Investigation on the Effect of Supply Chain Integration on Ethiopian Garment Industry‟s Performance

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Abstract

Investigation on the Effect of SCI on Ethiopian Garment Industry"s Performance

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This thesis paper makes an investigation on the effect of supply chain integration (Supply, internal, and customer integration) on Ethiopian garment industry's performance with regard to product quality and competitive advantage. The main objective of this paper is to explore the effect of supply chain integration on Ethiopian garment industry's performance and provide a recommendation in order to improve the product quality and competitive position performance of the sector. The study discusses different concepts on supply chain integration, product quality, and competitive advantage. In order to undertake this research, a sample size of 29 out of 41 garments in the country, which represents 62% of the total garment industry, was drawn. Primary type of data was collected with the help of questionnaires and personal interviews. Additionally, secondary data was also gathered using previous research works in the sector and different documents. The collected data was analyzed using spearman's correlations in order to examine the relationship between supply chain integration and the garment's performance. Finally the research comes up with the following findings. Customer integration and internal integration have a stronger effect on product quality than the effect of supply integration on product quality. Supply integration and customer integration have positive and strong effect on competitive advantage. However, internal integration has positive but weak effect with competitive advantage.

Keywords: Supply integration; Customer Integration; Internal integration; Product Quality; Competitive Advantage.

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List of Acronyms

SCM- Supply Chain Management

SCI- Supply Chain Integration

SI- Supply Integration

II- Internal Integration

CI- Customer Integration

AGOA-African Growth Opportunity Act

MoTI- Ministry of Trade and Industry

USA- United States of America

MoFED- Ministry of Finance and Economy Development

GSCF- Global Supply Chain Forum

UNIDO- United Nations Industrial Development Organization

1. Introduction

1.1. Background of the Study

Garment is a fashion product that is influenced by social trends and global economic environment. In today‟s world, garment industries make significant contribution to many national economies especially in the developing world. Many countries are exploiting this industry for reasons of economic growth (Alem, 2009).

Ethiopia has a long history in the traditional garment sub-sector. This traditional cottage industry specifically hand spinning and weaving is still a well-established and widespread craft which continues to grow even today making an important contribution in satisfying people‟s demand for textiles and providing large scale employment. However, the introduction of modern integrated textile mills in Ethiopia is a recent phenomenon initiated by Italians during the Second World War. Dire Dawa Textile Mill was the first integrated textile Mill established by foreign capital in 1939. This has marked the starting point of textile sub- sector in Ethiopia. During 1960‟s, five large-scale integrated textile enterprises were established mainly by private capital. In the same year, Ethiopia‟s first industrialized garment industry; Addis garments (Augusta) was established. Soon after Akaki garment was founded in 1963 followed by the Adey Ababa yarn share company, Gulele and Nazereth garment factory respectively. But later on all the private textile and apparel firms were nationalized by the socialist regime, which reigned from 1974 to 1991; and at the same time established four more integrated textile mills to expand the sector in order to satisfy the domestic demand for regular textiles and substituting imported products. After the downfall of the Derge regime, the

Ethiopian government has drafted "Agricultural Development- Led Industrialization" (ADLI) as its principal strategy and has defined the textile and garment sector as a top priority sector in the industrial development package of the country. This is because textile and clothing market is always demanded next to food commodities. The sector also utilizes more labor which is available abundantly at low cost in the country. The garment sector has a large potential for creating employment opportunities. The sector has a vast potential to manufacture goods for export, thus earning highly demanded foreign exchange (Chavary, 2010).

According to Statistical Abstract (2011), currently there are a total of 41 garment factories; 2 in Tigray region, 5 in Oromia region, and 34 in Addis Ababa. These industries produce different kinds of attires including uniforms, work wears, knit wear products like sportswear, under wears, polo shirts, clothing products and suits. Ownership structure of Ethiopian garment industries is a mixture of diversified ownerships including public, Share Company, private limited company, partnerships and individual ownership.

However, clothing and textiles is a totally global industry with multinational companies continuously searching the world for new sources of supply, it seems strange that Ethiopia has been almost completely overlooked, even though its textile and clothing industries are ripe for development and the Ethiopian government is desperate to encourage investment and export growth in the industry - which is still in its infancy, but has enormous export potential. It has indigenous raw cotton and the potential to produce other natural fibers plus an integrated textile supply chain; albeit in need of modernization and expansion (**Tait**, 2007).

Recently the Ethiopian garment sector has become beneficiary from opportunities in the global market such as AGOA giving quota and duty free access to the USA market for sub- Saharan African countries (Alem, 2009). However, export of textile and garment products does not figure even among the top 10 export products of Ethiopia. According to the information obtained from Profile of The Textile Industry in Ethiopia (htpp://www.itacaddis.org/Italy/index.cfm, accessed on December 2, 2011), among the factors that has been affecting the performance of Ethiopian garment industry; poor product quality and loose competitive position are the major ones.

There are many factors that could potentially affect product quality as well as competitive advantage of Ethiopian garment industry and among these factors supply chain integration is the major one. The high complexity of the supply chain of cotton garment value chain consisting of many interacting links that need networking of inputs (coordination between stakeholders, suppliers, customers) have resulted in the poor performance of the sector (Rahel,2010). According to Carter (2009), supply chain integration is a performance improving approach that develops seamless linkage between the various actors, levels, and functions within a supply chain to optimize customer service.

Since the Ethiopian modern garment industry is a recent phenomenon, lack of knowledge and practice of supply chain management makes it difficult to talk about supply chain integration in the garment industry. The principles and practice of supply chain integration, however, is a key to change the history of Ethiopian garments‟ quality and competitive advantage. This paper investigates the effect of supply chain integration

(internal, supply, and customer) on Ethiopian garment industry‟s performance with regard to product quality and competitive advantage. And based on the findings, the paper aims to suggest insight about what Ethiopian garments should do to integrate their supply chain.

1.2. Statement of the Problem

Clothing and textiles is totally a global industry with multinational companies continuously searching the world for new sources of supply. Ethiopia has the potential to provide basic production facilities in the sector. In addition to the previous production capacity of 3419 tons of cotton yarn and 31,568 („000 S.Q. M.) fabrics per year, this year 2 yarn factories and 3 textile factories which have the capacity to produce 10,500 tons of yarn and 16.5 million meter fabrics per year respectively, already started their operation (MoFED, 2003 E.C.). Moreover, the county‟s large labor pool contributes much on the labor-intensive manufacturing of the garment sector (The Textile and Garment Sector Italian Development Cooperation in Ethiopia, htpp://www.itacaddis.org/Italy/index.cfm, retrieved on November 23, 2011). However, Ethiopia has so far failed to use this potential as a competitive advantage to penetrate the global market. According to Alem (2009), the reasons for this failure are manifold, and extend vertically through the supply chain from poor quality raw materials to poor finishing.

Rahel (2010), also states that the high complexity of the supply chain of cotton garment value chain, consisting of many interacting links that need networking of inputs (coordination between stakeholders), large investment, new technologies skilled labor

force as well as image problems in European and US markets etc have resulted in poor performance of the industry.

The other area of problem in the garment sector is the under- developed industrial culture of Ethiopia. Understanding what is required in terms of western quality, the concept of design and styling, and productivity are all low. However, the problem is one of no idea rather than the wrong idea (**Tait,** 2007).

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 garment 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.

In 2002 E.C., the value of exports of textile, clothing and apparel was $21.8 million which is incredibly less than the expected $500million (MoFED, 2003E.C.). In spite of the importance of the textile sector to the nation, its development has been constrained over the years by many factors. Some of the problems faced by the textile before years ago are still persisting, such as overly bureaucratic rules and regulations, lack of modern technology, inconvenient bank rules and procedures, and poor infrastructure (Ethiopian Textiles, htpp://esedaexport.com/textiles.html, retrieved on December 2, 2011). However, all these problems are external factors which the sector has little or no control over.

The garment sector is also known for its poor reputation in keeping delivery lead-time. The limited level of automation has also effect on poor performance of the industries. Medium technology equipments, such as medium speed lockstitch and over lock sewing machines exist, hence mostly operations performance depends on the skill of operators. Thus automatic designing, pattern making, cutting machine, as well as computer-controlled lock stitch are one of the state of the art garment equipments that should be made available for better performance of the sector. In addition, absence of value adding activities such as printing, embroidery, washing and drying facilities further hinders customer satisfaction and competitiveness of the industries (Rahel, 2010).

The absence of significant backward linkages of domestic suppliers is the major negative feature of the Ethiopian garment industry. This not only concerns fabric, but also most of the accessories that are required. Currently, there are limited factories manufacturing accessories in the country for the garment sub-sector (Profile of the Textile Industry in Ethiopia, http://www.ethioiaemb.org.cn/bulletin/209/003.html, accessed on December2, 2011). The quality of the Ethiopian garment industry is further hindered by the poor quality of fabric produced by the local textile industries. Most of the domestic fabric available to the apparel manufacturers is of poor quality. Garment industries deal with this issue by importing textiles, which is time consuming and increases lead-time of order fulfillment. The garment industries are affected even more dramatically as high duties prevent them from importing high quality fabric (Alem, 2009).

To alleviate such problems facing the Ethiopian garment industries, supply chain integration needs to be considered as a performance- improving approach and its effect needs investigation on supply chain performance.

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 Ethiopian garment industry‟s product quality and competitive position. Therefore, the following research questions were developed to be answered as a result of the study:

- Is there an integrated supply chain within the sector?
- Does supply chain integration (internal, supplier and customer integration) affect the garment‟s product quality?
- Does supply chain integration (internal, supplier and customer integration) affect the garment‟s competitive position?

1.4. Objective of the Research

The major objective of this study is to investigate the effect of supply chain integration on Ethiopian garment industry‟s performance and provide recommendations which help to improve the product quality and competitive position performance of the sector.

Furthermore, the research targeted to achieve the following specific objectives:

- Discover whether product quality and competitive position performance affected by SCI or not

- Show the effect of SCI (internal, supplier, and customer integration) on the garment‟s product quality
- Show the effect of SCI (internal, supplier, and customer integration) on the garment‟s competitive position
- Examine SCI associated problems that affect performance of the sector
- Propose a recommendation to improve the SCI of the garments

1.5. Significance of the Study

In today‟s world, garment industries make significant contribution to many national economies especially in the developing world. Many countries are exploiting this industry for reasons of economic growth. The high amount of labor involved in garment production has caused garment producers to seek locations with lower wage employees for reduced production costs. That is why Ethiopian government is waiving taxes for both exports and the import of raw materials and machinery in order to encourage investors. Despite such incentives, Ethiopian garment industries cannot compete in the global markets because of poor performance (The Potential for Ethiopia‟s Textile and Garment Industry, http://www.researchandmarkets.com/reports/450488/the_potential_for_ethipia_s_textile_and_garment.html, accessed on December 2, 2011).

