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SCHOOL OF COMMERCE

DEPARTMENT OF LOGISTICS AND SUPPLY CHAIN MANAGEMENT

Perception of Supply Chain Management Practice and Its Links with Performances in Agro-processing Industry: The Case of National Tobacco Enterprise (Ethiopia) SC

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RESEARCH PAPER SUBMITTED TO THE SCHOOL OF GRADUATE STUDIES OF ADDIS ABABA UNIVERSITY IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF MASTERS OF ART IN LOGISTICS AND SUPPLY CHAIN MANAGEMENT

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Perceptions of Supply Chain Management Practice and Its Links
with Performances in Ago-processing Industry:

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DECLARATION

I hereby declare that this thesis titled **PERCEPTION OF SUPPLY CHAIN MANAGEMENT PRACTICES AND ITS LINKS WITH PERFORMANCES IN AGRO-PROCESSING INDUSTRY: THE CASE OF NATIONAL TOBACCO ENTERPRISE (ETH) SC**, submitted to Addis Ababa University, School of Commerce, for the award of the Degree of Master of Art is a record of original and independent research work done by me under the supervision and guidance of Dr. Berhanu Denu. It has not been submitted for the award of any other Degree or Diploma or Fellowship or any other similar title to any candidate of this or any other University/Institution.

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STATEMENT OF CERTIFICATION

This is to certify that **Meseret Belay** has carried out this research work on the topic entitled **Perception of Supply Chain Management Practice and its link with Performances in Agro-processing Industries: The Case of National Tobacco Enterprise (Ethiopia) SC** is his original work and is suitable for submission for the award of Master of Art Degree in Logistics and Supply Chain Management.

Advisor: Dr. Birhanu Denu.

Date: June, 2016

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Abbreviations

CITC- Corrected Item to Total Correlation

IT- Information Technology

NTE- National Tobacco Enterprise

ROA- Return on Asset

ROI- Return on Investment

SCM- Supply Chain Management

CLM- Council of Logistics Management

SCMP- Supply Chain Management Practice

SPSS- Statistical Package for Social Science

SRS- Simple Random Sampling

Abstract

The purpose of this research was to assess supply chain management practices (SCMP) and to test the relationship of supply chain management practice with SCM operational and organizational performances in National Tobacco Enterprise (Ethiopia) SC (NTE). The study methodology employed was quantitative method where structured questionnaires were sent to 224 tobacco out growers, suppliers, customers, NTE (purchasing, warehouse, marketing, production and IT) working unit employees. The research framework was tested in SPSS Version 20 using both descriptive statics (mean and standard deviation) and inferential statistics (linear correlation and multiple regressions). The empirical result of analysis indicates that supply chain management is practiced in NTE. Moreover the research findings have shown that SCMP have a positive effect on both SCM operational and organizational performance. Furthermore, SCM operational performance has also a positive significant relationship with SCM organizational performance. This study was conducted in one organization with a relatively small sample size of respondents. Also the data were collected only from suppliers and customers located in Addis Ababa. However, being the first study to assess the practice of SCMP in tobacco industry in Ethiopia, the research will serve as a spark light for future related researches. This study has also tested the relationship of SCM operational performance with SCM organizational performance for which few researches are available in this area.

CHAPTER ONE

BACKGROUND OF THE STUDY

1.1. Introduction

Traditional view of supply chain management tries to insure supply at the lowest cost and to leverage the supply chain (Christopher, 2011). It is characterized by multiple partners, partners' evaluation based on purchase price, cost based on information base, arm's-length negotiations, centralized purchasing and formal short-term contract. These conditions have brought fierce competition among suppliers and use of reward or punishment based on performance. It is assumed that trading partners are interchangeable and maximizing competition in the free market promotes a healthy and vigorous supply base (Spekman, et al., 1998). They try to achieve cost reduction and profit improvement at the expense of their upstream and downstream supply chain members (Waters, 2010).

But as fierce competition intensified these traditional business organizations try to look the interest of upstream and downstream for their input suppliers and their product customers (Chen and Paulraj, 2004). Moreover, it is now understood that the activities of each participant in the supply chain contributes profit generating capacity of the supply chain members (Sah, 2014) and to remain competitive in the dynamic market environment, firms are revising their SCM practices (Akdogan and Demirtas, 2014; Chen and Paulraj, 2004). By coordinating different participants in the chain to work as a system practicing supply chain management is now seen as a competitive advantage for business organizations (Sukati et al., 2012; Kazemkhanlou and Ahadi, 2014; Haque and Islam, 2013; Ghatebi et al., 2013; Sah, 2014; Chavosh et al., 2011; Li et al., 2005).

As supply chain management is an integrating activity of all the value generating elements in the chain from extraction of raw materials through transformation process to end user consumption (Quayle, 2006; Tan, 2002),

food manufacturing companies also need to utilize the supply chain practice in product development, inventory management and lead time, technology and innovation in order to achieve their business goals (Okello and Were; 2014).

According to Vorst et al, (2007) in recent times interest in agro processing industry supply chain management is growing like their counterparts in manufacturing and retailing companies. Brezhneva (2014) concluded that agro industrial supply chain management through value chain has the potential to achieve food security, to decrease the need for importing food, to create sustainable jobs opportunity, to increase household income and to reduce rural poverty in developing countries especially in East African Communities.

Gebresenbet and Bosona (2012) also concluded that integrated logistics network embraces producers, customers, collection centers (warehouse) and distribution centers in the supply chain and studying and identifying the constraints of this supply chain, developing and implementing effective and efficient supply chain management in agro processing is essential for overall economic growth of a country and for environmental conservation.

Roekel et al (2002) have showed that agro supply chain management has numerous benefits such as reduction of product loss; increase in sales; reduction of transaction costs; a better control of product quality and safety and dissemination of technology, capital and knowledge among the chain partners.

Ethiopian economy is dependent on agriculture. The country's 85% of employment and 50% GDP is from agriculture. Agriculture contributes 90% of foreign exchange earnings (Asefa and Zegeye, 2003). According to Chemedda (2009) more than 50% of employment in the overall manufacturing sector is in the agro-industrial sector and the food and beverages sector alone has employed more than 30% of the total employment of the manufacturing industries in Ethiopia. However, most of the produce of agriculture is for subsistence (Gebremedhin et al., 2006).

Li et al, (2004) have concluded that supply chain management practice can lead to enhanced competitive advantage and improved organizational performances. Accordingly this research is intended to study practice of supply chain management and its link with performances in agro-processing industries in Ethiopia especially the tobacco processing company.

1.2. Statement of the Problem

Even though practicing supply chain management was started in the 1950s, it has got major emphasis starting from the 1980s' (Borade and Bansod, 2007). This shows that there are no adequate researches on the subject like other field of studies (Vorst et al, 2007). However, recently supply chain management has been an emerging field and extensively under study in both theory and practice (Storey et al, 2006).

The researches of Harland (1997) and Mentzer et al., (2001) showed that cultural, social and economic condition of a country influence the link between SCM practices and SCM performance. But much of supply chain management studies especially in agro business were made in Western Europe and North America (Cunningham, 2001). He has reviewed 123 formal journal articles relating to supply chain management in the agri-food industry and strongly recommended that further study on supply chain in agri-food industry is deemed necessary in developing world. But researches made on the subject and implementation of well-coordinated supply chain management is not satisfactorily developed (Lemma et al, 2015).

Agro processing industries need to plan their supply chain considering producers (farmers), how the agricultural products are harvested, transported and delivered to the industries (Minae, 2009). Hence, these agro processing industries need to construct an efficient supply chain from the producer to the manufacturer and through the distributor and retailer to the end customers.

Specific to the National Tobacco Enterprise (Ethiopia) SC (NTE), its strategic plan from the year 2013 up to the year 2017 shows that only 62% of the demand of cigarette is supplied by NTE which is expected to supply 100% of the demand for its monopoly right to import, manufacture and distribute cigarette. The rest 38% of cigarette is supplied through illicit trade.

Moreover, most of the reviewed researches tried to relate supply chain management practice with organizational performance by taking competitive advantage as a mediator. Very few researches are conducted that relate supply chain management practice with supply chain operational performances. Moreover, many supply chain management researches mainly focused on either upstream or downstream side of the supply chain. Furthermore due to the nature of the product no researches were found in tobacco supply chain practices and performances in Ethiopia.

Therefore, this research was intended to assess the perceptions of supply chain management practices and its link with performances in the tobacco agro processing industry in Ethiopia.

1.3. Objective of the Study

1.3.1. General Objective:

The general purpose of this research was to assess perceptions in SCM practices and its link with SCM performances.

1.3.2. Specific Objectives:

1. To assess practices of supply chain management in National Tobacco Enterprise (Ethiopia SC),
2. To study the relationship of supply chain management practices with SCM operational performance and
3. To study the relationship of supply chain management practices and SCM organizational performance in the case company.

1.4. Significance of the Study

As this is a basic research it is used to test the theories of supply chain management practices and its links with SCM operational and organizational performances particularly in tobacco industry. The research issues and findings can also be used for practitioners to consider these findings in their operational decision in line with supply chain management. The study could also serve to others researchers to extensively study SCM in agro processing industries in our country where our development strategy is agricultural led industrialization.

1.5. Scope of the Study

SCM practice and its relation with operational and organizational performance issues are very vast. And all issues couldn't be covered by a single research. Therefore, the scope of this study is limited to SCM practices operational and organizational performance in one selected agro-processing company. The dimensions of this study is also delimited to the SCM practices constructs of strategic supplier partnership, customer relationship, level of information sharing, quality of information sharing, internal lean practice and postponement among many elements of the SCM practices. In terms of firm performance the study was delimited to operational performances constructs of supply flexibility, customer responsiveness, supplier performances and partnership quality. Regarding organizational performance this research was limited to market share, ROI, the growth of market share, the growth of sales, growth in return on investment, profit margin on sales and overall competitive position.

This research considers both upstream and downstream participants of the supply chain. But the upstream supply chain members started from tobacco out growers and the downstream supply chain member ended with the cigarette distributors. The end users are not included in the downstream supply chain.

1.6. Limitation of the Study

The focus of this research was on supply chain management practice and performance in only one agro processing company. Moreover, one of the supply chain members-the final consumer is not included in the study. Furthermore, this study was limited only to suppliers and customers located in Addis Ababa except tobacco out growers.

1.7. Organization of the Research

This research is structured in to five different chapters. Chapter one discussed the research problem, research objectives, significance, scope and limitation of the research. Chapter two presents the literature review of the independent variables and dependent variables of the study. Conceptual framework and hypotheses are formulated based on the literature review. Moreover, background of the case company is discussed briefly. Chapter three focuses on the methodology which discusses the population, sample size, data collection methods, reliability and validity test and ethical issues. Chapter four discusses the details of the data presentation, descriptive and inferential statistical analysis. Lastly, the final chapter presents summary of the findings, limitations of the study, recommendations and conclusion.

CHAPTER TWO

LITERATURE REVIEW

2.1. Introduction

In recent time globalization, technological advancements and intensive world-wide competition have created an entirely new business environment for manufacturing organizations (Power et al., 2001; Moberg et al., 2002; Agus, 2011). They have used lean production in response to this intensifying competition and achieved massive productivity gains by eliminating waste (Koh et al, 2007; Hines, 2004). Currently these manufacturing organizations have limited their massive productivity improvements and they are using the huge improvement potential to reduce the inefficiencies caused by the poor performance of suppliers, unpredictable customer demands, and uncertain business environment (Koh et al, 2007).

Since 1980's organizations have given more emphasis to gain competitive advantage through implementing supply chain management practices in their operations (Kannan and Tan, 2005; Chin et al., 2010; Mutuerandu, 2014). Organizations have now realized the importance of creating an integrated relationship with the suppliers and customers. The supply chain management practices are viewed to be related to supply chain responsiveness which will increase supply chain competitive advantage and then lead to organizational performance (Sukati et al., 2011).

Supply chain management performance is used to show how successfully an organization achieves its market and financial goals (Yamin et al., 1999; Li et al., 2006; Ibrahim and Hamid, 2014). Financial measurements are used to compare performance of business organizations in fact this criteria lack the characteristics of being able to address the whole in order to benchmark organizations performances (Wong and Wong, 2008).

2.2. Supply chain, supply chain management, supply chain management practice and its objectives

2.2.1. Supply Chain

Supply chain is a network of different companies or independent business units that starts from original supplier to end-customers (Lambert et al, 2005). It is a series of activities starting with unprocessed raw materials and ending with the final customer using the finished goods (Chin et al., 2004). It is the material and informational interchanges in the logistical process stretching from acquisition of raw materials to delivery of finished products to the end user. All vendors, service providers and customers are links in the supply chain (Lambert, 2008).

A supply chain encompasses all the parties that involved, directly or indirectly, in fulfilling a customer request. This includes manufacturer, suppliers, transporters, warehouses, retailers and even customers themselves. Within each organization, such as a manufacturer, the supply chain includes all function involved in receiving and filling a customer request (Sukati et al., 2012). These functions includes new product development, marketing, operation, distribution, finance, customer service and other function that related to serving customer request (Chopra and Meindl, 2007).

2.2.2. Supply chain management

Council of Logistics Management (CLM) defined SCM as the systemic and strategic coordination of business functions and tactics across these businesses functions within a particular organization and across businesses within the supply chain for the purposes of improving the long-term performance of the individual organizations and the supply chain as a whole. SCM has been defined to explicitly recognize the strategic nature of coordination between trading partners and to explain the dual purpose of SCM: to improve the performance of an individual organization and to improve the performance of the supply chain members as a whole.

Tan et al. (1999) has defined supply chain management as the simultaneous integration of customer requirements, internal processes and upstream supplier performance. Lee and Billington (1995) have defined supply chain management as a network of facilities that produce raw materials to transform them into intermediate goods and then to final products. Fawcett and Magnan (2001) defined supply chain management as the collaboration of multiple participants in designing, implementation, and management of unified value-added processes to fill the actual needs of the end customer.

In addition to coordinated management of materials, information, and financial flows the development and integration of people and technological resources trigger successful supply chain integration. Tan et al. (2002) indicated that the important element of supply chain integration is inter-organizational decision making in collaboration with supply chain members and their involvement in the strategic decision making of the supply chain entities. Increasing global cooperation, vertical disintegration and a focus on core competencies have led to the concept that firms are linked in a networked supply chain (Chen and Paulraj, 2004). A truly integrated supply chain network requires commitment by all the members of chain. Tan et al. (2002) has showed that buyers have to revamp their purchasing cycle to integrate externally with supplier's engineering teams and internally with product designers. This shows that the need for involving all supply chain members in the business processes of the firm.

