርጅቱ ውስጥ የቆዩበት ዓመታት  
 ከ 1 አመት ከዚያ በታች     ከ 1 እስከ 3     ከ 4 እስከ 6   
 ከ6 አመት በላይ
4. የስራ መደብ መጠሪያ  
 ፕሬዝዳንት     ምክትል ፕሬዝዳንት     የሽያጭ ሠራተኛ     ሌሎች

**ክፍል 2. ከጥናቱ ጋር ቀጥታ ተያያዥነት ያላቸው ጥያቄዎች**

**1. የአቅርቦት ሂደት አስተዳደር**

ከዚህ በታች የድርጅቱን የአቅርቦት ሂደት አስተዳደር ለሚመለከቱ ጥያቄዎች ምላሽን ✓ ምልክት በማስቀመጥ ይግለጹ።

- 1) በጣም እስማማለው፣      2) እስማማለው፣      3) አልወሰንኩም፣      4) አልስማማም
- 5) በጣም አልስማማም

የአከፋፋዮች ሽርክና ስትራቴጂ	1	2	3	4	5
1. በየጊዜው ችግሮችን አከፋፋዮች ጋር በጋራ እንፈታለን።					
2. አከፋፋዮች የሥራ ጥራታቸውን እንዲያሻሻሉ እናግዛለን።					
3. ከቁልፍ አከፋፋዮች ጋር ቀጣይነት ያለው የፕሮግራም ማሻሻያ እንተገብራለን።					
4. በእቅድ እና በግብ ዝግጅት ወቅት ቁልፍ አከፋፋዮች ከግንዛቤ እናስገባለን።					
5. በምርት ማሻሻያ ወቅት ቁልፍ አከፋፋዮች እናሳትፋለን።					
<b>ከደንበኞች ጋር ያለ ግንኙነት</b>					
1. በተደጋጋሚ ከደንበኞች ጋር ጥምረት በመፍጠር ተአማኒነትን፣ የሀላፊነት ስሜት እና ሌሎች መፍጠራችን መገለጫዎቻችን ናቸው።					
2. በተደጋጋሚ የደንበኞቻችንን እርካታ እንገመግማለን።					
3. በተደጋጋሚ የደንበኞቻችንን የወደፊት ፍላጎት እንወስናለን።					
4. ደንበኞች የኛን ድጋፍ እንዲያገኙ ሁኔታዎችን እናመቻቻለን።					
5. በየጊዜው ከደንበኞቻችን ጋር ያለንን ግንኙነት ጠቀሜታ እናምናለን።					
<b>የመረጃ ልውውጥ መጠን</b>					
1. በተደጋጋሚ ከንግድ አጋሮቻችን ጋር በማንኛውም መልኩ የመረጃ ልውውጥ እናደርጋለን።					
2. የማሻሻያ ለውጦች ሲኖሩ ለንግድ አጋሮቻችን መረጃ እንሰጣለን።					
3. ከንግድ አጋሮቻችን ጋር ስለ ድርጅታችን ምርት እና ሽያጭ መራጃ እንለዋወጣለን።					
4. የንግድ አጋሮቻችን ድርጅቱን ሊጎዱ የሚችሉ ጉዳዮችን ሙሉ ለሙሉ ያሳውቁናል።					
5. የንግድ አጋሮቻችን በንግድ እውቀቶች እና ሂደቶች ዙሪያ መረጃ እንለዋወጣለን።					
6. ከንግድ አጋሮቻችን ጋር የምናደርገው የመረጃ ልውውጥ ሚስጢራዊነቱ የተጠበቀ ነው።					