Most researches that have been conducted in Ethiopian garment industry focused on improving performance, quality, and related study areas. For instance, Bahiru (2008), studied The Determinants of the Performance of the Garment Industry in Ethiopia, Alem (2009), conducted research on Quality Improvement in Ethiopian Garment Industries,

and Rahel (2010) also makes an investigation on Performance Measurement and Improvement of Ethiopian Garment Industry. However, it has not been said much about supply chain integration which is the major factor that potentially affects the garment sector‟s performance. According to Carter (2009), supply chain integration is crucial in order to improve company performance. Moreover, most recent studies indicated that supply chain integration will directly lead to considerable improvement in firm‟s performance. Apart from previous studies engaged in the sector, this research is going to investigate the effect of Supply chain integration on Ethiopian garment industry‟s performance.

Therefore, this study is believed to contribute much in the garment sector by revealing how supply chain integration affects the sectors‟ performance (product quality and competitive advantage) and proposing recommendations which are compatible with Ethiopian garment industries in order to improve the sector‟s performance. Moreover, it could be served as a reference material to researchers who are interested to conduct research in the area.

1.6. Scope of the Research

This thesis paper revolves on investigating the effect of supply chain integration on Ethiopian garment industry‟s performance specifically on product quality and competitive position. The concept of supply chain integration is identified into different dimensions: internal, upstream or supply side and downstream or demand side integration. With regard to performance, the paper only concentrates on two aspects of performance; product quality and competitive advantages.

2. Literature Review

2.1. Introduction

These days, competitive global market place has high influence on business activities whether they are local or international on their own. Apparently, supply chains as the key part of global business are needed to be considered in particular. In supply chain management, it is necessary for industries to develop and organize networks of activities involved in procurement, production, delivery of production and delivery of products globally. Since its introduction in the early 1980s, supply chain management (SCM) has become one of the most popular concepts within management in general and within logistics in particular (Baharanchi, 2009). Most of definitions of SCM are related to integration: “the entire concept of SCM is really predicated on integration” (Carter, 2009).

The literature review of this study is composed of basic theories which provides definition and explanation about supply chain management, supply chain integration, product quality, competitive advantage and garment processes; related works which present different scholars‟ point of view with regard to the effect of supply chain integration; and finally the conceptual framework of the study which is constructed based on the theoretical framework.

2.2. Supply Chain Management

Supply chain management represents a new management philosophy, which addresses the modern business demand, such as globalization, long term strategic alliance, cross-organizational logistics management, joint planning and control of inventory. It particularly focuses on integration with a few competent suppliers both in product development and inventory control. The integration spreads and spans the entire chain from suppliers, manufacturer, distributer, and retailer (Jaya, 2004).

A prerequisite for successful supply chain management is the integration of information flow, material flow, and all the business process within a supply chain network. Effective and efficient supply chain management requires integrated business process that goes beyond purchasing and logistics activities (Boon-itt, 2011). This shows a supply chain is more of the integration of business processes. According to GSCF, the definition of supply chain management is: “SCM is the integration of key business processes from end user through original suppliers that provide products, services, and information that add value for customer and other stakeholders.” The definition pictures supply chain management‟s imitativeness of integrating and managing multiple key processes within and beyond the boundaries of the individual organizations.

In theory, any complex supply chain is the synthesis of these three components: supplier, manufacturer and customer. The three entities of supply chain respectively take one of the three great processes: supplying, manufacturing and customer ordering. Another two are inbound logistics and outbound logistics, which provide logistics service for the three basic entities. The former includes purchasing, inbound transportation and material

warehousing. The later concerns the functions of distribution, outbound transportation, finished products warehousing, and sales (Jaya 2004). The structure is given in Figure 1.

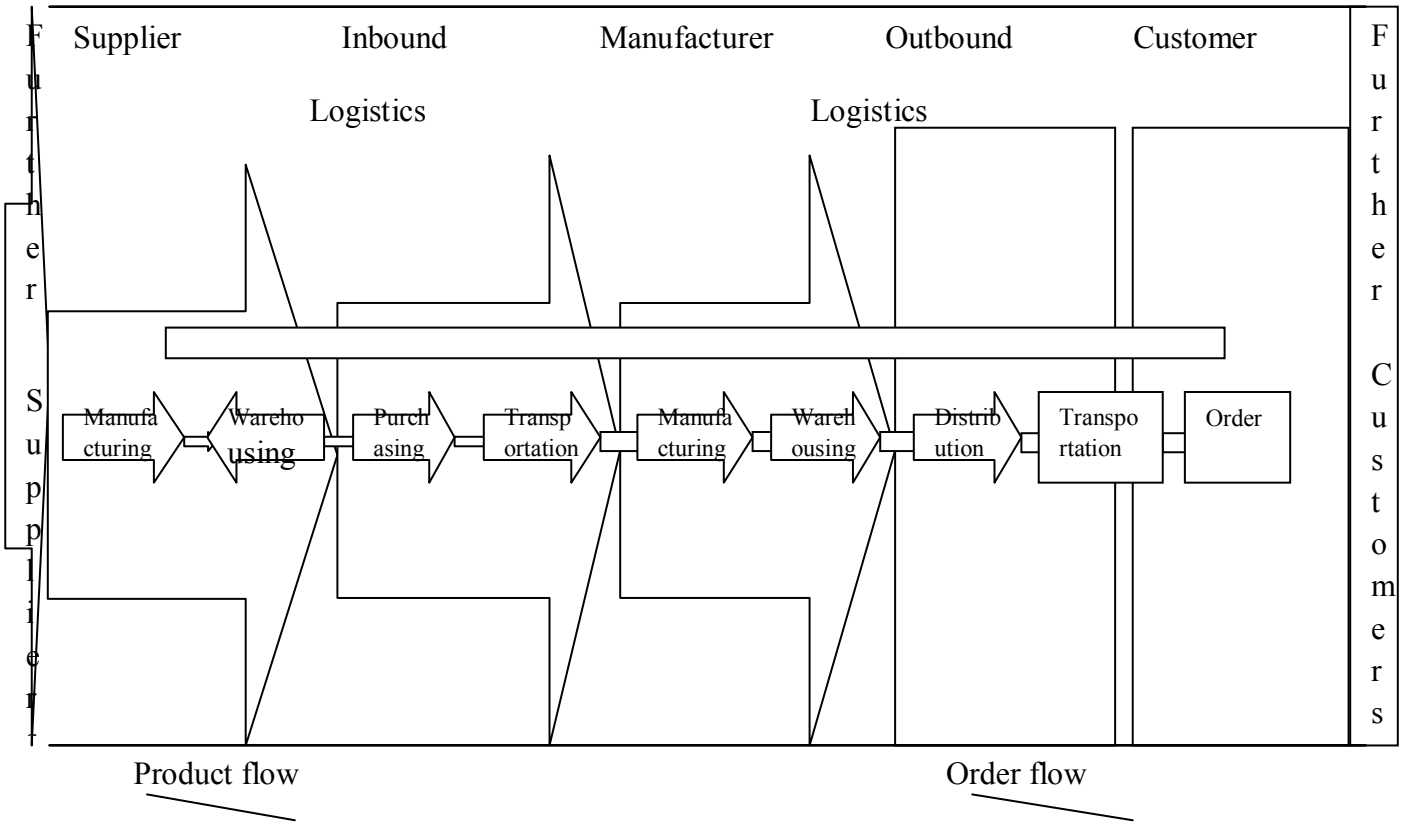

Figure1. Simplified Supply Chain Model

Source: S.Jaya Krishna (2004)

2.3. Porter's Value Chain Model

Porter advocates the identification and strategic exploitation of horizontal and vertical linkages. Vertical integration defined as the process in which several steps in the production and/or distribution of a product or service are controlled by a single company or entity, in order to increase that company"s or entity"s power in the marketplace. And Horizontal integration (lateral integration) is a strategy to increase market share by taking

over a similar company (Himanshu 2011). Optimizing the vertical linkages with suppliers is the core of supply chain management.

Value chain analysis describes the activities within and around an organization, and relates them to an analysis of the competitive strength of the organization. Therefore, it evaluates which value each particular activity adds to the organizations products or services. This idea was built upon the insight that an organization is more than a random compilation of machinery, equipment, people and money. Only if these things are arranged into systems and systematic activates it will become possible to produce something for which customers are willing to pay a price. Porter argues that the ability to perform particular activities and to manage the linkages between these activities is a source of competitive advantage (Recklies, 2001).

Most organizations engage in hundreds, even thousands, of activities in the process of converting inputs to outputs. Porter classified these activities generally as either primary or support activities that all businesses must undertake in some form.

The primary activities are:

1. *Inbound Logistics,* which involve relationship with suppliers and include all the activities required to receive, store and disseminate inputs.
2. *Operations* are all the activities required to transform inputs into outputs (products and services).
3. *Outbound Logistics,* which involve relationships with customers and include all the activities required to collect, store and distribute the output.

4. *Marketing and Sales* are activities that inform buyers about products and services induce buyers to purchase them and facilitate their purchase.
5. *Service* includes all the activities required to keep the product or service working effectively for the buyer after it is sold and delivered.

The support activities are procurement, human resource management (HRM), technological development and infrastructure. A graphical representation of Porter‟s value chain is shown in figure 2.

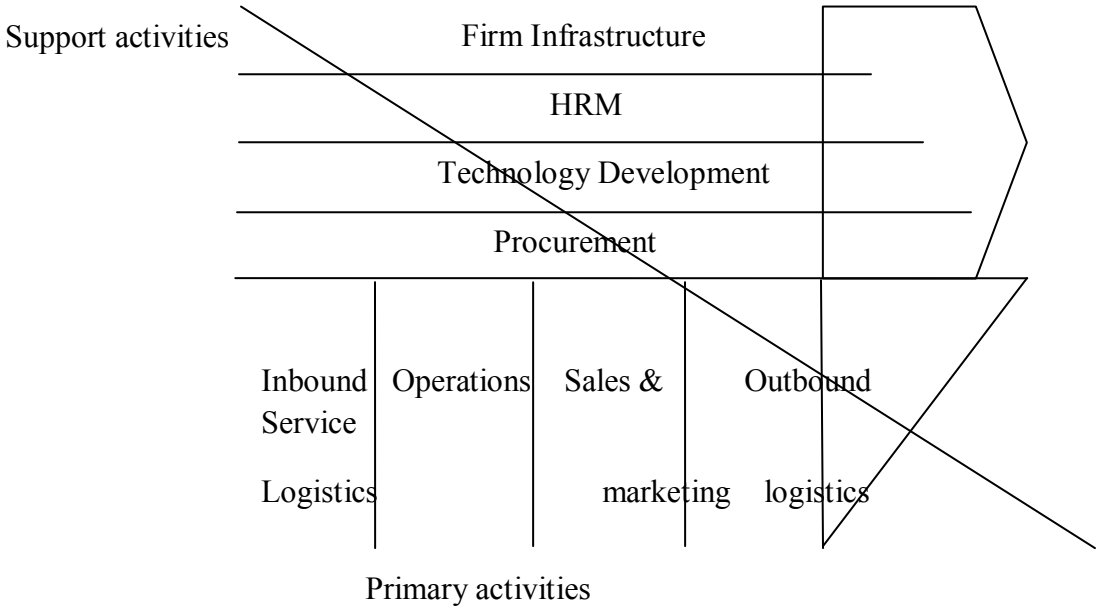

Figure2. Porter‟s Value Chain Model

Source: Porter (1985)

2.4. Supply Chain Integration

The theoretical foundation for supply chain integration can be traced to the value chain model of Porter, and specifically, its notion of linkages. According to Baharanchi (2009), an integrated supply chain is linked organizationally and coordinated with information

flow, from raw materials to the on-time delivery of finished products to customers. The entire supply chain is linked by information about anticipated and actual demand. There are two interrelated forms of integration that manufacturers regularly employ. The first type of integration involves integrating the forward physical flow of delivery between suppliers, manufacturers and customers. The second type of integration involves the backward integration of information technologies and the flow of data from customers to suppliers.