2.2.3. Supply chain management objectives

Li et al. (2005) stated that successful SCM implementation is expected to enhance the relationship between upstream suppliers and downstream customers, increases customer satisfaction and firm performance. Prior research has also indicated that SCM as a key driver of firm performance (Wisner et al, 2005).

Supply chain objective is not only to improve profitability, customer response and ability to deliver value to the customers but also to improve the

interconnection and interdependence among firms (Sukati et al, 2013). The basic objective of supply chain management is to create sourcing, making and delivery processes and logistics functions seamlessly across the supply chain as an effective competitive weapon (Li et al., 2005). Moreover, supply chain management links the end customers, the channels of distribution, the production processes and the procurement activity in such a way that customers' service expectations are exceeded and yet at a lower total cost than their competitors (Ibrahim and Hamid, 2014). Furthermore, (Mentzer 2001) concluded that SCM is important to systematically and strategically coordinate the traditional business functions within a particular company and across businesses within the supply chain aiming at improving the long term performance of the individual companies and the supply chain members as a whole.

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. Supply chain improves the interconnection and interdependence among firms (Li et al. 2006). The growth of supply chain also aims to improve profitability, customer response and ability to deliver value to the customers (Sukati et al., 2011).

2.2.4. Supply chain management practice

Supply chain management practice is a group of activities undertaken in an organization to promote effective management of an organizations supply chain (Li et al, 2006; Ferry et al., 2007; Koh et al., 2007). SCM practice is proposed to be a multi-dimensional concept. It is viewed as a more comprehensive concept than the narrower view (the supplier side, the internal side or the customer side) taken in most researches (Li et al., 2005). And the intent of supply chain management practices encompass agreed vision and goal, sharing of information, collaboration, long term relationship and agreed supply chain leadership (Min and Mentzer, 2004). According to Otto and Kotzab (2003)

supply chain management practices are considered as a strategic partnership among suppliers and retailers.

According to Deshpande (2012) an increasing amount of attention is paid to supply chain management practices by both practitioners and academicians. But still there exists failures in effectively implementing SCM. One of the main reasons for the failure to successfully implement SCM is lack of agreement between researchers as to what constitutes the dimensions of SCM (Chen and Paulraj, 2004; Tan *et al.*, 1998; Li *et al.*, 2005; Min and Mentzer, 2004, Chong *et al.* 2010; Koh *et al.* 2007; Ellram *et al.*, 2007).

Li *et al.* (2006) have identified five dimensions of supply chain management practices. These are strategic supplier partnership, customer relationship, level of information sharing, quality of information sharing and postponement.

According to Donlon (cited by Li *et al.*, 2006) the dimensions of supply chain management practice are supplier partnership, outsourcing, cycle time compression, continuous process flow and information sharing. For Tan *et al.* (1998) supply chain management practices are purchasing, quality and customer relations. Using their factor analysis study Tan *et al.* (2002) identified six elements of supply chain management. These are: supply chain integration, information sharing, supply chain characteristics, customer service management, geographical proximity and JIT capabilities.

For Chen and Paulraj (2004) elements of supply chain practice are supplier base reduction, long-term relationship, communication, cross-functional teams and supplier involvement as a measurement of buyer-supplier relationships. Min and Mentzer (2004) extend the elements of supply chain management practices in to seven. These are agreed vision and goals, information sharing, risk and award sharing, cooperation, process integration, long-term relationship and agreed supply chain leadership.

Chong et al. (2010) identified supply chain management practices as management of customer relationship, management of demand, management of supplier relationship, performance of service, management of capacity and resource, management of order process, and management of information and technology. According to Narasimhan et al. (2008) supply chain management practices consist of information technology and sharing, integration of supply chain, relationship with supplier, just-in-time, geographical proximity, and relationship with customer. Koh et al. (2007) classified supply chain management practices into strong relationship with customers, strategic partnership with suppliers, e-procurement, just-in time, benchmarking, and outsourcing. According to Ellram et al., (2007) supply chain management practices include: managing customer relationship, managing service delivery, managing capacity and skills, flow of cash and information. According to Mentzer et al. (2001) the components of supply chain management are integrated behavior, mutually sharing of information, mutually sharing risks and rewards, cooperation, the same goal and the same focus on serving customers, integration of processes, and partners to build and maintain long-term relationships

Other researchers like Spekman *et al.* (1998), Tan *et al.* (1998) and Handfield and Nichols (1999) added two antecedents of corporate behavior (trust and commitment). Trust in trading partners is the willingness to rely on a trading partner in whom one has confidence. Commitment of trading partners is the willingness of each partner to exert effort on behalf of the relationship.

According to Kumar *et al.* (1995) trust has two dimension- honesty and benevolence. Trust is confidence in preferred trading partner, always keeps promises, always honest, good reputation, trust in preferred trading partner, believe information provided, close personal friendship, trading partner always consider best interests.

Commitment is the willingness of a party to invest financial, physical or relationship-based resources in a relationship (Morgan and Hunt, 1994). In a

supply chain it is an attitude of supply chain partners about the development and maintenance of a stable, long-lasting mutual relationship (Anderson and Weitz, 1992; Moore, 1998).

This research will take the following six components of supply chain management practices, which are common for most researchers, in relation to supply chain performances. These supply chain management dimensions are strategic supplier partnership, customer relationship, information sharing, quality of information sharing, postponement and internal lean practice.

2.2.4.1. Strategic supplier partnership

Strategic supplier partnership is a set of activities in managing firms' relationships with suppliers to improve the firms' performance (Tan, 2001). It is a long-term relationship between producers, processors, distributors and retailers (McNeil and Wilson 1997, Spekman et al., 1998; Zylbersztajn and Filho 2003). It is designed to raise the strategic, tactical and operational capabilities of individual supply chain member organizations to help them achieve significant ongoing benefits (Li et al., 2006; Noble 1997; Stuart 1997; Narasimhan, 1998; Monczka 1998). Kotabe et al. (2003) pointed out that by involving strategic suppliers extensively in SCM organizations could gain faster product development cycles, lower manufacturing costs and higher finished product quality.

A strategic partnership emphasizes direct, long-term association and encourages mutual planning and problem solving efforts. Such strategic partnerships are entered to promote shared benefits among the parties and ongoing participation in one or more key strategic areas such as technology, products, and markets (Yoshino and Rangan, 1995). Strategic partnerships with suppliers enable organizations to work more effectively with a few important suppliers who are willing to share responsibility for the success of the products (Sukati et al, 2013). Suppliers participating early in the product-design process can offer more cost effective design choices, help select the best components and technologies, and help in design assessment (Tan et al, 2002;

Monczka et al, 1998). Strategically aligned organizations can work closely together and eliminate wasteful time and effort (Balsmeier and Voisin, 1996). An effective supplier partnership can be a critical component of a leading edge supply chain (Noble 1997).

Strategic supplier partnerships highlight a direct, long-term relationship and encourage reciprocal plan and difficulty or problems solving efforts (Gunasekaran, 2001). Such strategic partnerships are entered into to support shared benefits among the parties and ongoing participation in one of more key strategic areas such as technology, products and markets (Yoshino and Rangan, 1995).

2.2.4.2. Customer relationship

According to Tan et al. (1998) and Claycomb et al. (1999) customer relationship comprises the entire array of practices that are employed for the purpose of managing customer complaints, building long-term relationships with customers, and improving customer satisfaction. (Noble 1997; Tan et al. 1998; Tan et al, 2002) consider customer relationship management as an important component of SCM practices. As pointed out by Day (2000) committed relationships are the most sustainable advantage because of their inherent barriers to competition. The growth of mass customization and personalized service is leading to an era in which relationship management with customers is becoming crucial for corporate survival (Wines, 1996; Agus, 2011). Good relationships with supply chain members, including customers, are needed for successful implementation of SCM programs (Moberg *et al.* 2002). Close customer relationship allows an organization to differentiate its product from competitors, sustain customer loyalty, and dramatically extend the value it provides to its customers (Magretta, 1998).

2.2.4.3. Information sharing:

According to Monczka et al. (1998) information sharing refers to the extent to which proprietary and important information is communicated among the partners of supply chain. According to Choi *et al.* (1996) information sharing

has two aspects: quantity and quality. Both aspects are important for the practices of SCM and have been treated as independent constructs in the past SCM studies (Moberg et al, 2002; Monczka et al., 1998). Quantity of information sharing is the extent to which critical and proprietary information is communicated to one's supply chain partner (Monczka et al., 1998). Shared information can vary from strategic to tactical in nature and from information about logistics activities to general market and customer information (Mentzer et al., 2001).

Childhouse and Towill, 2003; Balsmeier and Voisin, 1996); Towill, 1997; and Turner, 1993) have suggested that the key to the seamless supply chain is making available undistorted and up-to-date marketing data at every point within the supply chain. By taking the data available and sharing it with other parties within the supply chain, information can be used as a source of competitive advantage (Jones, 1998; Novack et al, 1995). Lalonde (1998) considers sharing of information as the building block that characterizes a solid supply chain relationship. According to Stein and Sweat (1998), supply chain partners who exchange information regularly are able to work as a single entity. Together they can understand the needs of the end customer better and can respond to market change quicker. Moreover, Tompkins and Ang (1999) consider the effective use of relevant and timely information by all functional elements within the supply chain as a key competitive and distinguishing factor. The findings of Childhouse and Towill (2003) reveal that simplified material flow, including streamlining and making highly visible all information flow throughout the chain, is the key to an integrated and effective supply chain.

2.2.4.4. Quality of information sharing

It includes such aspects as the accuracy, timeliness, adequacy and credibility of information exchanged (Moberg et al., 2002; Monczka et al., 1998). Information sharing is important but its impact on SCM depends on what information is shared, when and how it is shared and with whom it is shared (Chizzo, 1998; Holmberg, 2000).

A number of literatures show the dysfunctional effects of inaccurate or delayed information as information moves along the supply chain (Lee et al, 1997; McAdam and McCormack, 2001; Mason-Jones and Towill, 1997; Metters, 1997). Divergent interests and opportunistic behavior of supply chain partners and informational asymmetries across supply chain affect the quality of information (Feldmann and Müller, 2003). It has been suggested that organizations will deliberately distort information that can potentially reach not only their competitors, but also their own suppliers and customers (Mason-Jones and Towill, 1997). It appears that there is a built in reluctance within organizations to give away more than minimal information (Berry et al., 1994), since information disclosure is perceived as a loss of power. Given these predispositions, ensuring the quality of the shared information becomes a critical aspect of effective SCM (Feldmann and Müller, 2003). Organizations need to view their information as a strategic asset and ensure that it flows with minimum delay and distortion (Li et al., 2005).

2.2.4.5. Postponement

Postponement is defined as the practice of moving forward one or more operations or activities (making, sourcing and delivering) to a much later point in the supply chain (Beamon, 1998; Johnson and Davis, 1998; Naylor, 1999; Van Hoek, 1999). Two primary considerations in developing a postponement strategy are: (a) determining how many steps to postpone, and (b) determining which steps to postpone (Beamon, 1998). Postponement allows an organization to be flexible in developing different versions of the product in order to meet changing customer needs, and to differentiate a product or to modify a demand function (Waller, 2000). Keeping materials undifferentiated for as long as possible will increase an organization's flexibility in responding to changes in customer demand. In addition, an organization can reduce supply chain cost by keeping undifferentiated inventories (Lee and Billington, 1995; Van Hoek, 1999).

Postponement needs to match the type of products, market demands of a company, and structure or constraints within the manufacturing and logistics system (Fisher, 1997; Fisher, 1994; Fuller, 1993; Pagh and Cooper, 1998). In general, the adoption of postponement maybe appropriate in the following conditions: innovative products (Fisher, 1997; Fisher et al., 1994); products with high monetary density, high specialization and wide range; markets characterized by long delivery time, low delivery frequency and high demand uncertainty; and manufacturing or logistics systems with small economies of scales and no need for special knowledge (Pagh and Cooper, 1998).

2.2.4.6. Internal Lean practice

The principle of lean operations is to move towards the elimination of all wastes to develop a faster, more dependable, produces higher quality products and services and operates at low cost (Slack *et al.* 2004, p. 519). Lean systems focus on elimination of all kinds of waste. Waste is any activity or product that is not value adding for the business. Identifying the types of waste form the core philosophy behind lean systems, as identification of the problem is the first step in solving the problem (Finch 2006).

Lean practices are the practices of eliminating internal waste like cost, time, etc. in a manufacturing system. This can be characterized by reduced set-up times, small lot sizes, and pull-production (Womack and Jones, 1996). Lean system refer to a system that uses less input to produce at a mass production speed, while offering more variety to the end customers. A fundamental idea within the lean system is elimination of wastes. [Womack and Jones \(1996\)](#) have identified five fundamental principles to eliminate waste. These are specify what does and does not create value from the customer's perspective; identify all the steps necessary to design, order and produce the product across the whole value stream to highlight non-value-adding waste; make those actions that create value flow without interruption, detours, backflows, waiting or scrap; only make what is pulled by the customers just-in-time and strive for perfection by continually removing successive layers of waste as they are

uncovered. Following these principles, internal lean practices may include set-up reduction; pull production, short lead times from suppliers, streamlining ordering, receiving and other paperwork and continuous quality improvement.

Lean thinking and lean practices have become very important aspects of effective SCM (Handfield and Nichols, 1999; Mason-Jones and Towill, 1997). Organizations that have not made the effort to drive out unnecessary cost, time and other wastes from their internal supply chain (for the purpose of delivering high quality, best value products in a timely manner) will run the risk of losing customers. Lean operating practices are the dominant drivers of a highly integrated and down-sized supply chain, promising both cost savings and productive working partner relationships (Li et al., 2005).

2.3. Supply Chain Performance

2.3.1. Supply chain management operational performance

According to Beamon (1998) an important component in supply chain design and analysis is to establishment an appropriate performance measures. Supply chain performance in an organization refers to how well an organization achieves its market-oriented goals as well as its financial goals (Yamin et al., 1999). He stated that performance measures are used to determine the efficiency and/or effectiveness of an existing system, or to compare competing alternative systems. Christopher (1992) showed that operational performance is a source of competitive advantage as an organization can differentiate itself from competitors in the eyes of the customers by operating at a lower cost and hence at a greater profit.