<b>የመረጃ ጥራት ደረጃ</b>					
1. ከንግድ አጋሮቻችን ጋር የምናደርገው የመረጃ ልውውጥ በጊዜው ነው።					
2. ከንግድ አጋሮቻችን ጋር የምናደርገው የመረጃ ልውውጥ ትክክል ነው።					
3. ከንግድ አጋሮቻችን ጋር የምናደርገው የመረጃ ልውውጥ የተሟላ ነው።					
4. ከንግድ አጋሮቻችን ጋር የምናደርገው የመረጃ ልውውጥ በቂ ወይም ተመጣጣኝ ነው።					
5. ከንግድ አጋሮቻችን ጋር የምናደርገው የመረጃ ልውውጥ ተአማኒ ነው።					
<b>ውስጣዊ የአሰራር ጥረቶች</b>					
1. በድርጅታችን ለምርት ወይም ለእድሳት ሂደቶች የሚፈጅው ጊዜ ይቀንሳል።					
2. ድርጅታችን በተደጋጋሚ የምርት ጥራት ማሻሻያዎችን ያደርጋል።					
3. ድርጅታችን የሚያመርተው ደንበኞች በፈለጉበት ወቅት እና መጠን በመመርኮዝ ነው።					

## 2. የገበያ ውድድር

ከዚህ በታች የድርጅቶን የገበያ ውድድር ለሚመለከቱ ጥያቄዎች ምላሾን ✓ ምልክት በማስቀመጥ ይግለጹ።

- 1) ማለት በጣም እስማማለው፣ 2) እስማማለው፣ 3) አልወሰንኩም፣ 4) አልስማማም እና 5) በጣም አልስማማም

<b>ዋጋ/ ወጪ</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
1. የድርጅታችን ዋጋ ከተፎካካሪዎች አንጻር ያነሰ ነው።					
2. ድርጅታችን አቅምን ከመጠቀም አንጻር በጣም ጥሩ ነው።					
3. ድርጅታችን የሽያጭ ልውውጥ ከፍተኛ ነው።					
4. ድርጅታችን በአነስተኛ ወጪ ስራውን ያከናውናል።					
5. ድርጅታችን በተፎካካሪ ዋጋ ምርቱን ያቀርባል።					
<b>ጥራት</b>					
1. ድርጅታችን በምርት ይፎካካራል።					
2. ድርጅታችን ከፍተኛ ተአማኒነት ያላቸው ምርቶችን ያቀርባል።					
3. ድርጅታችን በቆይታ የማይበላሹ ምርቶችን ያቀርባል።					

4. ድርጅታችን ከፍተኛ ጥራት ያላቸውን ምርቶች ለደንበኞቹ ያቀርባል።					
<b>ምርትን በተፈለገው መጠን፣ ጊዜ እና አይነት ማቅረብ</b>					
1. ምርትን በተፈለገው አይነት ለደንበኞች እናቀርባለን።					
2. ምርትን በተፈለገው ጊዜ ለደንበኞች እናቀርባለን።					
3. የምርት አቅርቦታችን በሁኔታዎች ላይ የተመሰረተ ነው።					
4. የደንበኞችን ቅሬታ በአጭር ጊዜ ምላሽ እንሰጣለን					
5. የደንበኞች የትዕዛዝ ሂደት ጊዜ አጭር ነው።					
<b>አዳዲስ ምርቶችን ከተፎካካሪዎች ቀድሞ ማስተዋወቅ</b>					
1. ምርቶችን በፍጥነት ለገበያ እናቀርባለን።					
2. በአንደስትሪው አማካኝ በታች ለገበያ የምናቀርብበት ጊዜ አለ።					
3. አዳዲስ ምርቶችን ለገበያ ማስተዋወቅ የመጀመሪያዎቹ ነን።					
4. ምርቶቹን በማሻሻል ፈጣንነን።					

**3. የድርጅቱ አፈጻጸም**

ከዚህ በታች የድርጅቱን አፈጻጸም ለሚመለከቱ ጥያቄዎች ምላሽን \ ምልክት በማስቀመጥ ይግለጹ።

1) ማለት ታላቅ ቅናሽ፣ 2) ቅናሽ፣ 3) ከቀድሞው ተመሳሳይ ነው፣ 4) ጨምሯል እና 5) ታላቅ ጭማሪ

የድርጅቱ አፈጻጸም	1	2	3	4	5
1. በገበያው ያለው ድርሻ					
2. ከአንቨስት መንገድ የተገኘው					
3. በገበያው ያለው ድርሻ እድገት					
4. የሽያጭ እድገት					
5. ከአንቨስት መንገድ የተገኘው እድገት					
6. የሽያጭ የትርፍ ጣራ					
7. አጠቃላይ የተፎካካሪነት ድርሻ					