Chopra et.al (1998) discusses an integrated supply chain needs its dynamics to be considered at three levels:

- Strategic level- to develop objective and policies for the supply chain, determine its physical components having a statement of customer service; an organization structure which would be capable of bridging the gap between various functions.
- Tactical perspective- to focus on the means by which the strategic objective may be realized.
- Operational perspectives- to focus on the efficient operation of the supply chain.

2.4.1. Upstream and Downstream Integration

Upstream and downstream integration extends the scope of integration outside the company to embrace suppliers and customers. More specifically, this stage of integration

represents more than a change of focus from product-oriented to customer-oriented in relation to mutual support and cooperation.

A review of external supply chain integration literature reveals two major areas of emphasis. They are: (i) Customer integration and (ii) Supply integration. For supply integration, integration back down to the suppliers represents a change in attitude away from conflict to cooperation, starting from product development, the supply of high quality products, process and specification change information, technology exchange and design support (Baharanchi, 2009). Some researchers have investigated supply-side integration in different dimensions. Power (2005), defines supply integration as obtaining frequent deliveries in small lots, using single or dual sources of supply, evaluating alternative sources on the basis of quality and delivery instead of price, and establishing long-term contracts with suppliers. In terms of logistics communication, this concept could view supply integration as effective alignment, information sharing and supplier participation between suppliers and manufacturers.

In terms of customer integration, the firm will penetrate deep into the customer organization to understand the product, culture, market and organization, so that it can respond rapidly to the customer's needs and requirements. The important concept of demand integration is based on the improvement of demand planning and visibility in supply chains. Without information, sharing from one end of the supply chain to the other, tremendous inefficiencies can occur in customer service (Kastro, 2006).

2.4.2. Internal Integration

According to Sweeny et.al (2011), most businesses certainly manufacturing based business can be described in terms of the five functions: buy, make, store, move and sell. This is what is referred to as the internal (or micro or intra-firm) supply chain. Traditionally these functions have often been measured, and therefore managed, in isolation, often working at cross purposes. This traditional approach is analogous to a relay race with responsibility being passed from one function to another. SCM means thinking beyond the established boundaries, strengthening the linkages between the functions, and finding ways for them to pull together. A recognition that the „whole is greater than the sum of the parts" calls for more effective integration between purchasing and procurement (buy), production planning and control (make), warehouse management (store), transport management (move) and customer relationship management.

The phrase „internal supply chain" is to describe work aimed at breaking down the barriers between functions within organizations. Asif (2010) also discusses to support customer requirements at the lowest total system cost, internal integration represents the integration of all internal functions, from material management to production, sale and distribution. At this stage, the firm focuses on the internal flow of goods into the organization and on the way out to the customer. Moreover, internal integration is characterized by full system visibility from distribution to purchasing, and required integration across functions under the control of the firm to achieve customer satisfaction. In practice, it means that special attention must be given to the interface

between functional areas such as procurement, production, logistics, marketing, sales and distribution.

2.5. Product Quality

Product quality is the collection of features and characteristics of a product that contribute to its ability to meet given requirements. There are three views for describing the overall quality of a product. First is the view of the manufacturer, who is primarily concerned with the design, engineering, and manufacturing processes involved in fabricating the product. Quality is measured by the degree of conformance to predetermined specifications and standards, and deviations from these standards can lead to poor quality and low reliability. Efforts for quality improvement are aimed at eliminating defects (components and subsystems that are out of conformance), the need for scrap and rework, and hence overall reductions in production costs. Second is the view of the consumer or user. To consumers, a high-quality product is one that well satisfies their preferences and expectations. This consideration can include a number of characteristics, some of which contribute little or nothing to the functionality of the product but are significant in providing customer satisfaction. A third view relating to quality is to consider the product itself as a system and to incorporate those characteristics that pertain directly to the operation and functionality of the product (Kastro, 2006).

In order to improve competitiveness of a garment industry and build better reputation amongst consumers and competitors it is important to maintain level of quality of the garments. Quality affects all aspects of the organization and has dramatic cost

implications. The most obvious consequence occurs when poor quality creates dissatisfied customers and eventually leads to loss of business.

Effective quality improvements should result in a future stream of benefits, such as: reduced failure costs, lower appraisal costs, increased market share, increased customer base and more productive workforce. Improved quality increases productivity, hence, many world class industries use quality as a powerful competitive tool.

There are many aspects of quality in garment operations including; quality of garment design, quality of production, quality of inspections, and quality of sales as well as quality of marketing of the final product which, is as important as the quality of the garment itself (Rahel, 2010).

2.6. Competitive Advantage

Competitive advantage exists when a firm has a product or service that is perceived by its target market customers as better than that of its competitors (Gregory et.al, 2005). According to Suhong Li et.al (2006), competitive advantage is the extent to which an organization is able to create a defensible position over its competitors. It comprises capabilities that allow an organization to differentiate itself from its competitors and is an outcome of critical management decisions. The empirical literature has been quite consistent in identifying price/cost, quality, delivery, and flexibility as important competitive capabilities. In addition, recent studies have included time-based competition as an important competitive priority.

There are three sources of competitive advantage: (1) *Cost efficiencies* that make more efficient use of the firm‟s assets and supplier inputs or that lower supplier cost; (2) *Product differentiation* to raise customer benefits; and (3) *Transaction innovations* that lower the costs of transactions or that create new combinations of customers and suppliers. The three types of competitive advantage are called cost advantage, differentiation advantage, and transaction advantage as seen in Figure 3 Alternative strategies for creating value are associated with each of these alternatives.

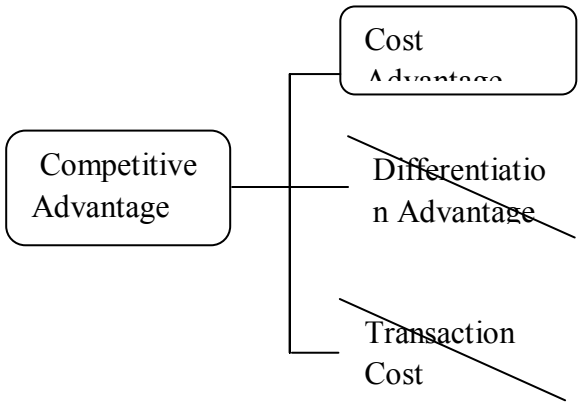

Figure 3. The three sources of competitive advantage

Source: http://www.worldscibooks.com/business/7171.html

Competitive advantage equals the difference between the values created by the company and the potential value created by its competitors. When market demand outruns industry capacity, competitive advantage increases the value added by the company and also increases its potential profits. When industry capacity outruns market demand, competitive advantage also ensures that the firm will survive (WSPC, http://www.worldscibooks.com/business/7171.html, accessed on February 27, 2012).

In any industry, competition works to drive down the rate of return on invested capital toward the rate that would be earned in the economist"s "perfectly competitive" industry. Rates of return that are greater than this so-called competitive rate will stimulate an inflow of capital either from new entrants or from existing competitors making additional investment. Rates of return below this competitive rate will result in withdrawal from the industry and a decline in the levels of activity and competition.

According to Michael E. Porter of Harvard University, a leading theorist of competitive strategy, there are five forces influencing competition in an industry: the threat of new entrants, the threat of substitute products or services, the bargaining power of buyers, the bargaining power of suppliers, and the competitive rivalry among current members of the industry (Kristopher et.al, 2005). The diagram in Figure 4 is a handy way of depicting the five forces Porter identifies.

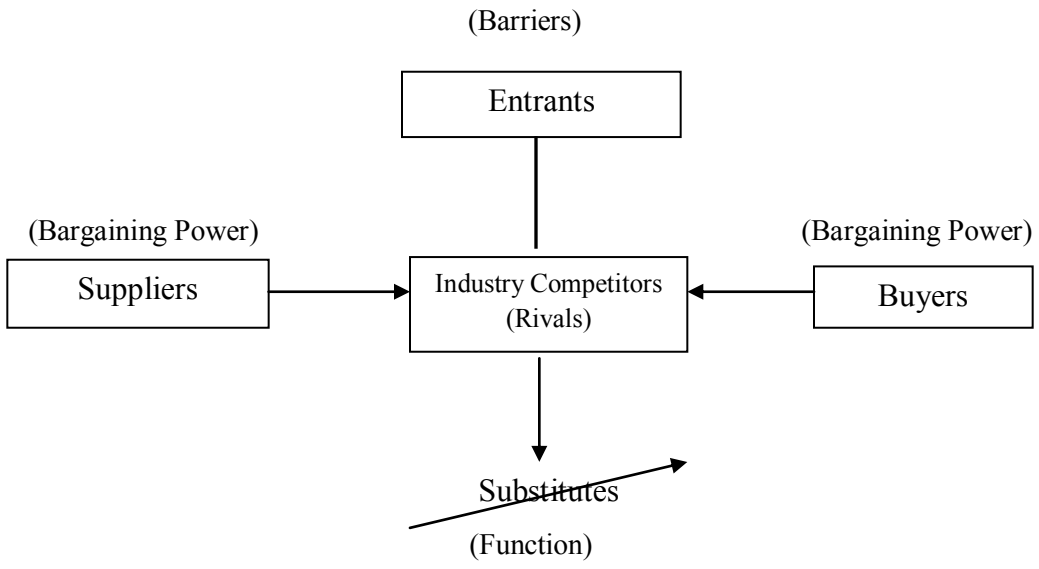

Figure 4. Michael Porter's Five Forces

Source: Porter. (1985).

2.7. Conceptual Framework

Baharanchi (2009) in his research hypothesis discusses the impact of SCI (supply, internal, and customer integration) on product features (product quality and product innovation). In this study, the product innovation variable is replaced with competitive advantage because the researcher is interested to see the whole package of the variable instead of taking a single element out of competitive advantage. Figure 3 shows the summarized research hypothesis of Baharanchi (2009).