Different types of measures have been suggested and used for SCM performance measurement. Stevens (1990) suggested that an organization can measure the performances of its supply chain in terms of inventory level, service level, throughput efficiency, supplier performance, and cost. Moreover, many organizations and academic institutions have developed a set of supply

chain metrics which can be grouped in any of the four categories: customer satisfaction/quality, time, cost and assets (Pittiglio et al., 1994).

After summarizing different research findings Beamon (1999) have suggested five major dimensions of SCM performance which cover the three types of performance measurements. These supply chain performance measures are flexibility, supply chain integration, customer responsiveness, supplier performance, and partnership quality. For this research Beamon's (1999) SCM performance measurement constructs are used to measure NTE's SCM performances.

2.3.1.1. Supply Chain Flexibility

It is the ability to effectively manage or react to changes with little penalty in time, cost, quality or performance (Upton, 1994; Aggarwal, 1997). According to Lee (2004) supply chain flexibility has three characteristics. These are adaptability, alignment and agility. Adaptability is the ability to adjust the supply chain's design to meet structural shifts in markets, modify supply network strategies, products and technologies. Alignment is the ability to create incentives along the partners within the supply chain for better overall performance and agility is the ability of a supply chain to respond to short-term changes in demand or supply quickly and handle external disruptions smoothly.

Building long-term partnership relations with suppliers and customers, holding safety stock, outsourcing and 3PL are frequently used in SCM practices by firms to provide flexibility. The long-term objectives are to increase market share and profits for all members of the supply chain (Tan et al., 1998).

According to Vickery et al, (1999) supply chain flexibility can be measured by five different dimensions. These are product (customization) flexibility, volume flexibility, launch (new product introduction) flexibility, access flexibility, and responsiveness to target markets.

- **Product flexibility**- is the ability to handle difficult, nonstandard orders, to meet special customer specifications, and to produce products characterized by numerous features, options, sizes, and colors.
- **Volume flexibility**- is the ability to vary production in response to customer demands. It is the ability to effectively vary the aggregate production in response to customer demand (Cleveland et al., 1989). When there is increase or decrease in demand volume flexibility may require close coordination between a manufacturer and its suppliers.
- **Launch flexibility**- refers the ability to rapidly introduce many new products and product varieties.
- **Access flexibility**- is the ability to produce widespread or intensive distribution coverage.
- **Responsiveness to target markets flexibility**- captures the overall ability of the organization to respond to the needs of its target markets.

2.3.1.2. Supply chain integration

Supply chain integration is the degree to which all activities within an organization, the activities of suppliers, customers and other supply chain members are integrated together (Stock et al, 1998; Narasimhan and Jayaram, 1998). Supply chain integration can improve a firms SCM performance and competitive advantage (Wood, 1997; Singh and Power, 2009; Ou et al. 2010). Organizations that operate in isolation are placing themselves at competitive disadvantage. Organizations need to collaborate internally across business functions and they must also establish external strategic linkages with other organizations (Zailani and Rajagopal, 2005).

Along the supply chain there are two interrelated forms of integration (Cousins and Menguc, 2006). These are (1) integration involving coordinating and integrating the forward physical flow of deliveries between suppliers,

manufacturers and customers (2) integration involving the backward coordination of information technologies and the flow of data from customers, to manufacturers and to suppliers.

Supply chain integration comprises the following three stages:

- ❖ Functional integration- it is the relationship between functions such as shipping and inventory or purchasing and raw material management (Turner, 1993; Stevens, 1990; Morash and Clinton, 1997). This supply chain integration stage emphasis is on the internal flow of the goods rather than external customer satisfaction and cost reduction rather than performance improvement (Narasimhan and Kim, 2001).
- ❖ Internal integration- involves the integration of all internal functions from raw material management through production, shipping and sales (Narasimhan and Jayaram, 1998). According to Stevens (1990) this stage is characterized by full system-visibility from distribution to purchasing and different functions in an organization need to be coordinated and integrated to achieve customer value and satisfaction.
- ❖ External integration- Several studies found a positive relationship between external integration and organizational performance (Frohlich and Westbrook, 2001). External integration is integration of members outside the organization to embrace suppliers and customers (Narasimhan and Jayaram, 1998). The rivalry relationship between suppliers and customers is changed into mutual support and cooperation (Vokurka and Lummus, 2000). According to Magretta, (1998) higher level of supply chain integration will allow organizations to meet customers' need faster and more efficiently than non-integrated organizations.

2.3.1.3. Customer responsiveness

It is the speed by which customer request is replied by the organization (Narasimham and Jayaram, 1998; Beamon, 1998). The performance of SCM is measured by responsiveness to customers (Lee and Billington, 1992).

Customer responsiveness is one of the principal aims of SCM practice (Stevens, 1990; Kiefer and Novack, 1999; Spekman et al., 1998). Focusing on fast, reliable delivery and responsiveness to changing customer needs are important to achieve integration of supply chain (Narasimhan and Jayram, 1998). SCM measurements are needed to integrate the customer specification in design, to set the dimensions of quality, to control cost, and to give feedback for the control of process to the satisfaction of customers. It is known that without a satisfied customer the whole exercise of applying the supply chain strategy could be costly and futile (Gunasekran et al., 2001).

2.3.1.4. Supplier performance

It is ability and consistency of suppliers' in delivering materials, components, or products to an organization on time and in good condition (Beamon, 1998). Suppliers' performance is one of the determining factors for the organizations' operational success (Davis, 1993, Levy, 1997; Shin et al, 2000; Tan et al., 1998; Vonderembse and Tacey, 1999; Carr and Person, 1999) and very important dimension of SCM performance (Stevens, 1990; Beamon, 1998; Gunasekaran et al., 2001). Poor vendor quality and delivery performance results in higher levels of inventory and order backlog (Shin et al., 2000).

Shin et al. (2000) and Newman (1998) have shown that the traditional adversarial buyer-seller relationship is shifted in to the use of limited number of qualified suppliers.

2.3.1.5. Partnership quality

It is how well the outcome of a partnership matches the participants' expectation (Lee and Kim, 1999; Wilson and Vlosky, 1998). Partnership quality may be considered as a commitment to the partnership and find it productive and worthwhile, the extent to which each partner carries out its responsibilities

and commitments, their time and effort to build and maintain the relationship, the fair benefit allocations among the partners (Walton, 1996; Ballou et al., 2000), and the satisfaction with the relationship (Bucklin and Sengupta; Mentzer et al., 2000).

2.3.2. SCM organizational performance

Organizational performance refers to how well an organization fulfilled its market and financial goals (Yamin et al., 1999). The short-term objectives of SCM are primarily to increase productivity and reduce inventory and cycle time, while a long-term objective is to increase market share and profits for all members of the supply chain (Tan et al, 1998).

According to Yamin et al., (1999) firm performance refers to how well a firm achieves its market oriented goals as well as its financial goals. Financial performance measurements are the accounting-based measurements such as ROI, percentage in market share, rapid turnover of inventories, ROA, etc (Yamin et al., 1999). Li et al., (2006) measured firm performance through its market share, ROI, the growth of market share, the growth of sales, growth in return on investment, profit margin on sales, and overall competitive position.

2.4. Conceptual framework

Based on the above literature review the conceptual framework for this research is shown as below.

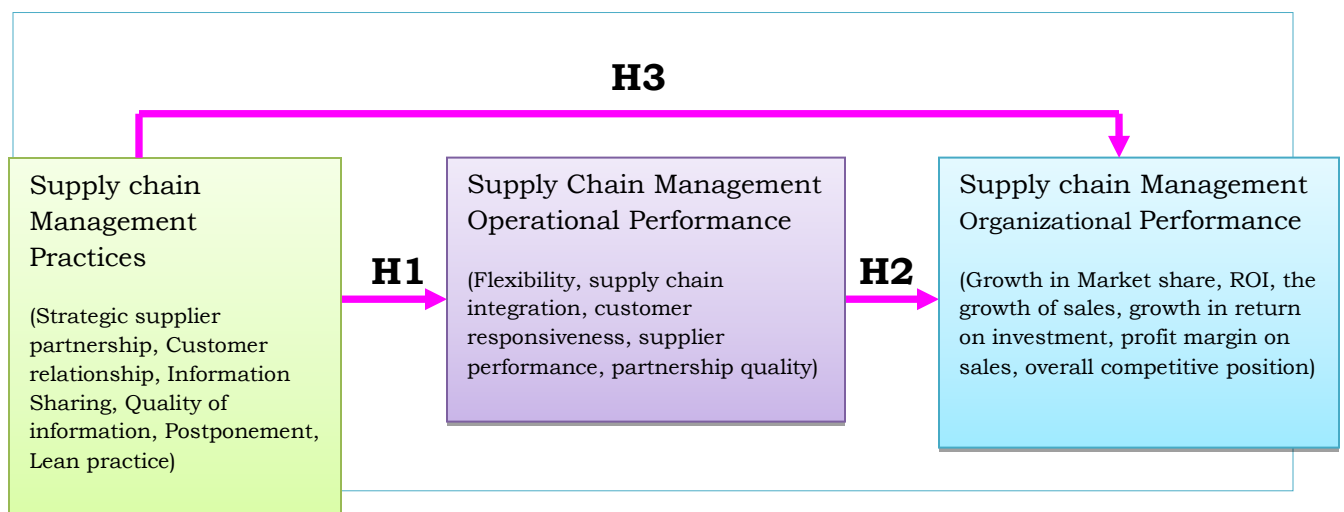


Figure 2.1 Conceptual framework (Adapted from Koh et al., 2007)

2.5. Research Hypothesis

2.5.1. SCM practice and SCM operational performance

Various studies conducted by different researchers indicated that the components of SCM practices have an impact on organizational performance (Naraimhan and Jayaram, 1998; Shin et al., 2000 and Prasad and Tata, 2000, Li et al., 2006). These researchers also have shown that SCM practice is expected to increase an organization's market share and return on investment

Strategic supplier partnership has been reported to yield organization-specific benefits in terms of financial performance (Tan et al., 1998; Stuart, 1997; Carr and Person, 1999; Stanley and Wisner, 2001; Lamming 1996; Agus, 2011). The study of different researchers have also shown that customer relation practices also lead to significant improvement in organizational performance(Tan et al., 1998; Rababah et al., 2011; Chen and Popovich, 2011).

Information sharing among partners along the supply chain facilitates higher overall performance (Marinagi et al, 2015). Li et al (2002) also concluded that higher level of information sharing is associated with lower total cost. Information sharing in supply chains has become more efficient long term cooperation and coordination of organizations which leads ultimately to the improvement of companies' competitive advantages (Lotfi et al., 2013).

A survey by Sheridan (1998) found that organizations that are best at SCM got advantage in their cash-to-cash cycle time over average organizations and less inventory than their competitors.

As it is shown above various SCM practices have an impact on various aspects of operational performance. The above conceptual framework proposes that SCM practices have a direct impact on the operational performance. Hence it is supposed that SCM practices will increase operational performance through flexibility, reduced lead time, cost saving, resource planning, reduced inventory

level and forecasting. Therefore, based on the above conceptual frame work it is hypothesized that:

Hypothesis 1. SCM practices have a positive relationship with supply chain management operational performance.

2.5.2. SCM operational and SCM related organizational performance

Organizational SCM performance is a term used to refer how well an organization achieves its market-oriented and financial goals (Sah et al., 2014).

Non-financial performance such as improved quality, innovativeness and resource planning reduce costs and they have a positive effect on measures of financial performance (York and Miree, 2004). Increasing quality of products helps to retain current customers and create greater customer loyalty, which in return may increase market share and organizational performance. Increase in operational performance may lead to high levels of organizational performance by increasing sales, organizational coordination and supply chain integration. Therefore, by these arguments it can be proposed that there is a positive relationship between operational performance and SCM-related organizational performance.

Hypothesis 2. There is a positive relationship between operational performance and SCM related organizational performance.

2.5.3. SCM practice and organizational performance

Studies have shown that the well-managed and well-executed SCM practice will directly lead to improved organizational performance (Shin et al, 2000; Prasad and Tata, 2000, Karimi and Rafiee, 2014). For example, strategic supplier partnership has been reported to yield organization-specific benefits in terms of productivity, competitive advantage, and financial performance (Lamming, 1993; Varadarajan and Cunningham, 1995; Stuart, 1997; Tan et al., 1998; Carr and Person, 1999; Stanley and Wisner, 2001; Agus, 2009). Customer relation practices lead to significant improvement in organizational performance (Tan et al., 1998). Information sharing will reduce cycle times,

fulfill customer order more quickly, cut out excessive inventory cost, and improve customer service (Stein and Sweat, 1998; Balsmeier and Voisin, 1996). Monczka et al. (1998) find that information quality is significantly related to improved quality, reduced cycle time, and shorter new product development time. Moreover, Vickery et al. (1999) showed that volume flexibility is positively related to all measures of overall organizational performance. Van Hoek et al. (1999) and Beamon (1998) suggest that postponement strategy may contribute to the competitiveness and improved organizational performance by simultaneously enhancing customer service and reducing cost level. Therefore, considering the above studies it is hypothesized that:

Hypothesis 3. SCM practices have positive relationship with SCM related organizational performance.

2.6. Background of National Tobacco Enterprise (Ethiopia) SC

2.6.1. Introduction

National Tobacco Enterprise (Ethiopia) Share Company was established in 1935 as “Imperial Ethiopian Tobacco Monopoly” with a single machine and one brand called Nigusu.

In 1981 the enterprise was re-structured and named as National Tobacco and Match Corporation. In 1992 it was also re-organized as National Tobacco Enterprise and it has given a monopoly right to produce, process, manufacture, distribute, import and export tobacco and tobacco related products in Ethiopia. Since 1999 it is organized as a share company by selling 22% of its share to private owners.

The company has four tobacco development farms in the country. These are Awassa, Billatie and Wolayita Farms in SNNP and Robi Tobacco Farm in Amhara Regional State. The objective of these farms is to supply tobacco leaves to the cigarette factory to secure the foreign exchange spent in importing

tobacco leaves. The total tobacco leaves production by these farms is 30% of the tobacco leave demand of the factory.

NTE has taken its manufacturing capability, new product development capability, effective supply chain management, brand strength and strong financial position as key success factor to increase its competitive advantage. On the other hand high cost of production, low product quality, inefficient distribution system and poor packaging are taken as competitive disadvantage of the enterprise.

In 1999, the enterprise has been re-organized as a share company by selling its shares to private investors. With this selling of shares private investors, 78% of the total paid up share capital has been maintained by the Ethiopian Government while the remaining 22% are owned by private shareholders.

2.6.2. Business purpose of NTE

NTE's business purposes can be summarized into three. These are:

- a) By its monopoly right to grow and process tobacco, import, export, distribute, tobacco and tobacco products including but not limited to cigars, cigarillos and water pipe tobaccos.
- b) To produce matches and paper for the preparation of cigarettes.
- c) To carry on other related activities necessary for the successful achievement of the above mentioned purposes of the company.

2.6.3. Demand and supply of tobacco and cigarettes

The major input for production of cigarette is tobacco. 30% of the annual consumption of tobacco is supplied from local tobacco farms owned by NTE. The rest 70% of tobacco is imported from foreign sources.

NTE has indicated that the annual national demand for cigarettes is about six billion pieces. However, the annual production capacity of NTE is about 3.7 billion pieces per annum. This shows that there is a huge demand gap and

this gap is being fulfilled through imports and illicit trade. And the company has revealed that smuggled cigarettes are estimated to account for 38% of the national market share.

2.6.4. Mission and vision statement of NTE

NTE has set a mission statement of:

“To maximize the long term value and interest of our stakeholders through producing, processing, manufacturing, distributing, importing and exporting quality tobacco and tobacco products by means of utilizing contemporary technologies and also using modern leadership style.”

NTE vision statement is:

“To be a cigarettes exporter subsequent to the full satisfaction of national demand”.

2.6.5. Supply, production and marketing strategies of NTE

2.6.5.1. Supply strategy

In its supply strategy NTE has set five strategies. These are:

- Starting modern procurement and inventory management system.
- Minimizing the current long and distant supply chains.
- Creating strategic partnership and long term relationship with its suppliers.
- Assess alternative means of acquiring inputs and capital items.
- Expand the current suppliers businesses with regard to selected critical inputs.

2.6.5.2. Production strategy

NTE has set the following production strategies.

- Keep the existing 3 shift production operation system.
- Acquire new machineries to increase efficiency and capacity.
- Automate major processes to reduce cost.
- Minimize cost and waste.
- Improve quality and productivity.
- Reduce down time.

- Overhaul machineries.
- Undertake rehabilitation, expansion, and re-location of the cigarette factory.

2.6.5.3. Marketing strategy:

NTE's marketing strategy focuses on the four key marketing elements or Four P's (Product, Price, Place and Promotion). Its product strategies are continue providing the current brands, promoting Gissila filter tipped brand, to develop and to introduce Menthol brand and continuing importing and distributing Rothmans and Marlboro brand cigarettes.

Its promotion strategy is to strength the door-to-door sales of new brands, enhancing promotion effort at point of sale, improving the promotion effort in the eastern market segment, implementing innovative sales approach and intensifying the fight against illicit cigarette trade.

Distribution strategies of NTE are improving the existing distribution setup, appointing sales men (foot soldiers) in selected areas to support distributors.

NTE's pricing strategies are to maintain stable selling prices based on the cost plus approach and to revise selling prices on imported products based on the related cost of importation.

2.6.6. Current supply chain of NTE

As discussed above NTE has four tobacco farms whose primary purpose is to grow tobacco and supply to the factory. But all these four tobacco farms and the out growers located around the tobacco farms is not sufficient for the factory's current production capacity. Hence tobacco leaf is imported from different foreign countries.

Moreover, other different raw materials like tear tape, glue, labels, filters are imported from foreign countries. Packing materials like cartons and scotch tape

are supplied from local sources. Figure 2.2 shows the current NTE'S supply chain.

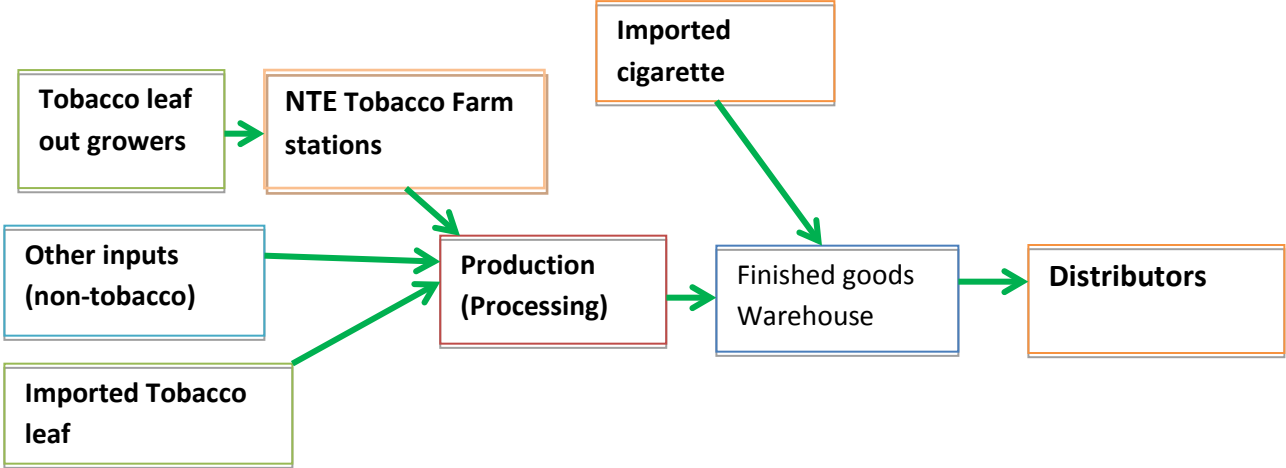


Figure 2.2 NTE's current supply chain
Source: Researcher's observation

CHAPTER THREE

RESEARCH METHODOLOGY

3.1. Introduction

This chapter presents the methodology applied to conduct the proposed research work, the research design, the nature and source of data collected and details about the research instrument used for the research. Moreover, description of the tests employed to establish reliability and validity of the collected data for further analysis and ethical issues are discussed in this chapter.

3.2. Research design and methodology

As the purpose of this research is to analyze and describe the practice of supply chain management with respect to supply chain management operational and organizational performances, the researcher believes that case study research design is sufficient to gain greater insights and to conduct in-depth analysis of supply chain management practices in the case company.

According to Denzin and Lincoln (2005) researchers who adopt quantitative research use the measurement and analysis of casual relationships that might exist between variables rather than studying process. According to McPhail (1999) the default research method used by many researchers is quantitative research. This type of research attempts to quantify data and uses statistical analysis to test the hypothesis. Qualitative research doesn't use statistical procedures to produce research findings (Neuman, 2003). Guba and Lincoln (1994) stated that quantitative research uses surveys, experimental design and statistics. As quantitative research provides both scientific thoroughness and objectivity, many researches argue that quantitative research is better than qualitative research. The researcher has used quantitative research method.

3.3. Research instrument

Primary data pertaining to the supply chain management practice related variable and organizational performance of National Tobacco Enterprise (Ethiopia) SC were collected using a structured questionnaire from different members of the supply chain. In order to quantify and evaluate data, a rating scale technique what is known as Likert Scales (Leedy and Ormarod, 2010) is used for primary data collection.

The questionnaires consisted of different aspects related to supply chain management practice components and their impact on the supply chain operational and organizational performance of the case company. These questionnaires for the study were adopted from Li et al. (2005), Li et al. (2006), Koh et al. (2007) and Adebayo (2012).

Prior to the final distribution of the questionnaire and cover letter it was also translated in to Amharic and both Amharic and English versions were examined by practitioners working in NTE. Based on their comments questionnaires which were not clear were modified and reworded.

3.4. Population and sample of the study

A population is the set of all units or individuals in which a researcher has an interest to make inference. Population also can be defined as the set of all values of a particular characteristic across the set of units (Winner, 2009).

Diamantopoulos and Schlegelmilch (2000) defined population as the totality of entities, objects or events in which one has an interest to make an inference based on representative sample and these samples are also part of the population.

Samples are subsets of a corresponding population that are used to describe and make inferences concerning the populations from which they arise. Statistical methods are based on these samples having been taken at random from the population (Winner, 2009). Sample from a population refers to the

population from which the sample for the proposed study is drawn (Cooper and Schindler, 2003, p. 82).

Tobacco growers, other raw material suppliers, cigarette distributors and NTE employees constitute the population for the research work. Since this study has a supply chain management focus, the target respondents were the production (manufacturing), purchasing, warehouse (materials), IT employees, suppliers and customers were deemed to have the best knowledge in the supply chain of NTE. The final consumers and distributors located outside of Addis Ababa except tobacco out growers, which are located out of Addis Ababa, were excluded from the sampling population.

3.5. Sampling technique

Selecting samples from the target population can be either probabilistic and/or non-probabilistic. In probability sampling all the elements of the population have a nonzero chance of being included in the sample. In non-probability sampling certain elements of the population have little or no chance of being included in the sample (Tustin *et al.*, 2005; Blanche and Durrheim, 2002). In probability sampling there are different methods to select samples. These are simple random sampling, systematic sampling, stratified sampling and cluster sampling (Cant, 2005). The different methods in non-probability sampling include convenience sampling, judgment sampling, purposive sampling, quota sampling and snowball sampling (Tustin *et al.*, 2005; McDaniel and Gates, 2001:347-350; Cant, 2005).

Combination of probabilistic sampling method was used in this research to select samples. Simple random sampling is used to select samples from suppliers and production employees. Payroll and approved suppliers lists were used as a sampling frame to select samples from production employees and suppliers. Cluster sampling method was used to select samples from tobacco out growers. List of tobacco out growers in the cluster was used as sampling frame.

Krejcie and Morgan (1970) have developed ready, easy reference sample size determination table (Table 3.1) by using the following formula.

$$S = \frac{X^2NP(1-P)}{d^2(N-1)} + X^2P(1-P)$$

S = required sample size, X^2 = the table value of chi-square for 1 degree of freedom at the desired confidence level, P = the population proportion, d = the degree of accuracy expressed as a proportion

This table is used to determine the number of samples to be selected from tobacco out growers, production employees and suppliers.

The total number of employees in purchasing, warehouse, marketing and IT working units were small. Hence, census instead of sampling is used in these working units. Moreover, all 18 cigarette distributors located in Addis Ababa are included in this research.

Table 3.1 Sample size determination table

Sample Size for a Given Population Size

N	S	N	S	N	S
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	132	1000	278	75000	382
210	136	1100	285	1000000	384

Table 3.1 Sample size determination table (Source Krejcie and Morgan, 1970)

Where N= population size and S= sample size.

The population and samples taken are summarized below:

Table 3.2 Population, sample size and response rate.

SN	Type of respondents	Population size	Sample selected	Sampling method	Response obtained	Response rate (%)
1	NTE Employees					
1.1	Purchasing	14	14	Census	12	85.71
1.2	Marketing and Sales	13	13	Census	8	61.54
1.3	Warehouse	23	23	Census	13	56.52
1.4	Production	134	97	SRS	17	17.53
1.5	IT	6	6	Census	4	66.67
2	Customers	18	18	Census	15	83.33
3	Tobacco out growers	117	92	Cluster sampling	31	33.70
4	Other Suppliers	274	160	SRS	20	12.50
Total		599	423	-	120	28.30

(Source: researcher compilation)

The total sample size selected for this research is 423. However, only 224 samples were accessed and hand delivered questionnaires were distributed to these accessed selected samples. The rest samples were hard to locate and deliver the questionnaires due to annual leave, sick leave and field works. From these 224 distributed questionnaires only 120 questionnaires were filled and returned. This shows that there is a 54% response rate. Marinagi et al., (2015); van der Vaart and van Donk (2008), Eng (2004) and Spaho, (2011) have used 30.5%, 30%, 21%, 29% response rate respectively for their data analysis. Therefore, a 54% response rate is considered satisfactory to make data analysis for this study. From these 122 answered questionnaires only 98 questionnaires are found appropriately filled and usable.

3.6. Reliability and validity test

Cronbach's alpha is generally used as an instrument or measure of internal consistency or reliability of a given concept. It is an indication of how well a set of items measures the same concept. The constructs in the study should all measure the same thing, so they should be correlated with one another. Cronbach's alpha generally increases when the correlations between the items increase. For this reason the coefficient is also called the internal consistency or the internal consistency reliability of the test. The Cronbach's Alpha coefficient varies between zero and one where zero indicates that there is no internal consistency and one indicates perfect correlation (Cronbach, 1951). As a rule of thumb a reliability of Cronbach's Alpha 0.70 or higher is required (Nunnally, 1978; Churchill, 1979).

Item-to-Total Correlation analysis is performed to purify the measure by eliminating inconsistent items prior to determining the factors that represent the construct. The mean was used to find out the trend of each attribute under each construct.

3.6.1. SCM practice items

Supply Chain Management Practices (SCMP) was represented by six dimensions and thirty three items. Strategic supplier partnership was represented by eight items; customer relationship by six items; information sharing, information quality and internal lean practice by five items each and postponement by four items.

The interrelation between each dimension is calculated as shown in table 3.3 below. Corrected item to total correlation (CITC) test is performed to check if any item in the set of tests is inconsistent with the averaged behavior of the other items. If an item is found inconsistent it will be discarded. The CITC for all items is above 0.50 except item 1.1 (NTE relies on a few high quality suppliers) and item 5.4 (NTE pushes suppliers for shorter lead-times) whose CITC value is 0.353 and 0.310 respectively. Generally a correlation value less than 0.3 shows that there is very weak or no relation, correlation value between 0.3 and 0.5 is weak, value between 0.5 and 0.7 is moderate and value above 0.7 is considered strong (Moore et. al, 2013). Hence, item 1.1 and item 5.4 are deleted and the rest items CITC was changed. Cronbach's alpha for strategic supplier partnership has increased from 0.832 to 0.839 after deletion of these items. Moreover alpha for internal lean practice has increased from 0.736 to 0.750 after deletion of the uncorrelated items.