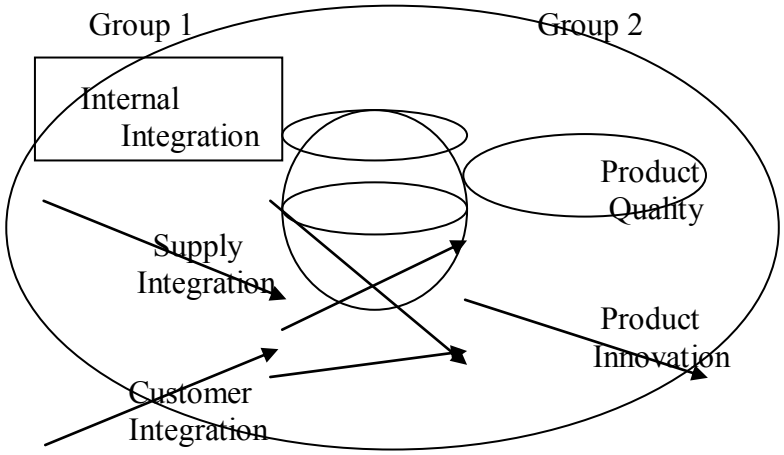

Figure 5.Research Hypothesis

Source: Baharanchi (2009)

On the other hand, (Suhong et al., 2004) in their framework proposed that SCM practices have an impact on organizational performance both directly and also indirectly through competitive advantage as it is exhibited in Figure 4. However, according to the purpose of this paper, the framework developed by Suhong et.al (2004) is modified as; SCI (supply, internal, and customer integration) has direct as well as indirect effect through product quality on competitive advantage.

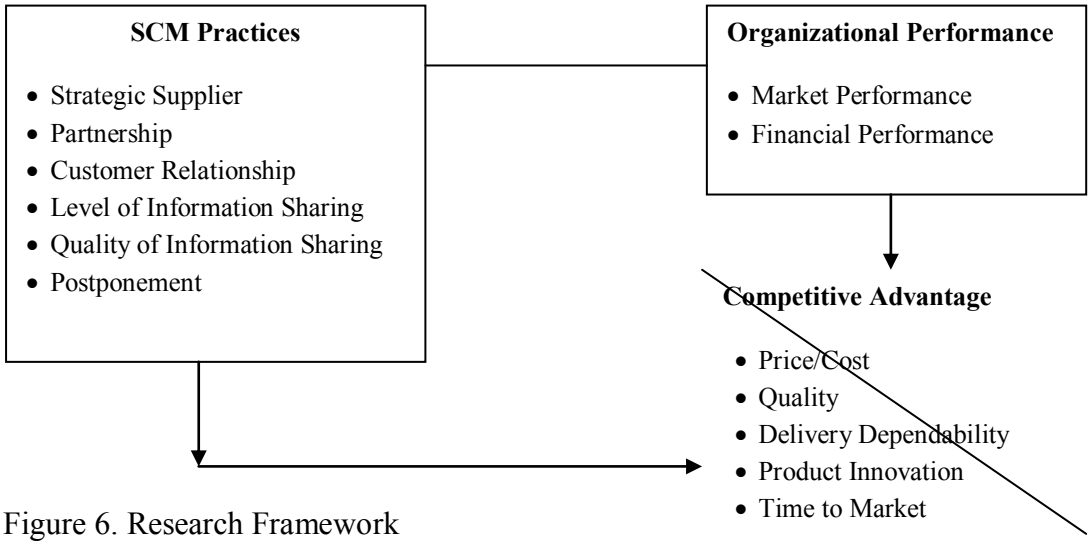

Figure 6. Research Framework

Source: (Suhong et al., 2004)

With the above modifications, this study came up with a conceptual schema which examines the relationship among five research constructs; supply integration, internal integration, customer integration, product quality, and competitive advantage. It shows the effect of SCI (supply, internal, and customer integration) on competitive advantage which is mediated through product quality.

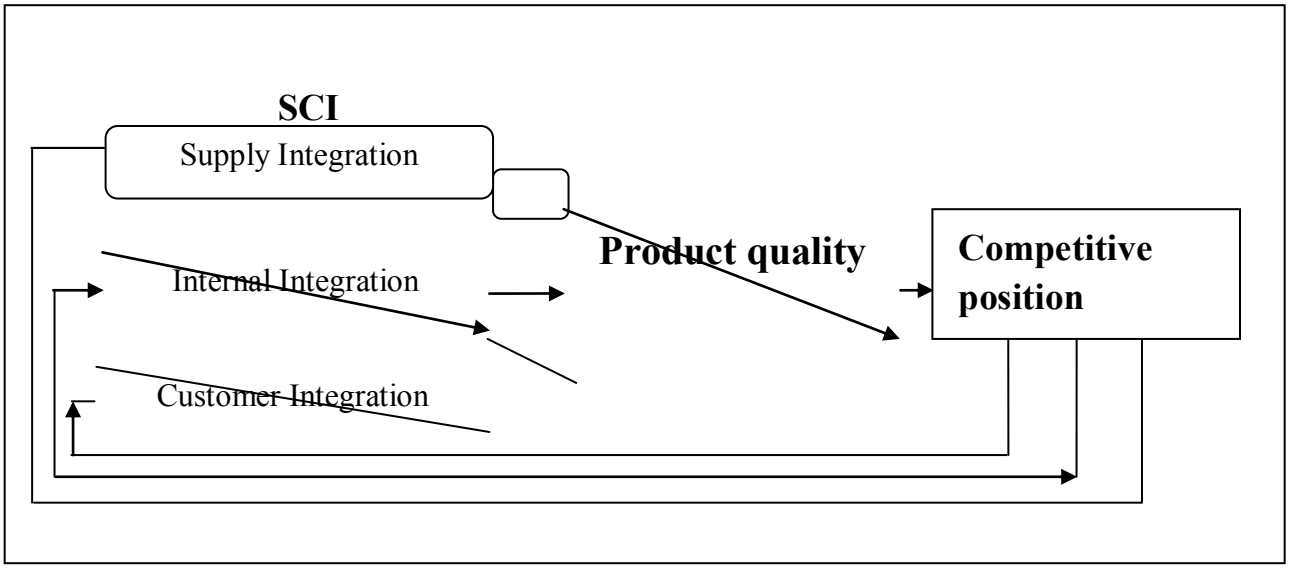

Figure 7. A conceptual Framework of the Study

Source: modified from Baranchi (2009) and Suhong Li et.al (2006)

A detailed description of the relationship between the independent and dependent variables is provided in the following paragraphs. Using literature support, the expected relationships among SCI (supply, internal, and customer integration) and Ethiopian garment industry‟s performance (product quality and competitive advantage) are discussed, and hypotheses relating these variables are developed.

2.7.1. Supply Chain Integration and Product Quality

According to Total Quality Management (TQM), the key issue, regarding extension of a total quality approach across the organizational interface is essentially related to integration (Baharanchi, 2009). Power (2005) also states that effective collaboration between functions and between customers and suppliers can increase product quality. To

support this statement, Kabbe- Costes (2008) surveyed 500 purchasing professionals and found that their high level of service quality, leading to customer satisfaction, was related to the level of collaboration with internal suppliers and internal customers. Moreover, inter-functional integration within a firm can improve performance, in terms of better customer service (Power, 2005). Extended to external integration, previous studies have shown that supply integration leads to improved product quality. Baharanchi (2009) reports that integrating with suppliers, in terms of supplier participation and information sharing; can help companies achieve higher product quality performance. In addition, strategic supplier partnership through technology sharing has been reported to yield specific benefits, in terms of product quality. Besides supply integration, demand integration is also significantly related to product quality, in terms of customer satisfaction and product customization, because firms that closely interact with selected customers will better understand the detailed wants and needs of their customers (Awad et al., 2010). Kabbe- Costes et al. (2008) also find significant correlation between information sharing with customers through an understanding of customer need and product quality. Therefore, the first hypothesis was developed as follows:

Hypothesis1: higher levels of SCI (Supplier, customer, and internal integration) have significant direct effect on product quality performance

2.7.2. Supply Chain Integration and Competitive Advantage

A competitive firm has to have the ability to acquire the goods and services it needs just when and where it needs them, at a favorable price, and with acceptable payment and

delivery terms. A competitive firm needs to directly manage the flow of goods through its distribution networks in a cost-effective manner (Chen et al., 2004).

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. Baharanchi (2009) discuss integration would enable the value creation and transfer process, right from the supplier to the end customer to operate as a seamless chain along which information, knowledge, equipment and physical assets flow as if water. Seamless flow of physical and non-physical assets amongst companies would lead to pooling synergy and optimization of tangible and intangible assets that could possibly led to gain competitive advantage. According to Suhong et al. (2004), the findings of their research on the impact of supply chain management practices on competitive advantage and organizational performance indicate that higher levels of SCM practice can lead to enhanced competitive advantage and improved organizational performance. Also, competitive advantage can have a direct, positive impact on organizational performance. Therefore, the second hypothesis was developed as follows:

Hypothesis 2: Higher levels of supply chain integration (Supplier, customer, and internal integration) have significant direct effect on competitive advantage

2.8. Garment Production Process

Garment production process is fragmented and labor-intensive. With low capital and skill requirements, it is ideally suited to the early stages of industrialization (Alem, 2009). The

Ethiopian garment industry is segmented into tailors, domestic manufacturers and exporters. Tailors undertake the bulk of production of the domestic market. A typical tailoring shop consists of a tailor who deals with customers (helping with design and measurement) and 3-4 workers who stitch the clothes. Consumers generally provide the fabric; therefore, tailors have low fixed costs and pay lower wages. Generally, most tailor made clothing are cheaper than ready-made apparel. Domestic manufacturers and exporters produce western style ready-made apparel for either domestic or export (Profile of the Textile Industry, http://www.ethioiaemb.org.cn/bulletin/209/003.html). This research focuses only western style ready-made apparel.

2.8.1. Garment's Supply Chain

In today"s era of „globalization", many goods are produced in complicated patterns. How garments are produced around the world has become very complicated. Big companies that sell garments place orders with other companies to make them; which is called „subcontracting". The subcontractors often subcontract to smaller companies, and they in turn subcontract again. Many companies are involved, across many countries which make the supply chain very complex (Mather, 2004). Figure4. Shows fashion the complexity of garments supply chain.