1	Strategic supplier partnership (SSP)	CITC1	CITC2	α_1	α_2
1.1	NTE relies on a few high quality suppliers	0.353	-	0.832	0.839
1.2	Quality is the most considerable criterion in selecting suppliers	0.521	0.503		
1.3	NTE;s aim is to establish long-lasting relationship with suppliers	0.629	0.617		
1.4	NTE regularly solve problems jointly with suppliers	0.612	0.598		
1.5	NTE helps suppliers to improve their product quality	0.565	0.606		
1.6	NTE has continuous improvement programs that include key suppliers	0.636	0.631		
1.7	NTE includes key suppliers in planning and goal-setting activities	0.637	0.611		
1.8	NTE actively involves key suppliers in new product development processes	0.564	0.598		
2	Customer relationship (CR)				
2.1	Formal and informal customers complaints are frequently evaluated	0.602			
2.2	There is a frequent follow-up of customers for	0.584			

	quality/service feedback				
2.3	Customer satisfaction is frequently measured and evaluated	0.707		0.850	
2.4	Future customer expectations is frequently determined	0.653			
2.5	Customers' ability to seek assistance from us is frequently facilitated	0.644			
2.6	NTE periodically evaluate the importance of its relationship with its customers	0.613			
3	Information sharing (IS)				
3.1	NTE business units' proprietary information is shared with trading partners	0.641		0.857	
3.2	Trading partners are made informed in advance of changing needs	0.671			
3.3	NTE's trading partners keep NTE fully informed about issues that affect the business	0.685			
3.4	NTE and its trading partners exchange information that helps establishment of business planning	0.692			
3.5	NTE's and its trading partners keep each other informed about events or changes that may affect the other partners	0.669			
4	Information quality (IQ)				
4.1	Information exchange with trading partners is timely	0.658		0.917	
4.2	Information exchange with trading partners is accurate	0.850			
4.3	Information exchange with trading partners is complete	0.807			
4.4	Information exchange with trading partners is adequate	0.846			
4.5	Information exchange with trading partners is reliable	0.784			
5	Internal lean practices (ILP)				
5.1	NTE has the ability to reduces set-up time	0.568	0.565	0.736	0.750
5.2	NTE has continuous quality improvement program	0.594	0.597		
5.3	NTE uses a Pull production system	0.511	0.510		
5.4	NTE pushes suppliers for shorter lead-times	0.310	-		
5.5	NTE produces only what is demanded by customers when they request (JIT)	0.517	0.517		
6	Postponement (POS)				
6.1	NTE's production process modules can be re-arranged so that customization can be carried out later at distribution centers	0.531		0.736	
6.2	NTE is able to delay final product assembly activities until customer orders have actually been received	0.753			
6.3	NTE can delay final product assembly activities until the last possible position (or nearest to customers) in the supply chain	0.703			
6.4	NTE's goods are stored at appropriate distribution points close to the customers in the supply chain	0.636			

Table 3.3 Corrected item to total correlation (CITC) test and alpha value of SCM practice dimensions.

3.6.2. SCM operational performance items

Supply chain management operational performance was represented by five elements, supply chain flexibility (seven items), supply chain integration (four constructs), responsiveness to customers (three constructs), suppliers performance (four items) and partnership quality (six items) a total of 24 items.

Table 3.4 summarizes the correlated item to total correlation and Cronbach's alpha for each constructs.

The CITC scores for all items were all above 0.50 except construct 4.4 (NTE's supplier base has reduced over the past three years), 5.1 (NTE does not wish to terminate current partnerships with trading partners and establish new ones), 5.3 (Any risk that can occur in the supply chain are shared between NTE and NTE's trading partner) and 5.4 (Benefits obtained from SCM are shared with trading partners) whose CITC values are 0.211, 0.317, 0.424 and 0.373 respectively. These four items were removed and inter item correlation for supplier performance and partnership quality was recalculated. The recalculated result is shown in table 3.4 in CITC2 and α_2 columns.

After deletion of item 4.4 (NTE's supplier base has reduced over the past three years) in supplier performance dimension the Cronbach's alpha has increased from 0.694 to 0.805. Moreover the CITC values of other constructs have increased from 0.483, 0.679 and 0.623 to 0.585, 0.730 and 0.655 respectively. After deletion of three constructs 5.1, 5.3 and 5.4 of partnership quality dimension Cronbach's alpha has increased from 0.739 to 0.813. The CITC values of 5.5 (There is a high degree of harmonized relationship with NTE's trading partners) and 5.6 (There is a satisfactory relationship with trading partners) have increased from 0.575 and 0.622 to 0.732 and 0.727 respectively. But the CITC value of 5.2 (NTE believes its relationship with trading partners is profitable) has decreased from 0.564 to 0.544.

1	Supply chain flexibility	CITC1	CITC2	α_1	α_2
1.1	NTE supply chain is able to handle difficult nonstandard orders	0.560		0.859	
1.2	NTE supply chain is able to meet special customer specification	0.647			
1.3	NTE supply chain is able to produce products characterized by numerous features, sizes and colors	0.535			
1.4	NTE supply chain is able to rapidly adjust capacity so as to accelerate or decelerate production in response to changes in customer	0.567			

	demand				
1.5	NTE supply chain is able to rapidly introduce large numbers of product improvements/ variations	0.751			
1.6	NTE supply chain is able to handle rapid introduction of new products	0.644			
1.7	NTE supply chain is able to respond to the needs and wants of the firm's target market(s)	0.683			
2	Supply chain integration				
2.1	There is a high level of communication and coordination between all functions in NTE	0.641		0.849	
2.2	Cross-functional teams are frequently used for process design and improvement in NTE	0.713			
2.3	There is a high level of integration of information systems in NTE	0.779			
2.4	NTE supply chain characterized by full system visibility from suppliers' suppliers to customers' customers	0.621			
3	Responsiveness to customers				
3.1	NTE fills customer order on time	0.724		0.852	
3.2	NTE has short order-to-delivery cycle time	0.789			
3.3	NTE has fast customer response time	0.664			
4	Supplier Performance				
4.1	NTE's suppliers deliver materials on time	0.483	0.585		
4.2	NTE's suppliers provide dependable delivery	0.679	0.730		
4.3	Materials that NTE's suppliers provide are highly reliable	0.623	0.655	0.694	0.805
4.4	NTE's supplier base has reduced over the past three years	0.211	-		
5	Partnership quality				
5.1	NTE does not wish to terminate current partnerships with trading partners and establish new ones	0.317	-		
5.2	NTE believes its relationship with trading partners is profitable	0.564	0.544	0.739	0.813
5.3	Any risk that can occur in the supply chain are shared between NTE and NTE's trading partners	0.424	-		
5.4	Benefits obtained from SCM are shared with trading partners	0.373	-		
5.5	There is a high degree of harmonized relationship with NTE's trading partners	0.575	0.732		
5.6	There is a satisfactory relationship with trading partners	0.622	0.727		

Table 3.4 Inter-correlation and alpha value of SCM performance dimensions

3.6.3. SCM Organizational Performance

As show in table 3.5 SCM organizational performance measure contains seven constructs. The CITC values of all constructs are above 0.50 except item 6 whose CITC value is 0.497. It is almost near to 0.5 and not deleted. The Cronbach's alpha of all SCM organizational performance constructs is 0.84.

	Overall Performance of the firm	CITC1	CITC2	α_1	α_2
1	NTE's market share has increased through SCM	0.592		0.824	
2	NTE's has got return on investment by applying SCM	0.592			
3	NTE's volume of sales has increased	0.628			
4	There is growth of NTE's return on investment	0.689			
5	NTE's profit margin on sales has increased	0.594			
6	Overall competitive position related to illicit cigarette has increased.	0.497			

Table 3.5. Inter-correlation and alpha value of SCM organizational performance dimensions.

3.7. Ethical Considerations

To be cleared from different ethical issues written consent was obtained from the case company. Willingness of respondents was requested in advance before distributing the questionnaires. Moreover, respondents were instructed not to write their names on the questionnaire. They are also told that their responses would be used only for academic purpose and it is kept confidential.

Different people involved in this research and different sources from which information was drawn are acknowledged.

CHAPTER FOUR

DATA PRESENTATION, DISCUSSION AND ANALYSIS

4.1. Introduction

In this chapter the collected data are presented, analyzed and interpreted with a view of determining the extent to which supply chain management is practiced and its relation with supply chain management operational and organizational performance in NTE. Presentation, analysis and interpretation of the results are discussed under different sections. The findings of the study are presented and analyzed using tables, figures and graphs.

The data were collected from different groups as shown in table 3.2. After data collection, the filled-in and returned questionnaires were edited for completeness, coded and entered into Statistical Package for Social Sciences (SPSS) version 20.

Both descriptive and inferential statistical methods were used in the data analysis. Mean and standard deviations were used as measures of central tendencies and dispersions respectively. Regression and correlation analysis were also used to assess the strength of the relationships between the specified variables. Various statistics were extracted and interpreted with respect to the various models. Inferential analysis was done to test the hypotheses of the study.

The first section deals with the background information of respondents such as job functions, service years, relationship with the case company and respondent's educational level. The next section presents findings and analysis based on the objectives of the study.

4.2. Descriptive statistics

This section starts with the description of sample characteristics for the study in respect to suppliers, customers, tobacco out growers, NTE employees, working field of NTE employees, respondents' educational level, respondents' length of service/partnership with NTE.

4.2.1. Respondents by sex

Table 4.1 shows the sex of respondents that participated in the study. It shows that 83 of the respondents (84.7%) are male while 15 of them (15.3%) are female. This result indicates that there are more male participants in the study than female participants.

Table 4.1. Sex of respondents

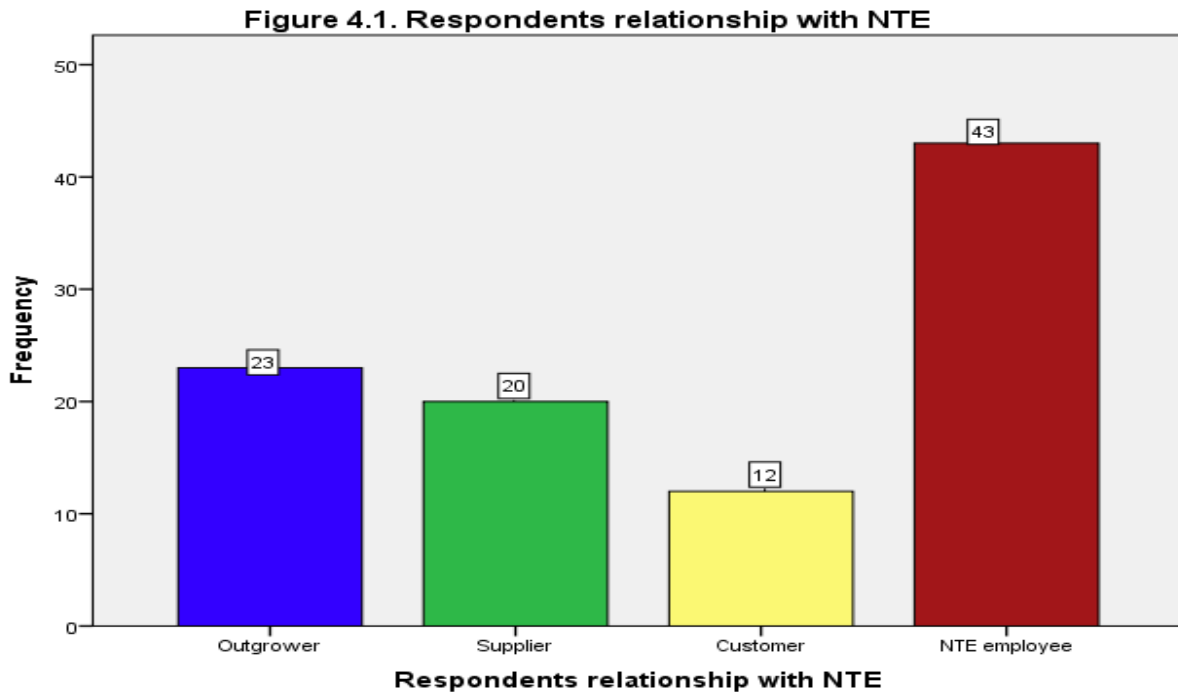
	Frequency	Percent	Valid Percent	Cumulative Percent
Male	83	84.7	84.7	84.7
Female	15	15.3	15.3	100.0
Total	98	100.0	100.0	

4.2.2. Respondents relationship with NTE

Data for this research was collected from the upstream to the downstream supply chain members of NTE that includes suppliers, employees of NTE and customers. The detail is shown in table 4.2 and figure 4.1 below.

Table 4.2. Respondents relationship with NTE

	Frequency	Percent	Valid Percent	Cumulative Percent
Out growers	23	23.5	23.5	23.5
Suppliers	20	20.4	20.4	43.9
Customers	12	12.2	12.2	56.1
NTE employee	43	43.9	43.9	100.0
Total	98	100.0	100.0	



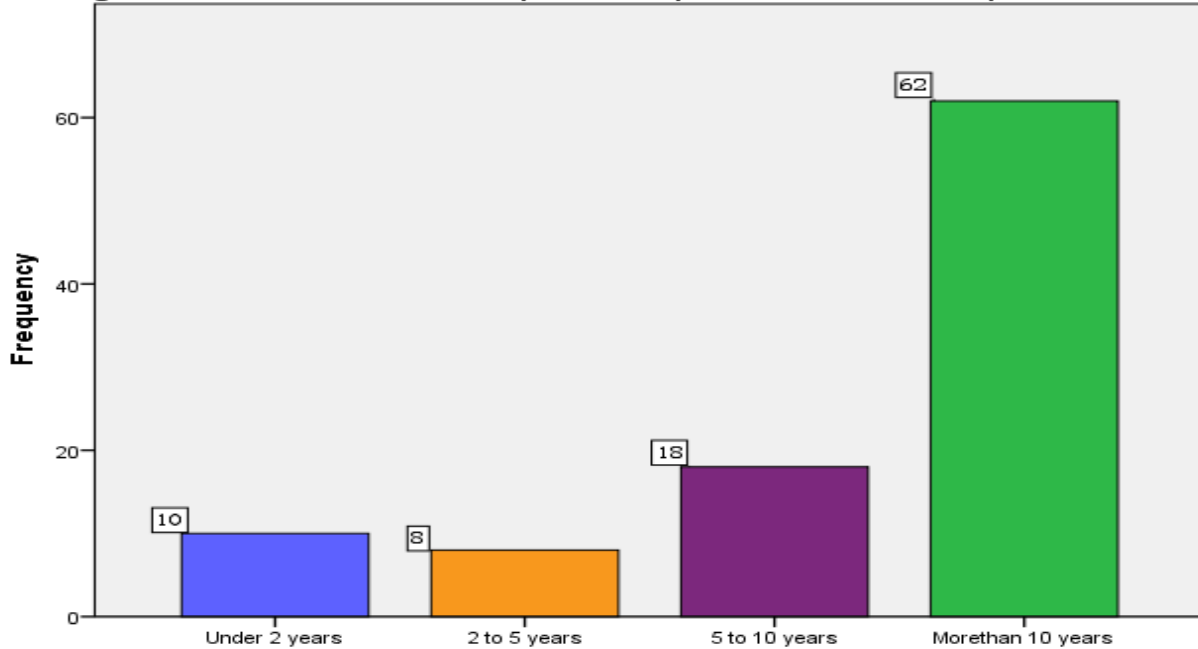
As shown in Figure 4.1 and Table 4.2 above 23 of the respondents (23.5%) are tobacco out growers, 20 of them (20.4%) are suppliers, 12 of the respondents (12.2%) are customers and the rest 43 respondents (43.9%) are NTE employees. This shows that majority of the respondents are NTE employees.

4.2.3. Respondents years of service or partnership with NTE

Figure 4.2 shows years of service years of respondents with NTE (as employee or trading partner). The figure shows that 10 of the respondents (10.2%) have worked with NTE for less than 2 years, 8 of them (8.2%) have worked between 2 and 5 years, 18 of them (18.4%) have worked between 5 and 10 years and the rest 62 (63.3%) of respondents have worked with NTE for more than 10 years.

The data thus clearly shows that majority of the respondents have worked with NTE for more than 10 years and this assures that respondents have good experience to respond to the questionnaires accordingly.

Figure 4.2. Years of Service or partnership with NTE of the respondents



4.2.4. Respondents educational level

Figure 4.3. Respondents Educational level

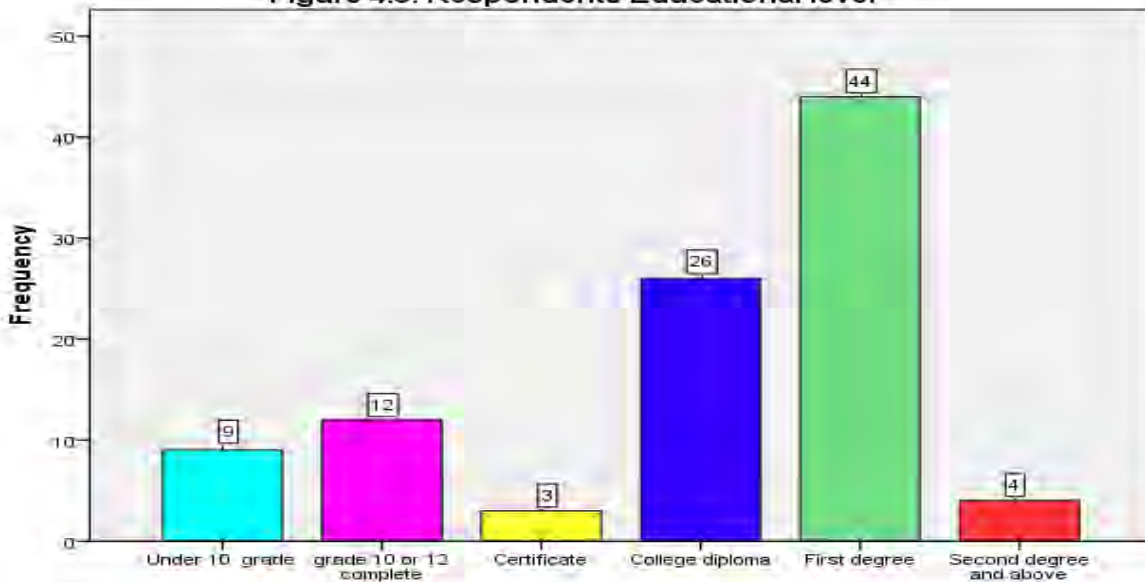


Figure 4.3 represents the educational level of the respondents. It shows that 9 respondents (9.2%) are under 10th grade level. 12 or (12.2%) of the respondents are 10th or 12th grade complete. Three (3.1%) of the respondents have certificate and 26 of them (26%) have college diploma. The rest 48 respondents 48.9% have first degree and above first degree. Majority of the respondents have a

college diploma and above educational background. This indicates that the respondents are deemed to understand supply chain management and respond to the questionnaires.

4.2.5. NTE Employee respondents by working unit

Figure 4.4 shows number of NTE employees participated in the research by their working area.

Figure 4.4. NTE employees by thier working area



It was noted that those NTE employees whose activities are directly related to supply chain management were taken as population of the study. Among the respondents of these NTE employees 9.3% were information technology related employees, 27.91% of the respondents were purchasing employees, 18.60% of the respondents were marketing and sales employees, 23.26% were production and the rest 20.93 % were warehouse employees. This indicates that the employees taken as sample are in best position to respond to NTE's supply chain management activities.

4.3. Respondents perception of SCM practices, SCM operational and organizational performance

In this section the respondents' perception about the extent of SCM practices and its effect on SCM operational and organizational performance in NTE are discussed. Therefore, data related to each of the SCM practices (strategic supplier partnership, customer relationship, quality and degree of information sharing, internal lean practices and postponement), supply chain management operational performance (supply chain flexibility, supply chain integration, responsiveness to customer, supplier performance and partnership quality) and organizational performance are summarized and the results are presented in the same format as they are in the questionnaire.

4.3.1. Supply Chain Management Practice (SCMP)

4.3.1.1. Strategic supplier partnership

Table 4.3 shows respondents perception of extent of practice of strategic supplier partnership in the case company.

Table 4.3. Extent of the strategic supplier partnership practices in NTE									
Where: - F= frequency, %= percentage									
No	Description		Level of agreement					Mean	Std. Deviation
			Strongly disagree	Disagree	Neutral	Agree	Strongly agree		
1	NTE relies on a few high quality suppliers	F	7	22	12	39	16	3.36	1.215
		%	7.14	22.45	12.24	39.80	16.33		
2	Quality is the most considerable criterion in selecting suppliers	F	2	12	17	38	27	3.79	1.055
		%	2.04	12.24	17.35	38.78	27.55		
3	NTE's aim is to establish long-lasting relationship with suppliers	F	2	8	8	49	31	4.01	0.958
		%	2.04	8.16	8.16	50.00	31.63		
4	NTE regularly solve problems jointly with suppliers	F	1	8	16	39	34	3.99	0.969
		%	1.02	8.16	16.33	39.80	34.69		
5	NTE helps suppliers to improve their product quality	F	5	14	27	32	20	3.49	1.124
		%	5.10	14.29	27.55	32.65	20.41		
6	NTE has continuous improvement programs	F	8	10	24	31	25	3.56	1.21
		%					25.51		

	that include key suppliers		8.16	0.20	24.49	31.63			
7	NTE includes key suppliers in planning and goal-setting activities	F	10	21	29	20	16	3.15	1.286
		%	10.20	21.43	29.59	20.41	16.33		
8	NTE actively involves key suppliers in new product development processes	F	8	18	24	28	20	3.35	1.228
		%	8.16	18.37	24.49	28.57	20.41		

Source: Survey result

As it is shown in Table 4.3 supplier selection based on quality, aim to establish long-lasting relationship with suppliers and solving problems jointly with suppliers have mean value of 3.79, 4.01 and 3.99 respectively which are the most practiced elements of strategic supplier partnership.

The mean value for NTE's encouraging suppliers to improve their product quality and involving its suppliers in continuous improvement programs are 3.49 and 3.56 respectively are practiced above average. Inclusion of key suppliers in planning and goal setting is the least practiced element in NTE.

Tan et al (2002) suggested that suppliers participating early in the product design process can offer more cost effective design choices, helps to select the best components and technologies, and helps in design assessment.

4.3.1.2. Customer relationship

In this sub-section respondents were requested to rate practice of customer relationship in NTE based on six variables. These variables include the extent of NTEs practices in handling customer complaints, follow up of customers of quality/service feedback, assessing customer satisfaction, determining future customer expectation, facilitations to customers to seek assistance from NTE and NTE's continuous assessment of importance of relationship with customers. Table 4.4 shows details of the respondents' perception on NTE's customer relationships.

No	Description of customer relationship		Level of agreement					Mean	SD
			Strongly disagree	Disagree	Neutral	Agree	Strongly agree		
1	Formal and informal customers complaints are frequently evaluated	F	3	6	20	48	21	3.80	0.925
		%	3.06	6.12	20.41	48.98	21.43		
2	There is a frequent follow-up of customers for quality/service feedback	F	3	10	12	49	24	3.83	1.016
		%	3.06	10.20	12.24	50.00	24.49		
3	Customer satisfaction is frequently measured and evaluated	F	6	18	24	31	19	3.4	1.173
		%	6.12	18.37	24.49	31.63	19.39		
4	Future customer expectations is frequently determined	F	4	25	32	25	12	3.22	1.072
		%	4.08	25.51	32.65	25.51	2.24		
5	Customers' ability to seek assistance from us is frequently facilitated	F	4	11	23	41	17	3.57	1.043
		%	4.08	11.22	23.47	41.84	7.35		
6	NTE periodically evaluate the importance of its relationship with its customers	F	3	12	30	32	21	3.58	10.55
		%	3.06	3.06	3.06	3.06	3.06		

T Table 4.4. Extent of the Customer relationship practices in NTE, (Source: survey result)

Note:- F = frequency, % = percentage, SD= standard deviation

As shown in Table 4.4 respondents were requested to evaluate NTE's relationship with customers. Their answers were ranged from one (strongly disagree) to five (strongly agree). The mean values of the responses are prioritized as follows: follow up of customer quality/service feedback (3.83), handling formal and informal customer compliant (3.80), evaluation of importance of customer relationship (3.58), facilitation of customer to request assistance from NTE (3.57), testing customer satisfaction (3.4) and in advance determination of future customer expectation (3.22). This indicates that follow up of customer quality/service feedback and handling formal and informal customer complaints dimensions are the most practiced dimension of customer relationship.

The data shown so far has shown that customer relationship is practiced in NTE. Customer relationships for an organization has several benefits like success in SCM efforts as well as its performance (Ellram, 1991; Turner, 1993; Moberg et al., 2002), increased sales and profits (Bommer et al., 2001), product

differentiation from competitors, sustaining customer loyalty, and greater value provided to customers (Magretta, 1998).

4.3.1.3. Information sharing

Respondents were asked to assess NTE's supply chain members information sharing practice in terms of sharing proprietary information, giving information in advance to changing needs, trading partners keep informed on issues that affect the business, sharing of information to aid planning and sharing of information that may affect the NTE's supply chain. The respondents' perceptions on these issues are shown in table 4.5 below.

No	Information sharing (IS)		Level of agreement					Mean	SD
			Strongly disagree	Disagree	Neutral	Agree	Strongly agree		
1	NTE business units' proprietary information is shared with trading partners	F	4	11	27	34	21	3.59	1.078
		%	4.08	11.22	27.55	34.69	21.43		
2	Trading partners are made informed in advance of changing needs	F	3	9	25	38	20	3.66	1.017
		%	3.06	9.18	25.51	38.78	20.41		
3	NTE's trading partners keep NTE fully informed about issues that affect the business	F	6	12	35	30	14	3.35	1.071
		%	6.12	12.24	35.71	30.61	14.29		
4	NTE and its trading partners exchange information that helps establishment of business planning	F	4	14	27	39	14	3.46	1.037
		%	4.08	14.29	27.55	39.80	14.29		
5	NTE's and its trading partners keep each other informed about events or changes that may affect the other partners	F	3	13	23	36	21	3.61	1.07
		%	3.06	13.27	23.47	36.73	21.43		

Table 4.5. Information sharing practices. Where F= frequency and % = relative percentage of respondents, SD = Standard Deviation, (Source: survey result)

As shown in table 4.5 mean of sharing proprietary information is 3.59, informing changing needs in advance is 3.66, keeping NTE informed by trading partners about issues that affect the business is 3.35, exchange of information for business planning is 3.46, and keeping NTE partners each other informed is 3.61. All the mean value of information sharing elements are above average

and informing changing needs in advance, keeping NTE partners each other informed and sharing proprietary information are the most practiced elements.

According to Stein and Sweat (1998), information exchange among supply chain partners enables them to work as a single entity so that they can understand the needs of the end customer better and hence can respond to market change quicker.

4.3.1.4. Information quality

Respondents were asked to assess NTE’s supply chain members on quality of information sharing in terms of accuracy, timeliness, completeness, adequacy and reliability. The respondents’ perceptions on these issues are shown in table 4.6 below.

No	Information quality (IQ)		Level of agreement					Mean	SD
			Strongly disagree	Disagree	Neutral	Agree	Strongly agree		
1	Information exchange with trading partners is timely	F	2	12	25	36	22	3.66	1.03
		%	2.04	12.24	25.51	36.73	22.45		
2	Information exchange with trading partners is accurate	F	4	14	28	39	12	3.42	1.019
		%	4.08	14.29	28.57	39.80	12.24		
3	Information exchange with trading partners is complete	F	5	22	28	31	11	3.22	1.082
		%	5.10	22.45	28.57	31.63	11.22		
4	Information exchange with trading partners is adequate	F	5	12	27	34	19	3.52	1.1
		%	5.10	12.24	27.55	34.69	19.39		
5	Information exchange with trading partners is reliable	F	9	8	29	31	17	3.41	1.168
		%	9.18	8.16	29.59	31.63	17.35		

Table 4.6. Extent of information quality. Where F= frequency and % = relative percentage of respondents, SD = Standard Deviation, (Source: survey result)

As shown in table 4.6 timely information exchanges (mean 3.66) and adequacy of information exchange (mean 3.52) are the most practiced elements of information quality in NTE. Accuracy of information exchange (mean 3.42),

completeness of information exchange (mean 3.22) and reliability of information reliability (mean 3.41) are also practiced above the average value.

Regarding quality of information sharing the study of Tompkins and Ang (1999) stated that effective use of pertinent, timely, and accurate information by supply chain members is a key competitive factor.

4.3.1.5. Internal Lean Practice (ILP)

Respondents were asked to indicate the extent to which the five variables of internal lean practice were experienced in NTE. These variables include: the ability to reduce set-up time, applying continuous quality improvement program, use of pull production system, pushing suppliers for short lead time and providing only what is requested by customers when demanded. The respondents' reflection to these attribute is shown in table 4.7.

	Internal lean practices (ILP)		Level of agreement					Mean	SD
			Strongly disagree	Disagree	Neutral	Agree	Strongly agree		
1	NTE has the ability to reduces set-up time	F	8	18	31	27	13	3.22	1.171
		%	8.16	18.37	31.63	27.55	13.27		
2	NTE has continuous quality improvement program	F	4	6	29	32	26	3.74	1.078
		%	4.08	6.12	29.59	32.65	26.53		
3	NTE uses a Pull production system	F	4	14	24	39	15	3.49	1.056
		%	4.08	14.29	24.49	39.80	15.31		
4	NTE pushes suppliers for shorter lead-times	F	2	14	36	33	12	3.4	0.954
		%	2.04	14.29	36.73	33.67	12.24		
5	NTE produces only what is demanded by customers when they request (JIT)	F	14	12	25	31	15	3.22	1.268
		%	14.29	12.24	25.51	31.63	15.31		

Table 4.7. Internal lean practice. Where F= frequency and % = relative percentage of respondents, SD = Standard Deviation, (Source: survey result)

The mean values for short set-up time is 3.22, for continuous quality improvement is 3.74, for pull production system is 3.49, for shorter lead-time is 3.4 and for JIT is 3.22. This shows that mean value of internal lean practice

is above average and continuous quality improvement program is the most practiced element in internal lean practice. Researchers like Agus (2011) concluded that lean production system is important factor for SCM enhancement initiatives.