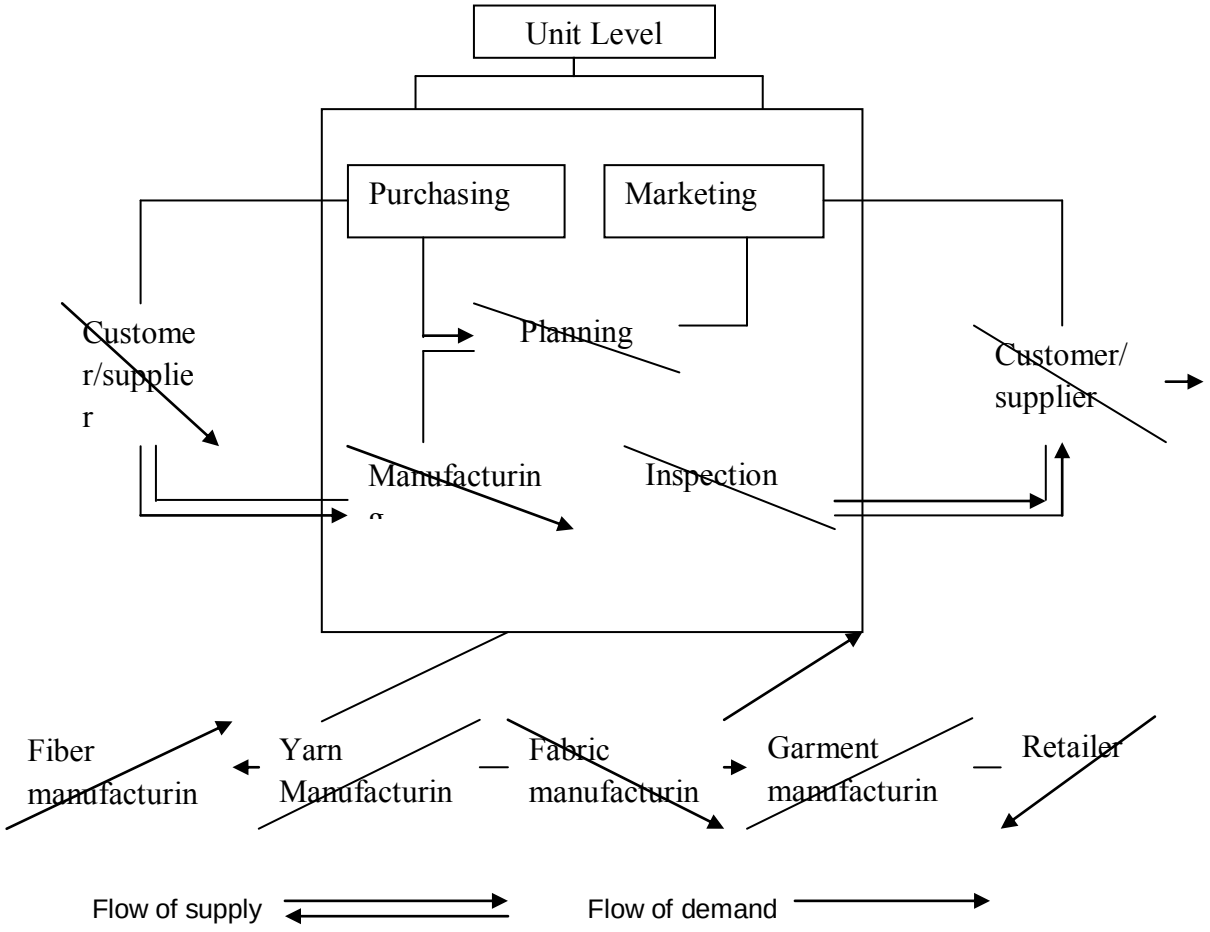

Figure 8. Configuration of apparel supply chain

Source: Alexandra. (2010).The Fashion Supply Chain: Fashion 101

When it comes to fashion, things are far more complicated. Assume a typical pair of jeans. Let‟s imagine the cotton comes from India. Indigo dye can also come from India, so the cotton and dye get shipped to Pakistan, where it is woven into a fabric and dyed. The denim fabric then gets shipped to China, where the jeans are made. The metal buttons and studs are made from a copper alloy, which is mined in Chile, which are then turned into trendy looking studs and buttons in Japan. The zippers (made from metal, and generally a synthetic fiber for the ribbon), a printed leather tag on the back, labels on the outside and inside of the jeans which need to be printed and embroidered, a hand tag, the

string, pin, or plastic used to attach the hand tag to the jeans, etc… Then the jeans need to be shipped to a warehouse in Australia, and then distribute to their stockiest in Europe and North America. The role of the supply chain manager is to minimize this complexity, and try to make the supply chain as efficient as possible (Alexandra, 2010).

3. Research Methodology

3.1. Research Design

The main objective of this research is to investigate the effect of SCI on Ethiopian garment industry‟s performance (product quality and competitive advantage). Considering the purpose of the research and the nature of the phenomenon, co relational study has been engaged. Co relational studies trace relationships among two or more variables in order to gain greater situational insight. The purpose of such studies is not to establish cause-effect relationship among variables but to determine whether the variables under study have some kind of association or not. Variables being studied may have positive or negative relationship or they may not have relationship at all (Experiment Resources, 2008). Therefore, using co relational study, this research investigates the direction and level of relationship between SCI (supplier, internal, and customer integration) and Ethiopian garment industry‟s performance (product quality and competitive position).

This study uses quantitative research method. In order to gather adequate information which helps to measure the variables, both qualitative and quantitative methods of data collection were used. For the qualitative method of data collection personal interview had been engaged with 5 persons who were expected to have sufficient knowledge in the subject area; one from Ethiopian Conformity Assessment, one from Ethiopian Textile and Garment Manufacturers Association, and the rest three are from Ethiopian Textile and Garment Industry Institution. For the quantitative method, 29 questionnaires which were modified from Baharanchi (2009) distributed to the production/purchasing managers of

each garment. This study involves five-point scale for three constructs of independent variables (internal, supplier, and customer integration) and two dependent variables (product quality and competitive advantage). Finally the developed hypotheses were tested using Spearman‟s correlations.

3.2. Target Population

The target population for a survey is the entire set of units for which the survey data are to be used to make inferences. Thus, the target population defines those units for which the findings of the survey are meant to generalize. Target populations must be specifically defined, as the definition determines whether sampled cases are eligible or ineligible for the survey (Experiment Resources, 2008). Therefore, the target population for this study is Ethiopian garment industry.

According to the Statistical bulletin (2011),the distributions of the 41 garment industries in Ethiopia are;1 in Tigray, 5 in Oromiya, 34 in Addis Ababa and 1 in Dire Dawa. Majority of Ethiopian garment industries (95%) are located in Addis Ababa and Oromia region. The selected sample industries are believed to be sufficient to represent Ethiopian garment industries.

3.3. Sample and Sampling Technique

The sampling technique used to draw a sample from the target population was lottery system. Lottery system is a type of simple random sampling technique in which a total list of the population is prepared, enfold each member‟s number or name in separate and identical papers, and choose randomly until it reaches the targeted sample size

(Experiment Resources, 2008). Therefore, this sampling technique was appropriate to use since the target population for this study are limited in number.

According to Yalew (2006), if the research is co relational and there are many members in the total population, then the sample size must not be less than 30. Therefore, considering the research design, expected response rate, survey cost and available time, a sample size of 29 out of a total 41 garments which is more than half of the total populations was drawn using simple random sampling technique (lottery system). Namely; Osis, Lucy, Unis, Mulat, Pittards, Wossi, Concept Ethiopia, Wow International, Akaki, Novastar, Nazret, Abem, Feleke, GMM, Haile, BM, Yirgalem, Ma, Almeda, Ayka, Gulele, Augusta(Addis), DLM, Elias, Triangle, Ediget, Woinu, Zekariyas, and Evolution garment. The selected garments constitute both public and private companies who export their products abroad and those who are restricted only to the domestic market.

3.4. Data Source and Method of Collection

In order to achieve the objective of this research, both primary and secondary sources of data were used.

The instruments engaged in order to collect primary data were structured questionnaires and personal interviews. In addition, secondary data was also collected from profiles of the garments, documents, books, articles and journals. The draft questionnaire was modified from a readymade questionnaire that Baharanchi (2009) used in his study on Investigation of the Impact of Supply Chain Integration on Product Innovation and

Quality. Since it was pre-tested with academics and practitioners to check its content validity, there was no need of conducting pilot test to examine its suitability for the target population. Moreover, it was modified considering the context of the study‟s target population. The structured questionnaires was directed to Production /purchasing managers of the garments since they are the one who directly relate and have the knowledge about supply chain integration. That is, 29 questionnaires were distributed to the 29garment‟s purchasing/ production managers.

3.5. Methods of Data Presentation and Analysis

Data presentation and interpretation was made using tables in order to display the collected data in a concise and meaningful way, percentage and frequency to shows the respondents position towards SCI (Supply, Customer, and internal integration) activities, and mean so as to compare vertically integrated and non- integrated garments with respect to SCI (Supply, Customer, and internal integration) activities.

In order to analyze the data and test the developed hypothesis, this study used Spearman‟s co relation. According to Kothari (2004), Spearman‟s correlation is the technique of determining the degree of correlation between two variables in case of ordinal data where ranks are given to the different values of the variables. The main objective of this coefficient is to determine the extent to which the two sets of ranking are similar or dissimilar. The value of „*r*‟ lies between ± 1. Positive values of *r* indicate positive correlation between the two variables (i.e., changes in both variables take place in the statement direction), whereas negative values of „*r*‟ indicate negative correlation i.e., changes in the two variables taking place in the opposite directions. A zero value of

„*r*" indicates that there is no association between the two variables. When $r = (+)\ 1$, it indicates perfect positive correlation and when it is (–) 1, it indicates perfect negative correlation, meaning thereby that variations in independent variable (X) explain 100% of the variations in the dependent variable (Y). We can also say that for a unit change in independent variable, if there happens to be a constant change in the dependent variable in the same direction, then correlation will be termed as perfect positive. But if such change occurs in the opposite direction, the correlation will be termed as perfect negative. The value of „*r*" nearer to +1 or –1 indicates high degree of correlation between the two variables.

4. Data Presentation, Interpretation, and Analysis

4.1. General Information of the Garments

4.1.1. Products

According to Ministry of Trade and Industry (2003), the products of Ethiopian garment industries are very wide. Products are mainly mass produced and are staple garments. There are few producers of fashion garments. As the respondents stated the key products manufactured by their company include shirts, knitwear, sportswear, working garment, uniforms, underwear, men and women‟s clothing, curtains, bed sheets, Quilts, Pillow case, fitted sheets etc.

4.1.2. Establishment and Ownership

Among the sample garment manufacturers, 2 of them were established before 1980, 3 in between 1980-1990, 3 in between1991- 2000, 15 in between 2001-2010, and 3 after 2011; showing that most of the garments in Ethiopia were established in recent time.

In terms of ownership, all the enterprises in the sample are privately owned. This is partly because of the current government followed a largely free market economy and has undertaken a number of economic reforms among which privatization and creating a favorable environment for private investment are important ones (Bahiru, 2009). Among the respondents 72.4% of the garments are private limited companies, 24.15% are share companies, and only 3.45% is in the form of partnership.

4.1.3. Employees

The required human power in the garment sub sector is mainly semi skilled and unskilled labor and this may in effect contribute to low share of wage and salary as compared to other manufacturing sectors (Alem, 2009). According to The Potential for Ethiopia‟s Textile and Garment Industry (2007), Serious shortage of trained manpower and qualified operators, production managers, quality controllers, fashion designers, unsatisfactory workers attitudes and poor motivation constraining productivity and production; absence of training systems (internal or external); and High turnover of labor are the major human resource related area of problems.

4.2. Descriptive Analysis

4.2.1. Supply Integration

Table 1 illustrates respondent‟s position with different supply integration activities by their frequency and percentage.

Table1. Percentage analysis of supply integration

Items		Strongly agree	Agree	Neutral	Disagree	Strongly Disagree	Total
Effective communications with suppliers on research activities and new product development	Frequency	7	10	5	4	3	29
	Percent	24.138	34.483	17.241	13.793	10.345	100
Transparent information about inventory status	Frequency	5	14	3	6	1	29
	Percent	17.241	48.276	10.345	20.690	3.448	100
Sharing information on production plan	Frequency	9	11	2	6	1	29
	Percent	31.034	37.931	6.897	20.690	3.448	100
Collaboration in development program	Frequency	4	13	6	5	1	29
	Percent	13.793	44.828	20.690	17.241	3.448	100
Sharing medium term and long term policies and strategies	Frequency	5	11	4	8	1	29
	Percent	17.241	37.931	13.793	27.586	3.448	100
Sharing technical information	Frequency	10	13	1	4	1	29
	Percent	34.483	44.828	3.448	13.793	3.448	100
long-term relationship with suppliers	Frequency	10	14	1	3	1	29
	Percent	34.483	48.276	3.448	10.345	3.448	100
Rewarding suppliers	Frequency	7	7	7	6	2	29
	Percent	24.138	24.138	24.138	20.690	6.897	100

Source: survey output

As it is shown in Table 1, 24.1%, 34.5%, 17.2%, 13.8% and 10.4% of the respondents replied strongly agree, agree, neutral, disagree, and strongly disagree respectively on having effective communication with their suppliers on research activities and new product development. This means more than half of the respondents have effective communication with their suppliers.

For the second category of question, 17.2% of the respondents strongly agreed, 48.3% agreed, 10.4% neutral, 20.7%disagreed and 3.4% are strongly disagreed that they exchange transparent information about inventory status with their suppliers. This means most of the respondents share information about inventory status with their suppliers.

Regarding question rose to the garments about exchanging information on production plan with their suppliers, 31 %, 37.9%, 6.9%, and 20.7% respectively replied strongly agreed, agreed, neutral, disagree and strongly disagree. This also shows that most of the garments from the sample drawn exchange information on production plan with their suppliers.

Among the respondents, 13.8% strongly agreed, 44.8 % agreed, 20.7%neutral, 17.2%disagreed, and 3.5%strongly disagreed on the topic of collaborating with suppliers‟ development program which shows more than half of the respondents collaborate with their suppliers regarding development program.

On the subject of aware of each other‟s policies and strategies, 17.2% strongly agreed, 37.9% agreed,17.8 % neutral, 27.6%disagreed, and 3.5% strongly disagreed that they exchange information on medium- term and long- term policies and strategies with their suppliers. This means most of the respondents exchange information on medium and long-term policies and strategies with their suppliers.

Regarding sharing technical information with suppliers, 34.5%strongly agreed, 44.8% agreed, 3.5 % neutral, 13.8% disagreed, and 3.5% strongly disagreed which shows most of the garments share technical information with their suppliers.

34.5% of the respondents strongly agreed that they have long term relationship with their suppliers, 48.3% agreed,3.5 % neutral, 10.5%disagreed, and 3.5% strongly disagreed. This means most of the respondents have long- term relationship with their suppliers.

For the question do you reward your suppliers based on their performance, 21.1% strongly agreed that they reward their suppliers, 24.1% just agreed, 24.1% neutral, 20.7% disagreed, and 6.9%strongly disagreed. This also means majority of the respondents reward their suppliers based on their performance, some of the respondents do this practice sometimes, and significant number of the respondents do not reward their suppliers.

Although most of the respondents agreed that they perform almost all of the supply integration practices, it does not prove that the sector have excellent supply integration. Talking about effective supply integration in Ethiopian garment industry which is in its infancy stage, when it is a challenge even for the developed countries that have sophisticated supply chains, would be far from the truth. Moreover, for the question how many raw material and component suppliers do the garments have, most of the sample garments replied that they do not have limited number of suppliers. Without having limited number of suppliers, it is not likely to sharing common vision, goals, purpose, and objectives across organization. It would also be difficult to communicate and share information. This indicates that there is a problem of alignment as well as linkage in the upward stream supply chain of Ethiopian garment industry.

Table 2 illustrates the difference between vertically integrated and non-integrated garments comparing with their mean regarding supply integration.

Table 2. Mean of supply integration in Garment companies

	Mean	
Variables	**Vertically Integrated**	**Non-integrated**
effective communications with suppliers on research activities and new product development	2.428571	2.545455
Exchanging transparent information about inventory status with suppliers	1.714286	2.681818
sharing production plan information with suppliers	1.714286	2.454545
collaboration with your supplier's development program	2.285714	2.590909
sharing medium term and long term policies and strategies with suppliers	2.285714	2.727273
sharing technical information with suppliers	1.714286	2.181818
long-term relationship with your suppliers	1.571429	2.136364
rewarding suppliers	2	2.818182

Source: survey output and own computation

As we can see in Table 2, the mean of vertically integrated garments shows that these companies have effective communication with their suppliers on research activities and new product development, they have transparent information exchange with their suppliers about their inventory status, they exchange production plan information with their suppliers, they collaborate with their suppliers‟ development program, they are aware of their suppliers medium and long-term policies and strategies, they share technical information with their suppliers, they have long term relationship with their suppliers, and they also reward their suppliers for best performance. But when we see the mean of the non-integrated garments, it shows us these companies perform only three of the supply integration activities that is; exchanging production plan with suppliers, sharing technical information with their suppliers, and having long- term relationship

with their suppliers when they do not always perform the rest supply integration activities. This indicates that vertically integrated garments are more engaged in performing supply integration activities than that of the non-integrated garments.

4.2.2. Customer Integration

Table3. Percentage analysis of customer integration

Items		strongly agree	agree	Neutral	disagree	strongly Disagree	Total
effective communication with customers on research activities and new product development	Frequency	9	11	4	4	1	29
	Percent	31.034	37.931	13.793	13.793	3.448	100
Sharing transparent information about inventory status with customers	Frequency	4	21	1	3	0	29
	Percent	13.79	72.41	3.45	10.34	0	100
Sharing production plan information with customers	Frequency	8	11	3	7	0	29
	Percent	27.59	37.93	10.34	24.14	0	100
collaboration with customer's on development program	Frequency	5	17	4	3	0	29
	Percent	17.24	58.62	13.79	10.34	0	100
Sharing medium-term and long-term policy and strategies with customers	Frequency	5	13	5	6	0	29
	Percent	17.241	44.83	17.24	20.69	0	100
sharing technical information with customers	Frequency	12	13	1	3	0	29
	Percent	41.38	44.83	3.45	10.34	0	100
long-term relationships with customers	Frequency	11	13	2	3	0	29
	Percent	37.93	44.83	6.90	10.34	0	100
systematic way to constantly measure customer satisfaction	Frequency	7	15	2	5	0	29
	Percent	24.12	51.72	6.90	17.24	0	100

Source: survey output

As it is shown in Table 3, about 31% of the respondents strongly agreed, 37.9% which is majority of the respondents just agreed, 13.8% are neutral since they do not always have

effective communication, 3.5% disagreed and no respondent strongly disagreed on having effective communications with their customers on research activities and new product development. This shows most of the respondents have effective communication on research activities and new product development with their customers.

For the second category of question, 13.8% of the respondents strongly agreed, 72.4% agreed, 3.5% neutral, 10.3%disagreed and no one respond strongly disagreed on the topic of sharing transparent information of inventory status with customers. This also shows majority of the sample garments share their inventory status to their customers.

Regarding question rose to the garments about exchanging information of production plan with their customers,27.6 % replied strongly agree, 37.9% replied agree,10.3% replied neutral, 24.1% replied disagree and no respondent replied strongly disagree which means the greater part of the respondents exchange information about production plan with their customers.

Among the respondents, 17.2% strongly agreed, 58.6 % agreed, 13.8%neutral, 10.3%disagreed, and no one strongly disagreed on the topic of collaborating with customer‟s development program which shows that most of the respondents collaborate with their customer‟s development program.

On the subject of aware of each other‟s policies and strategies, 17.2% strongly agreed, 44.8% agreed, 3.5% neutral, 10.3%disagreed, and no one strongly disagreed that they exchange information on medium- term and long- term policies and strategies with their customers. This means most of the sample garments exchange information about medium as well as long-term policies and strategies with their customers.

Regarding sharing technical information with customers, 41.4%strongly agreed, 44.8%agreed, 3.5 % neutral, 10.3% disagreed, and no one strongly disagreed. This shows majority of the sample garments share technical information with their customers.

37.9% of the respondents strongly agreed that they have long term relationship with their customers, 44.8% agreed,6.9 %neutral, 10.3%disagreed, and no one strongly disagreed which shows the greater portion of the respondents have long-term relationship with their customers.

For the question does your company have a systematic way to constantly measure customer satisfaction, 24.1% strongly agreed, 51.7% just agreed, 6.9% neutral, 17.2% disagreed, and no one strongly disagreed. This means most of the respondents have a systematic way to constantly measure customer satisfaction.

However, according to the response of the sample garments for the question how many customer companies do they have, 41.38% of the respondents answered they have 1-5 buyer companies. Majority of the respondents that is 58.62% sell their products to any buyers they find in the market. This indicates that there is a problem of linkage as well as alignment in the downward stream supply chain of Ethiopian garment industry.

Table 4 illustrates the difference between vertically integrated and non-integrated garments comparing with their mean regarding customer integration.

Table 4. Mean of customer integration in Garment companies

Customer integration	Mean	
	Vertically Integrated	Non-integrated
effective communication with customers on research activities and new product development	2.1428571	2.2272727
sharing transparent information about inventory status with customers	1.8571429	2.1818182
sharing production plan information with customers	1.8571429	2.4545455
collaboration with customer's development program	2	2.2272727
sharing medium-term and long-term policy and strategies with customers	2.4285714	2.4090909
sharing technical information with customers	1.5714286	1.9090909
long-term relationships with customers	1.5714286	2
systematic way to constantly measure customer satisfaction	2	2.2272727

Source: survey output and own computation

As it is shown in Table 4, the mean of vertically integrated garments shows that these companies have effective communication with their customers on research activities and new product development, they have transparent information exchange with their customers about their inventory status, they exchange production plan information with their customers, they collaborate with their customers‟ development program, they are aware of their customers medium and long-term policies and strategies, they share technical information with their customers, they have long term relationship with their customers, and they have a systematic way to constantly measure customer satisfaction. The same is true for non-integrated garments too. This indicates that there is no difference between vertically integrated and non-integrated garments in performing customer integration activities.