4.3.1.6. Postponement

The respondents were asked about their level of agreement on the application of postponement by means of four statements using a five-point Likert response format, ranging from 1 (strongly disagree) to 5 (strongly agree). Table 4.8 indicates the frequency distribution and percentage per statement.

	Postponement (POS)		Level of agreement					Mean	SD
			Strongly disagree	Disagree	Neutral	Agree	Strongly agree		
1	NTE's production process modules can be re-arranged so that customization can be carried out later at distribution centers	F	8	14	37	26	10	3.17	1.078
		%	8.16	14.28	37.75	26.53	10.20		
2	NTE is able to delay final product assembly activities until customer orders have actually been received	F	9	12	47	25	5	3.05	0.978
		%	9.18	12.24	47.96	25.51	5.10		
3	NTE can delay final product assembly activities until the last possible position (or nearest to customers) in the supply chain	F	9	18	45	19	7	2.97	1.02
		%	9.18	18.37	45.92	19.39	7.14		
4	NTE's goods are stored at appropriate distribution points close to the customers in the supply chain	F	13	14	41	19	11	3.01	1.153
		%	13.27	14.29	41.84	19.39	11.22		

Table 4.8. Extent of postponement practice. Where F= frequency and % = relative percentage of respondents, SD = Standard Deviation, (Source: survey result)

Table 4.8 shows that the mean value for production process module (3.17), waiting final products assembly until customer order (3.05), waiting product assembly near to customer location (2.97) and storage at appropriate distribution location near to customer (3.01) centers around Likert's scale 3 (Neutral). Among these elements production process module is the most

practiced and waiting product assembly near to customer location is the least practiced element.

Researches regarding postponement like van Hoek et al. (1999) suggested that the supply chain should respond to changes in customer demand, as well as improving the cost effectiveness of supply chains.

4.3.2. Supply Chain Management Operational Performance

Respondents' attitude about supply chain management operational performance (supply chain flexibility, supply chain integration, responsiveness to customer, supplier performance and partnership quality) of NTE will be discussed through these five dimensions.

4.3.2.1. Supply chain flexibility

Respondents were requested to rate their opinion on supply chain flexibility constructs of NTE. Their response is summarized in table 4.9.

S N	Supply chain flexibility		Level of agreement					Mean	SD
			Strongly disagree	Disagree	Neutral	Agree	Strongly agree		
1	NTE supply chain is able to handle difficult nonstandard orders	F	7	16	37	24	13	3.27	1.168
		%	7.14	16.33	37.76	24.49	13.27		
2	NTE supply chain is able to meet special customer specification	F	7	20	38	22	10	3.08	1.067
		%	7.14	20.41	38.78	22.45	10.20		
3	NTE supply chain is able to produce products characterized by numerous features, sizes and colors	F	8	14	44	14	14	3.16	11.48
		%	8.51	14.29	44.90	14.29	14.29		
4	NTE supply chain is able to rapidly adjust capacity so as to accelerate or decelerate production in response to changes in customer demand	F	7	14	36	21	18	3.3	1.153
		%	7.29	14.58	37.50	21.88	18.75		
5	NTE supply chain is able to rapidly introduce large numbers of product improvements/ variations	F	11	18	33	18	14	3.06	1.208
		%	11.2	18.37	33.67	18.37	14.29		
6	NTE supply chain is able to handle rapid introduction of	F	9	16	45	14	11	3.02	1.082

	new products	%	9.18	16.33	45.92	14.29	11.22		
7	NTE supply chain is able to respond to the needs and wants of the firm's target market(s)	F	9	18	25	30	15	3.25	1.199
		%	9.18	18.37	25.51	30.61	15.31		

Table 4.9. Extent of supply chain flexibility. Where F= frequency and % = relative percentage of respondents, SD = Standard Deviation, (Source: survey result)

As shown in table 4.9 the mean value of handling difficult nonstandard orders is 3.27, meeting special customer specification is 3.08, providing products with numerous features, size and colors is 3.16, ability to adjust capacity to accelerate or decelerate production is 3.3, ability to introduce large product improvement or variation is 3.06, ability to introduce new products rapidly is 3.02 and the supply chain's ability to respond to needs and wants of target market is 3.25. This shows that ability to adjust capacity to accelerate or decelerate production is the most practiced and ability to introduce new products rapidly is the least practiced element in NTE.

AGUS (2011) suggested that as supply chain exists in an uncertain environment, supply chain flexibility is vital to the success of the supply chain members' performances.

4.3.2.2. Supply chain integration

Regarding supply chain integration respondents were requested to rate their level of agreement from 1 (Strongly disagree) to 5 (Strongly agree) for four variables. The mean and frequency of the responses on supply chain integrity of NTE is shown in table 4.10.

SN	Supply chain integration		Level of agreement					Mean	SD
			Strongly disagree	Disagree	Neutral	Agree	Strongly agree		
1	There is a high level of communication and coordination between all functions in NTE	F	6	14	16	42	19	3.56	1.145
		%	6.12	14.29	16.33	42.86	19.39		
2	Cross-functional teams are frequently used for process design and improvement in NTE	F	10	12	36	26	12	3.19	1.136
		%	10.20	12.24	36.73	26.53	12.24		
3	There is a high level of integration of information systems in NTE	F	9	22	22	32	12	3.16	1.187
		%	9.18	22.45	22.45	32.65	12.24		
4	NTE supply chain characterized by full system visibility from suppliers' suppliers to customers' customers	F	6	20	33	26	11	3.17	1.083
		%	6.12	20.41	33.67	26.53	11.22		

Table 4.10. Extent of supply chain integration. Where F= frequency and % = relative percentage of respondents, SD = Standard Deviation, (Source: survey result)

The mean value of the response for level of coordination and communication among functions of NTE is 3.56, usage of cross-functional teams in process design and improvement is 3.19, integration of information system is 3.16 and full system visibility of NTE's supply chain is 3.17. This shows that coordination and communication among different functions of NTE is the most practiced and the rest nearly equally practiced.

The studies of van der Vaart and van Donk, (2008), Singh and Power (2009) and Ou et al. (2010) showed that successful supply-chain integration can improve firm's performance and competitive advantage.

4.3.2.3. Responsiveness to customers

Respondents were requested to assess NTE's supply chain responsiveness to customers by three variables through a Likert's Scale from 1 (Strongly disagree) to 5 (strongly agree). Their reflection on the responsiveness to customer responsiveness is shown in table 4.11.

S N	Responsiveness to customers		Level of agreement					Mean	SD
			Strongly disagree	Disagree	Neutral	Agree	Strongly agree		
1	NTE fills customer order on time	F	5	12	25	39	15	3.49	1.066
		%	5.10	12.24	25.51	39.80	15.31		
2	NTE has short order-to-delivery cycle time	F	1	14	26	44	11	3.55	0.947
		%	1.02	14.29	26.53	44.90	11.22		
3	NTE has fast customer response time	F	2	17	26	33	19	3.52	1.062
		%	2.04	17.35	26.53	33.67	19.39		

Table 4.11. Responsiveness to customers. Where F= frequency and % = relative percentage of respondents, SD = Standard Deviation

As shown in table 4.11 the mean value of fulfilling customers order on time is 3.49, order-to-delivery cycle time is 3.55 and speed of customer response time is 3.52. This shows that all these mean values are above average and nearly all elements are practiced equally in NTE.

4.3.2.4. Suppliers performance

Respondents were asked to express their level of agreement on the NTE'S suppliers' performance on a Likert's Scale that range from 1 (strongly disagree) to 5 (strongly agree). The respondents' reflection is indicated in table 4.12.

S N	Supplier Performance		Level of agreement					Mean	SD
			Strongly disagree	Disagree	Neutral	Agree	Strongly agree		
1	NTE's suppliers deliver materials on time	F	3	17	28	41	7	3.33	0.959
		%	3.06	17.35	28.57	41.84	7.14		
2	NTE's suppliers provide dependable delivery	F	2	12	35	38	9	3.45	0.939
		%	2.04	12.24	35.71	38.78	9.18		
3	Materials that NTE's suppliers provide are highly reliable	F	3	16	34	31	11	3.39	1.065
		%	3.06	16.33	34.69	31.63	11.22		
4	NTE's supplier base has reduced over the past three years	F	5	11	51	16	12	3.33	1.134
		%	5.10	11.22	52.04	16.33	12.24		

Table 4.12. Suppliers' performance. Where F= frequency and % = relative percentage of respondents, SD = Standard Deviation, (Source: survey result)

As shown in table 4.11 the mean value of delivery of materials on time is 3.33, dependability on suppliers' delivery is 3.45, reliability of materials supplier by suppliers is 3.39 and reduction of supplier base in the past three years is 3.33.

All the mean values shown above are above average in 5 levels Likert's Scale. Moreover, all the mean values are nearly similar and we can say all the elements of supplier performance elements are equally practiced in NTE. Dependability on suppliers' delivery is the highest.

4.3.2.5. Partnership quality

Respondents were asked to rate their level of agreement about NTE's partnership quality from 1 (strongly disagree) to 5 (strongly agree). Their response this supply chain management operational performance is shown in table 4.13.1 below.

S N	Partnership quality		Level of agreement					Mean	SD
			Strongly disagree	Disagree	Neutral	Agree	Strongly agree		
1	NTE does not wish to terminate current partnerships with trading partners and establish new ones	F	6	13	40	26	13	3.28	1.0 53
		%	6.12	13.27	40.82	26.53	13.27		
2	NTE believes its relationship with trading partners is profitable	F	2	7	23	44	22	3.79	0.9 44
		%	2.04	7.14	23.47	44.90	22.45		
3	Any risk that can occur in the supply chain are shared between NTE and NTE's trading partners	F	2	19	26	38	13	3.42	1.0 15
		%	2.04	19.39	26.53	38.78	13.27		
4	Benefits obtained from SCM are shared with trading partners	F	4	19	47	20	8	3.09	0.9 43
		%	4.08	19.39	47.96	20.41	8.16		
5	There is a high degree of harmonized relationship with NTE's trading partners	F	1	13	28	35	21	3.63	0.9 99
		%	1.02	13.27	28.57	35.71	21.43		
6	There is a satisfactory relationship with trading partners	F	1	14	22	40	20	3.66	0.9 99
		%	1.02	14.29	22.45	40.82	20.41		

Table 4.13.1 Partnership quality. Where F= frequency and % = relative percentage of respondents, SD = Standard Deviation, (Source: survey result)

As shown in table 4.13 averages value of staying with current trading partners is 3.28, the belief of profitability of the current relation with trading partner is 3.79, sharing of risk between trading partners is 3.42, sharing of benefits obtained in SCM is 3.09, harmonized relation with trading partners is 3.63 and

the satisfactoriness of trading partners is 3.66. Among these trading partnership dimensions the belief of profitability of the current relation is the highest followed by existence of satisfactory relationship with trading partners and high degree of harmonization with trading partners and sharing of benefits obtained is the lowest.

Studies of Frohlich and Westbrook (2002) and Shamsuddin et al. (2013) showed that building a close partnership with customers and with suppliers are essential to achieve SCM operational and organizational performances.

4.3.3. Supply Chain Management Organizational Performance

Respondents were requested to reflect their opinion to what extent NTE has changed its organizational performance through supply chain management. Likert's Scale of value 1 (strongly disagree) to 5 (strongly agree) was used to the respondents to rate it. Their reflection on NTE's supply chain performance is shown in table 4.13.

S N	Overall Performance of the firm in relation to supply chain management practices		Level of agreement					Mean	SD
			Strongly disagree	Disagree	Neutral	Agree	Strongly agree		
1	NTE's market share has increased through SCM	F	3	8	39	34	14	3.49	0.944
		%	3.06	8.16	39.80	34.69	14.29		
2	NTE's has got return on investment by applying SCM	F	-	10	37	32	19	3.61	0.915
		%	-	10.20	37.76	32.65	19.39		
3	NTE's volume of sales has increased	F	-	5	25	36	32	3.97	0.89
		%	-	5.10	25.51	36.73	32.65		
4	There is growth of NTE's return on investment	F	1	2	31	34	29	3.91	0.891
		%	1.02	2.04	31.63	34.69	29.59		
5	NTE's profit margin on sales has increased	F	1	1	39	32	25	3.81	0.869
		%	1.02	1.02	39.80	32.65	25.51		
6	Overall competitive position related to illicit cigarette has increased.	F	7	9	24	32	25	3.61	1.178
		%	7.14	9.18	24.49	32.65	25.51		

Table 4.13. Supply chain organizational performance. Where F= frequency and % = relative percentage of respondents, SD = Standard Deviation, (Source: survey result)

As shown in table 4.13 the average value of NTE's supply chain management organizational performances is highest on volume of sales (3.97), growth in return on investment (3.91) and profit margin on sales (3.81). The mean for return of investment and increase in competitiveness related to illicit cigarette is (3.61) but increase in market share is the lowest (3.49) among these measurement constructs.

Researches of Li et al. (2006) and Hussain et al (2014) shows that SCM practices enhance organization's market and financial performance such as, market share, return on investment, the growth of market share, the growth of sales, growth in return on investment, profit margin on sales and overall competitive position of the organization.

4.4. Inferential statistics

Different statistical methods are employed to analyze the empirical data. Cronbach's Alpha and Corrected Item-to-Total Correlations (CITC) were used in assessing the internal consistency of each construct as shown in chapter three under section 3.6.

4.4.1. Correlation analysis

The composite mean value of the supply chain management practice (strategic supplier partnership, customer relationship, information sharing, lean practice and postponement), supply chain management operational performance (supply chain flexibility, supply chain integration, responsiveness to customers, suppliers performance and partnership quality) and supply chain management organizational performance excluding items with low CITC was used for both correlation and regression analysis.

The inter correlation of these items is calculated using SPSS version 20 and the result is shown in table 4.14.