4.2.3. Internal Integration

Table 5. Percentage analysis of internal integration

Items		strongly agree	Agree	Neutral	disagree	strongly Disagree	Total
effective communication between different departments regarding a new product or process development project	Frequency	10	17	2	0	0	29
	Percent	34.482	58.620	6.896	0	0	100
information about the inventory status between departments	Frequency	13	12	2	2	0	29
	Percent	44.827	41.379	6.896	6.896	0	100
Exchanging of plan between departments	Frequency	12	16	1	0	0	29
	Percent	41.379	55.172	3.448	0	0	100
Departments‟ collaboration with the company development program	Frequency	12	16	1	0	0	29
	Percent	41.379	55.172	3.448	0	0	100
sharing technical information between departments	Frequency	14	13	2	0	0	29
	Percent	48.275	44.827	6.896	0	0	100

Source: survey output

As it is shown in Table 5, about 34.4% of the respondents strongly agreed, 58.6% which is majority of the respondents just agreed, 6.8% are neutral, and no one responded disagree and strongly disagreed on having effective communications between different departments regarding new product or process development project. This means more than half of the respondents have effective communication between departments in new product or process development.

For the second category of question, 44.8% of the respondents strongly agreed, 41.3% agreed, 6.8% neutral, and no one replied disagree or strongly disagree on sharing transparent information about inventory status between different but related production sections. This also shows also most of the sample garment‟s production sections share transparent information about inventory status.

Regarding question rose to the garments about exchanging information about their plan between different departments of the garments, 41.3 % replied strongly agree, 55.1% replied agree, 3.4% replied neutral, and no one was neither disagreed or strongly disagreed which shows there is information exchange between departments about their plan.

Among the respondents, 41.3% strongly agreed, 55.1 % agreed, 3.4%neutral, and no one was disagreed and strongly disagreed on the topic of collaborating with the company development program. This means greater portion of the garments‟ departments collaborates with their company‟s development program.

Regarding sharing technical information between different departments within the company, 48.2%strongly agreed, 44.8%agreed, 6.8 %neutral, and no one answered disagree and strongly disagree which shows majority of the respondents‟ departments share technical information.

Even though majority of the sample garments have a good internal integration, there are few garments that think merging different department functions into one helps to cut administrative cost. So, they hire one person to work as a purchaser, sales, and even administration which results in overlapping of tasks. But this is a problem that the researcher observes only on the non- integrated garments.

Table 6 illustrates the difference between vertically integrated and disintegrated garments by comparing with their mean.

Table6. Mean of internal integration in Garment companies

	Mean	
Internal integration	**Vertically integrated**	**Non-integrated**
effective communication between departments regarding a new product or process development project	2	1.7272727
sharing information about the inventory status between departments	2.5714286	1.5
sharing of plan between departments	2	1.5
Departments‟ collaboration with the company development program	1.8571429	1.5909091
sharing technical information with departments	2.1428571	1.4090909

Source: survey output and own computation

As it is shown in Table 6, the mean of both vertically integrated and non-integrated garments shows that there is effective communication between different departments regarding new product or process development project, they have transparent information exchange about inventory status between different but related production sections, different departments in their company exchange information on their plan, and different departments collaborate with the company‟s development program, different departments share technical information with each other quickly if required. This indicates that there is no difference between the vertically integrated and non-integrated garments in performing internal integration activities.

4.2.4. Product Quality and Competitive Advantage

Table7. Percentage analysis of internal integration

Items		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Total
Customers‟ enjoyment with the continual improvement of	Frequency	9	17	2	1	0	29

product quality	Percent	31.034	58.620	6.896	3.448	0	100
customers satisfaction with the quality of products	Frequency	13	12	4	0	0	29
	Percent	44.827	41.379	13.793	0	0	100
products are differentiated from competitors because of their quality	Frequency	12	15	2	0	0	29
	Percent	41.379	51.724	6.896	0	0	100

Source: survey output

Regarding continuous improvements of quality, 31% of the respondents were strongly agreed, 58.6% agreed, 6.8% neutral, and 3.4% disagreed that their customers enjoys the continual improvement of their product quality which means most of the respondents agreed that they improve their product quality continuously. Although evidence was required for this question, only one of the respondents garment attached customer feedback. The feedback is more of complain of Customer Company on very poor embossing, missed stitches, forming inconsistency, sewing problem, defects, and sizing problem few encouraging words for good consistency of color of the fabric.

Among the respondents, 44.8% strongly agreed, 41.3% agreed, 13.7% was neutral, and no one replied both disagree and strongly disagree that their customers are satisfied with the quality of their product. This means the greater part of the sample garments‟ customers are satisfied with the quality of their product. The researcher asked for an evidence for this question. However none of the garments were willing to attach the required evidence.

Although the respondents believe that their customers are satisfied with their product quality and continuous improvement on quality, according to the interview engaged with 5persons; one from Ethiopian Conformity Assessment, one from Ethiopian Textile and Garment Manufacturers Association, and the rest three from Ethiopian Textile and Garment Industry Institution, 2 of them rated Ethiopian garment industry‟s product quality as low, 2 of them rated as medium quality, and 1 interviewee responded quality of the garments is relatively good only in the vertically integrated garments. In addition, as AGOA news presented, Ato Elias Meshesha, general manager of Spectrum Garment Industry, who has worked in the garment industry for the past thirty years and is an expert on the subject, said that garment industries in their country are still in their infancy. "Most industries that I saw in the country are incapable of producing the quality and standard demanded by the merchandise. This is due to lack of skilled man-power, well-trained designers, and lack latest technology.

This indicates that besides the problem of product quality in the sector there is also a problem of understanding quality by itself in terms of the global market standards, the concept of design and styling.

For the question asked that do your products differentiated from competitors because of their quality, about 41.3% of the respondents answered strongly agree, 51.7% responded agree, only 6.8% replied neutral, and no one neither disagreed or strongly disagreed which majority of the respondents said they compete by quality.

Table8. Percentage analysis of competitive advantage

Garments use supply chain integration as a competitive advantage		
Response	**Frequency**	**Percent**
Yes	24	82.758
No	5	17.241
Total	29	100

Source: survey output

For the question rose does you company use supply chain integration as a competitive advantage, 82.7% of the respondents replied yes when the rest 17.2% answered no. Although majority of the respondents replied that they use supply chain integration as a strategy to achieve competitive advantage, the previous findings on supply and customer integration shows that there is no supply and customer integration within the sector which means the garments do not use supply chain integration as a competitive advantage.

Moreover, during the collection of the questionnaires the researcher noticed production managers lack adequate knowledge in the concept of supply chain integration. According to the AGOA news, the main reasons behind this low performance of the sector might be lack of specialized and experienced manpower, lack of management and entrepreneurial skills.

4.3. Correlation among constructs

Table 9 presents the correlation between variables which shows the relationship between the independent and dependent variables.

Table9. Correlations among constructs

Spearman's Correlations						
		SI	**CI**	**II**	**PQ**	
SI	Correlation Coefficient	1				
CI	Correlation Coefficient	0.801	1			
	Sig. (1-tailed)	0.000	.			
II	Correlation Coefficient	0.078	0.260	1		
	Sig. (1-tailed)	0.344	0.086	.		
PQ	Correlation Coefficient	0.321	0.383	0.381	1	
	Sig. (1-tailed)	0.045**	0.020**	0.021**	.	
CA	Correlation Coefficient	0.531	0.518	0.286	0.033	1
	Sig. (1-tailed)	0.001***	0.002***	0.066*	0.433	
	N	29	29	29	29	29

Source: survey output and own computation

***. Correlation is significant at the 0.01 level (1-tailed).

**. Correlation is significant at the 0.05 level (1-tailed).

*. Correlation is significant at the 0.10 level (1-tailed).

As it is shown in Table 9, all the independent variables (supply, customer, and internal integration) are positively and well correlated with product quality. However, the

relationship between customer integration and internal integration with product quality is stronger than the relationship between supply integration with product quality. The correlation between supply, customer, and internal integration and product quality is statistically significant at 5% level, indicating that higher levels of supply, internal, and customer integration have significant positive effect on product quality. Therefore, the first null hypothesis is rejected.

The interviewees stated the reason for the poor/ medium quality of the garment‟s product are; unskilled supervisors due to lack of training and unsatisfactory payment, poor quality supply of fabrics and accessories, problem of backward quality management system and lack of technically capable man-power. For the question forwarded which type of integration (supply, internal, and customer integration) have more effect on Ethiopian garment‟s performance, 2 of the interviewees replied that internal integration have a greater impact than supply and customer integration, 1 interviewee said that supply integration is more important to improve quality, and 1 interviewee replied that all supply, internal and customer integration have equal effect on product quality.

In consistence with this observation, Dyer (1996) states that effective collaboration between functions can increase product quality. Extended to external integration, previous studies have shown that supply integration leads to improved product quality. Erickson et.al (1992) reports that integrating with suppliers, in terms of supplier participation and information sharing; can help companies achieve higher product quality performance. Besides supply integration, demand integration is also significantly related to product quality, in terms of customer satisfaction and product customization, because firms that closely interact with selected customers will better understand the detailed

wants and needs of their customers. Basnet et al. (2003) also found significant correlation between information sharing with customers through an understanding of customer need and product quality.

With regard to the correlation of the independent variables (supply, customer, and internal integration) and competitive advantage, supply and customer integration have positive and strong relationship with competitive advantage. However, internal integration has positive but weak correlation with competitive advantage. The correlation between supply, customer, and internal integration is statistically significant at 1%, 1%, and 10% level, respectively. This means higher levels of supply, internal, and customer integration have significant positive effect on competitive advantage. Therefore, the second null hypothesis also rejected.

For the question do Ethiopian garments have a good competitive advantage in the domestic as well as foreign market, all the interviewees replied "No", and the reason for that is poor quality of products (though it can be rated as medium, it is not competitive compared to other country‟s products), and too long production lead time. The researcher has also asked which independent variables (supply, internal, and customer integration) have a great effect on competitive advantage more and 3 of them replied that all supply, internal, and customer integration have a great effect whereas, 1 interviewee said only supply integration have a great effect on competitive advantage. Moreover, According to The Potential for Ethiopia‟s Textile and Garment Industry (2007), Ethiopian garment industry‟s problem with regard market are full package service not practiced because of problems related to input material supply, lack of awareness on the Importance of

meeting delivery times and quick response, and underdeveloped complaint management and claims – some companies even do not accept claims.

Successful and expansive Swedish fashion group, H&M could be a good example on its achievement in the garment industry by pursuing a strategy of vertical integration with the distribution network (downward integration). This strategy has allowed the company to directly collect and fully exploit information about sales and consumers in order to improve and accelerate response to the market (Case study: Hennas &Mauritz, n.d.).

5. Summary of Finding, Conclusion, and Recommendation

5.1. Summary of Findings

According to the data analysis in the previous section, summary of the findings is presented as follows.

- There is no supply as well as customer integration within the garment industry.
- Vertically integrated garments have effective communication with their suppliers when compared to the non-integrated garments.
- Majority of the sample garments, that is 58.62%, sell their products to any buyers they find in the market instead of establishing long-term relationship with customers.
- There is no difference between vertically integrated and non- integrated garments with regard to performing customer integration activities.
- Majority of the respondents are engaged in most of the internal integration activities.
- The mean of vertically integrated and non- integrated garments shows that there is effective communication between different departments of the garments.
- Although the respondents believe that their customers are satisfied with their product quality and continuous improvement on quality, the interview results and other secondary documents shows that the sector encounters quality problem which resulted in bad image and loose competitive advantage in the global market.

- All the independent variables (supply, customer, and internal integration) are positively and well correlated with product quality. However, the relationship between customer integration and internal integration with product quality is stronger than the relationship between supply integration with product quality.
- The correlation between supply, customer, and internal integration and product quality is statistically significant at 5% level. Therefore, the first null hypothesis is rejected.
- Supply and customer integration have positive and strong relationship with competitive advantage. However, internal integration has positive but weak correlation with competitive advantage.
- The correlation between supply, customer, and internal integration is statistically significant at 1%, 1%, and 10% level, respectively. Therefore, the second null hypothesis is also rejected.

5.2. Conclusion

The evidence from this study indicates that Ethiopian garment industry has a problem of quality and competitive advantage. The main reason behind this poor performance is lack of supply integration and customer integration within the garment industry. Since all the independent variables (supply, customer, and internal integration) have positive correlation with the dependent variables (product quality and competitive advantage), they have the potential to affect the quality and competitive advantage of the sector. This means, the higher the garments performance of supply chain integration, the higher they can improve their product quality and competitive advantage.

Unlike non integrated garments vertically integrated garments shows a better performance with regard to engaging in supply integration activities showing that the supply side integration is not a problem in the vertically integrated garments. However, both vertically integrated and non-integrated garments are challenged with the downward (customer) integration.

Moreover, the root cause for the supply chain integration problem in Ethiopian garment industry is lack of management‟s adequate knowledge in the subject matter. In addition, there is also a problem of understanding of quality by itself in terms of the global market standards.

5.3. Recommendation

Based on the conclusions dawn above, some recommendations are proposed as a means of alleviating the problems founded.

1. In order to improve the poor product quality and loose competitive advantage of the sector, garments have to start to see supply integration as performance improvement approach.
2. To integrate the supply side of the garments supply chain, the sector should engage in commercial agreement, merger or acquisition with their suppliers.
3. So as to maintain customer integration, instead of producing products and searching for markets, garments better use pull- based supply chain which is production and distribution are demand driven. If Ethiopian garments use pull-based supply chain, they could cut inventory carrying cost, decrease lead-times through the ability to better anticipate incoming orders from the retailers.
4. In order to have a good supply as well as customer integration, IT is a crucial tool along the entire value chain. Therefore, Ethiopian garments have to be able to develop this infrastructure in order to connect individual stores with the production and procurement departments. This will allow central departments to follow sales, thus feeding an intelligent procuring system. If communications between departments takes place electronically, including design and product development, it will help the garments to bring a better internal integration.

5. Above all, short-term as well as long-term trainings and workshops on supply chain integration should be arranged by internal (i.e. the garments themselves) and external (i.e. garment associations and institutions) parties so as to equip managers by the knowledge of different concepts of supply chain integration and applications.

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Appendix I

ADDIS ABABA UNIVERSITY

SCHOOL OF BUSINESS AND PUBLIC ADMINISTRATION

MBA PROGRAM

Questionnaire to be Distributed for the Purchasing/ Production Manager of the Garment Factory

Dear Participants;

This questionnaire is developed for an academic effort planned for the collection of data to conduct a thesis paper on the title "**The Effect of Supply Chain Integration on Ethiopian Garment Industry's Performance"**, in order to fulfill the University"s (Addis Ababa University) requirement set for awarding of a Masters Degree in Business Administration (MBA in Management). 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.

Thank you for your cooperation!

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

1. General Information

This part of the questionnaire tries to gather some general information about the background of the respondent and the company.

1.1.Name of the company:

_____

1.2.Form of company:

Private Limited Company□ Public □

Share Company □ Private Ownership □

Partnership□

1.3.Year of establishment: _____

1.4.Capital of the company:

- Startup capital: _____
- Current capital _____

1.5.Total number of employees:_____

1.6.What is/are your company‟s product(s)?

_____

_____

_____

_____

1.7.How many raw material and component suppliers do you have?

_____

1.8.How many people work in your purchasing and supply management department?

_____

1.9.How many customer/buyer companies do you have? _____

1.10. How many people work in your marketing and sales management department?

_____

___

2. Information on supplier integration/ supply chain management

This part of the questionnaire relates to information about suppliers, and relationships between your company and the suppliers. If your company has already worked out a supply chain management policy or is working on it currently, it would be great if you could attach theses documents to the completed questionnaire.

2.1.You have effective communications with your suppliers on research activities and new product development (R&D).

Strongly agree □ Neutral □ Strongly disagree□

Agree□ Disagree□

2.2.You and your supplier have transparent information about each other‟s inventory status.

Strongly agree □ Neutral □ Strongly disagree□

Agree □ Disagree□

2.3.You and your suppliers provide each other with each other‟s production plan.

Strongly agree □ Neutral □ Strongly disagree□

Agree □ Disagree□

2.4.You collaborate with your supplier‟s development program(s).

Strongly agree □ Neutral □ Strongly disagree□

Agree □ Disagree□

2.5.You and your suppliers are aware of each other medium-term and long-term policies and strategies.

Strongly agree □ Neutral □ Strongly disagree□

Agree □ Disagree□

2.6.You and your suppliers share technical information with each other if required.

Strongly agree □ Neutral □ Strongly disagree□

Agree □ Disagree□

2.7.You have long-term relationships with your suppliers.

Strongly agree □ Neutral □ Strongly disagree□

Agree □ Disagree□

2.8.You reward your suppliers based on their performance.

Strongly agree □ Neutral □ Strongly disagree□

Agree □ Disagree□

3. Information on Customer Integration/ Demand Chain Management

This part of the questionnaire relates to information on your customers, and relationships you have with them. If your company has already worked out a customer relationship management policy or is working out on it currently, it would be great if you could attach these documents to the completed questionnaire.

3.1.You have effective communication with your customers on research activities and new product development (R&D).

Strongly agree □ Disagree□

Agree □ Strongly disagree□

Neutral □

3.2. You and your customers have transparent information about each other‟s inventory status.

Strongly agree □ Neutral □ Strongly disagree□

Agree □ Disagree□

3.3. You and your customers provide each other with each other‟s production plan.

Strongly agree □ Neutral □ Strongly disagree□

Agree □ Disagree□

3.4.You collaborate with your customer‟s development program(s).

Strongly agree □ Agree □ Neutral □

Disagree□ Strongly disagree□

3.5.You and your customers are aware of each other"s medium-term and long-term policy and strategies.

Strongly agree □ Neutral □ Strongly disagree□

Agree □ Disagree□

3.6.You and your customers share technical information with each other if required.

Strongly agree □ Neutral □ Strongly disagree□

Agree □ Disagree□

3.7.You have long-term relationships with your customers.

Strongly agree □ Neutral □ Strongly disagree□

Agree □ Disagree□

3.8.Your company have a systematic way to constantly measure customer satisfaction

Strongly agree □ Neutral □ Strongly disagree□

Agree □ Disagree□

4. Information on Internal Integration

This part of the questionnaire relates to information on relationships among different departments of your company.

4.1.You have effective communications between different departments regarding a new product or process development project.

Strongly agree □ Neutral □ Strongly disagree□

Agree □ Disagree□

4.2.Different but related production sections have transparent information about the inventory status of each other.

Strongly agree □ Neutral □ Strongly disagree□

Agree □ Disagree□

4.3.Different departments in your company provide each other with their plan (s).

Strongly agree □ Agree □ Neutral □

Disagree□ Strongly disagree□

4.4.Different departments in your company collaborate with the company development program (s).

Strongly agree □ Neutral □ Strongly disagree□

Agree □ Disagree□

4.5.Different departments in your company share technical information with each other quickly if required.

Strongly agree □ Neutral □ Strongly disagree□

Agree □ Disagree□

5. Information on Product Quality and Competitive Position

5.1.Your products are differentiated from competitors‟ because of their quality.

Strongly agree □ Neutral □ Strongly disagree□

Agree □ Disagree□

5.2.Your customer (s) is satisfied with the quality of your product(s) (evidence of customer feedback is required).

Strongly agree □ Neutral □ Strongly disagree□

Agree □ Disagree□

5.3.Your customer(s) enjoys continual improvement of your product quality (evidence of customer feedback are required).

Strongly agree □ Neutral □ Strongly disagree□

Agree □ Disagree□

5.4.What type of competitive strategy does the company uses?

Convenience □ Price □ Delivery □

Availability □ Quality □ Variety □

5.5.Does your company use supply chain integration as a competitive advantage?

Yes □ No □

5.6. For question 5.5, if your answer is “yes”, did that brought a significant improvement on your company?

Yes □ No □

5.7. For question 5.5, if your answer is “No”, what is your reason for not doing so?

_____

_____

_____

_____

6. Information on supply chain integration

6.1. Reason/s for supply chain integration ineffectiveness in your company is/are:

Different interests among the actors in the supply chain □

Overlapping roles and tasks in the supply chain □

Too many small transactions in the supply chain □

6.2. Does your company use advanced information technology in order to integrate its supply chain?

Yes □ No □

6.3. For the question above, if your answer is no, what are the reasons for not using information technology?

_____

_____

_____

_____

6.4. What do you suggest your company should do in order to improve supply chain integration performance?

_____

_____

_____

_____

Thank you again for your cooperation!

Appendix II

Personal Interview

1. How do you rate the product quality of Ethiopian garment industry when compared to the global market?

   High quality ☐

   Medium quality ☐

   Low quality ☐

2. If their quality is low, what do you think the reason is for the poor product quality of the sector?

   _____

   _____

   _____

   _____

   _____

   _____

3. Do Ethiopian garments have a good competitive advantage in the domestic as well as foreign market?

   Yes ☐

   No ☐

4. If you say "No" for the above question, what is the reason for their weak competitive advantage?

   _____

   _____

   _____

   _____

   _____

   _____

   _____

5. What are the problems faced by the garment sector currently?

   _____

   _____

_____

_____

_____

6. Which one do you think have more effect on the garment‟s product quality?

   Garment‟s integration with their suppliers ☐

   Garment‟s integration with their customers ☐

   Garment‟s internal integration (coordination between departments within the garments) ☐

7. Which one do you think have more effect on the garment‟s competitive advantage?

   Garment‟s integration with their suppliers ☐

   Garment‟s integration with their customers ☐

   Garment‟s internal integration (coordination between departments within the garments) ☐

8. What do you recommend to the garment industry to improve its supply chain integration?

   _____

   _____

   _____

   _____

   _____

   _____