Abbreviations used in this chapter

<u>Supply Chain Management Practice</u>	<u>(SCMP)</u>
Strategic Supplier Partnership	SSP
Customer Relationship	RC
Information Sharing	IS
Information quality	IQ
Internal lean practice	ILP
Postponement	POS
<u>Supply Chain Management Operational Performance</u>	<u>SCMOP</u>
Supply Chain Flexibility	SCF
Supply Chain Integration	SCI
Responsiveness To Customers	RTC
Suppliers Performance	SP
Partnership Quality	PQ
Supply Chain Management Organizational Performance	SCMORP

SN	Item		SSP	CR	IS	IQ	ILP	POS	SCF	SCI	RTC	SP	PQ	SCORP	SCMP	SCOP
1	SSP	Pearson Correlation Sig. (2-tailed)	1													
		N	98	98												
2	CR	Pearson Correlation Sig. (2-tailed)	.761**	1												
		N	98	98												
3	IS	Pearson Correlation Sig. (2-tailed)	.589**	.609**	1											
		N	98	98	98											
4	IQ	Pearson Correlation Sig. (2-tailed)	.508**	.529**	.589**	1										
		N	98	98	98	98										
5	ILP	Pearson Correlation Sig. (2-tailed)	.682**	.712**	.479**	.592**	1									
		N	98	98	98	98	98									
6	POS	Pearson Correlation Sig. (2-tailed)	.563**	.461**	.458**	.568**	.616**	1								
		N	98	98	98	98	98	98								
7	SCF	Pearson Correlation Sig. (2-tailed)	.558**	.601**	.563**	.516**	.606**	.537**	1							
		N	98	98	98	98	98	98	98							
8	SCI	Pearson Correlation Sig. (2-tailed)	.571**	.580**	.373**	.425**	.605**	.422**	.746**	1						
		N	98	98	98	98	98	98	98	98						
	RTC	Pearson Correlation Sig. (2-tailed)	.453**	.557**	.452**	.357**	.531**	.240*	.657**	.574**	1					
		N	98	98	98	98	98	98	98	98	98					

9	SP	Pearson	.277**	.314**	.420**	.324**	.309**	.136	.522**	.435**	.530**	1				
		Correlation														
		Sig. (2-tailed)	.006	.002	.000	.001	.002	.183	.000	.000	.000	.000				
		N	98	98	98	98	98	98	98	98	98	98	98			
10	PQ	Pearson	.601**	.548**	.511**	.479**	.603**	.458**	.579**	.539**	.465**	.224*	1			
		Correlation														
		Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.027			
		N	98	98	98	98	98	98	98	98	98	98	98	98		
11	SCORP	Pearson	.507**	.508**	.356**	.474**	.596**	.376**	.405**	.419**	.320**	.142	.526**	1		
		Correlation														
		Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.001	.162	.000		
		N	98	98	98	98	98	98	98	98	98	98	98	98		
12	SCMP	Pearson	.794**	.697**	.772**	.779**	.789**	.742**	.626**	.547**	.472**	.327**	.633**	.572**	1	
		Correlation														
		Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.001	.000	.000	
		N	98	98	98	98	98	98	98	98	98	98	98	98		
13	SCOP	Pearson	.602**	.649**	.572**	.534**	.671**	.469**	.900**	.848**	.816**	.687**	.649**	.454**	.657**	1
		Correlation														
		Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	
		N	98	98	98	98	98	98	98	98	98	98	98	98		

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

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

Table 4.14 Pearson correlation of supply chain management items

As it can be seen in table 4.14 the correlation among the independent variables (supplier strategic partnership, customer relationship, and information sharing, information quality, internal lean practice and postponement), dependent variables supply chain management operational performance (supply chain flexibility, supply integration, supplier performance, relation to customer and partnership quality) and supply chain management organizational performance) were all positive. The result of the correlation analysis shows also that all of the constructs each differing from each other as a factor, are significantly related to each other when one-to-one correlations are considered.

Strategic supplier partnership had a correlation of 0.558, $p < 0.01$ with supply chain flexibility, 0.571, $p < 0.01$ with supply chain integration, 0.453, $p < 0.01$ with responsiveness to customer, 0.277, $p < 0.01$ with supplier performance and 0.601, $P < 0.01$ with partnership quality.

Customer relationship had a correlation of 0.601, $p < 0.01$ with supply chain flexibility, 0.508, $p < 0.01$ with supply chain integration, 0.557, $p < 0.01$ with responsiveness to customer, 0.314, $p < 0.01$ with supplier performance and 0.548, $P < 0.01$ with partnership quality.

Information sharing has a correlation of 0.563, $p < 0.01$ with supply chain flexibility, 0.373, $p < 0.01$ with supply chain integration, 0.452, $p < 0.01$ with responsiveness to customer, 0.420, $p < 0.01$ with supplier performance and 0.511, $P < 0.01$ with partnership quality.

Information quality has a correlation of 0.516, $p < 0.01$ with supply chain flexibility, 0.425, $p < 0.01$ with supply chain integration, 0.357, $p < 0.01$ with responsiveness to customer, 0.324, $p < 0.01$ with supplier performance and 0.479, $P < 0.01$ with partnership quality.

Internal lean practice has a correlation of 0.606, $p < 0.01$ with supply chain flexibility, 0.605, $p < 0.01$ with supply chain integration, 0.531, $p < 0.01$ with

responsiveness to customer, 0.309, $p < 0.01$ with supplier performance and 0.603, $P < 0.01$ with partnership quality.

Postponement has a correlation of 0.537, $p < 0.01$ with supply chain flexibility, 0.422, $p < 0.01$ with supply chain integration, 0.240, $p < 0.01$ with responsiveness to customer, 0.136, $p < 0.01$ with supplier performance and 0.458, $P < 0.01$ with partnership quality.

Moreover, strategic supplier partnership, relation to customer, information sharing, information quality, internal lean practice and postponement had a correlation of 0.507, 0.508, 0.356, 0.474, 0.596 and 0.376, $p < 0.01$ respectively with supply chain management organizational performance.

Supply chain flexibility had a correlation of 0.405, $p < 0.01$, supply chain integration of 0.419, $p < 0.01$, responsiveness to customers of 0.320, $p < 0.01$, supplier performance of 0.142, $p < 0.01$ and partnership quality of 0.526, $p < 0.01$.

The result of the correlations analysis between the variables of this study shown in table 4.14 indicated that SCM practices elements are positively and significantly correlated with SCM operational and organizational performances. Accordingly, it can be concluded that the more the effort being put into implementing SCM practices the direct impact it will have on both SCM operational and organizational performance.

4.4.2. Regression analysis

Linear regression is a method of data analysis. It is used for assessing the strength of the relationship between each of a set of explanatory variables (independent variables) with a single variable (dependent variable). When only a single explanatory variable is involved it is referred as simple linear regression. When more than one independent variable is involved it is known as multiple regressions. Applying, multiple regression analysis to a set of data results in what are known as regression coefficients. Each explanatory variable has one

coefficient. These coefficients give the estimated change in the dependent variable associated with a unit change in the independent variable. The fit of a multiple regression model can be judged through multiple correlation coefficients or by the examination of residuals (Leech et al., 2005).

The regression equation is: $Y = a + \beta_1X_1 + \beta_2X_2 + \dots + \beta_kX_k + e$, where Y is the predicted value of the dependent variable, a is the y-intercept, the β s are the slopes for each independent variable, the Xs are the values of the independent variable, and e is the residual (Leech et al., 2005, p. 714).

Multiple linear regression analysis is used in this research to assess the strength of relationship of the dependent variables (SCM operational performance and SCM organizational performance) with the independent variables (SCMP) to test the correlation of SCMP with supply chain management operational and organizational performance. To test the hypothesis of supply chain management organizational performance with supply chain operational performance the independent variable is supply chain management operational performance and the dependent variable is supply chain management organizational performance.

Before testing the hypothesis developed in chapter two assumptions of multiple linear regressions were tested using the collected data. Six types of multiple linear regression assumptions (Anderson et al., 2011; Leech et al., 2005) are tested before developing the regression equation and testing the proposed hypotheses.

1. **Independence of residuals**- residual is the difference between predicted and actual value of the dependent variable. It requires the residuals not to be correlated across participants. Independence of residuals also requires no repeated measurement or clustering.
2. **Normality of residuals**- this is to test the normal distribution of errors. The variances of the residuals are required to be constant and the residual has

to be relatively uncorrelated with the linear combination of predictors. This assumption can be tested by histogram and P-P test (Normality Probability Plot) and it needs to have points going in a straight diagonal line, bottom left to top right). Normality is assured if the histogram generated is normally distributed and the P-P plot follows the diagonal reference line.

3. **Homoscedasticity of residuals**- it is the test of residuals that it needs to have a constant variance across all predicted values of the dependent variable. Scatterplot of the standardized residuals is used to test homoscedasticity residuals. If this scatter plot is roughly rectangular shaped the assumption is considered fulfilled.
4. **Bivariate outliers**- this occur when one or more observations are unusually large or unusually small values. These outliers can severely influence the regression line and can lead to incorrect inference. In scatter plot they are identified by data points that are disconnected from the rest of the data points. If outliers are identified they have to be deleted or modified.
5. **Linearity**- requires that all the independent variables and the dependent variable should have to be a straight regression line and this assumption is evaluated prior to analysis by examining scatterplots of the dependent variable against each independent variable.
6. **Multicollinearity** - It is when independent variables correlate with each other. In fact they are expected to be highly correlated with the dependent variable. If they are too highly correlated with each other the standard errors will increase and the regression coefficients (β) became unstable. Tolerance value and variance inflation factor (VIF) are used to test this assumption. Tolerance values below 0.10 or a variance inflation factor (VIF) above 10 are used as benchmarks.

Hypothesis 1

It was hypothesized that: “SCM practices have a positive impact on supply chain management operational performance”.

To test this hypothesis the assumption of multiple regressions were checked with the research data. Output in Table 4.15 provides the usual descriptive statistics for all seven variables. Note that all the 98 participants are included in the analysis.

Table 4.15 Descriptive Statistics SCOP

	Mean	Std. Deviation	N
SCOP	3.2941	.69553	98
SSP	3.5943	.80394	98
CR	3.5438	.80259	98
IS	3.4837	.90903	98
IQ	3.3898	.98750	98
ILP	3.3929	.87711	98
POS	3.0255	.86192	98

Table 4. 16 Coefficients^a SCOP

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
	(Constant)	.858	.246				3.484	.001	.369	1.347		
SSP	.053	.104	.061	.506	.614	-.154	.259	.602	.053	.035	.341	2.934
CR	.156	.108	.180	1.435	.155	-.060	.371	.649	.149	.101	.314	3.188
IS	.165	.076	.215	2.171	.033	.014	.315	.572	.222	.152	.500	2.000
IQ	.052	.070	.074	.743	.459	-.087	.192	.534	.078	.052	.494	2.025
ILP	.287	.093	.362	3.074	.003	.102	.473	.671	.307	.215	.354	2.826
POS	-.009	.079	-.012	-.119	.905	-.166	.147	.469	-.012	-.008	.517	1.936

a. Dependent Variable: SCOP,

Table 4.17. Collinearity Diagnostics ^a SCOP

Dimensi on	Eigenvalue	Condition Index	Variance Proportions						
			(Constant)	SSP	CR	IS	IQ	ILP	POS
1	6.831	1.000	.00	.00	.00	.00	.00	.00	.00
2	.046	12.212	.20	.02	.03	.02	.22	.00	.27
3	.039	13.187	.02	.01	.00	.28	.27	.06	.22
4	.032	14.644	.56	.03	.07	.00	.00	.15	.13
5	.027	15.889	.18	.01	.00	.41	.37	.06	.24
6	.015	21.688	.04	.42	.04	.26	.13	.59	.01
7	.010	25.968	.00	.51	.86	.03	.00	.14	.14

a. Dependent Variable: SCOP

Table 4.18 ANOVA^a SCOP

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	25.960	6	4.327	18.780	.000 ^b
Residual	20.965	91	.230		
Total	46.924	97			

a. Dependent Variable: SCOP

b. Predictors: (Constant), POS, IS, CR, IQ, ILP, SSP

Table 4.19 Model Summary ^b SCOP

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.744 ^a	.553	.524	.47998

a. Predictors: (Constant), POS, IS, CR, IQ, ILP, SSP

b. Dependent Variable: SCOP

Figure 4.5 Histogram
Dependent Variable: SCOP

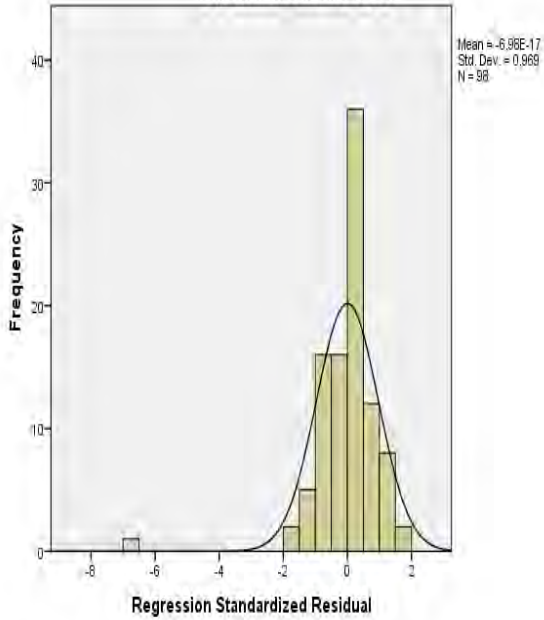


Figure 4.6 Normal P-P Plot of Regression Standardized Residual

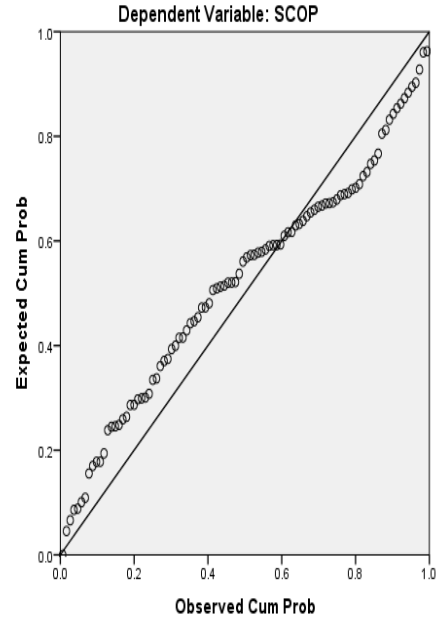
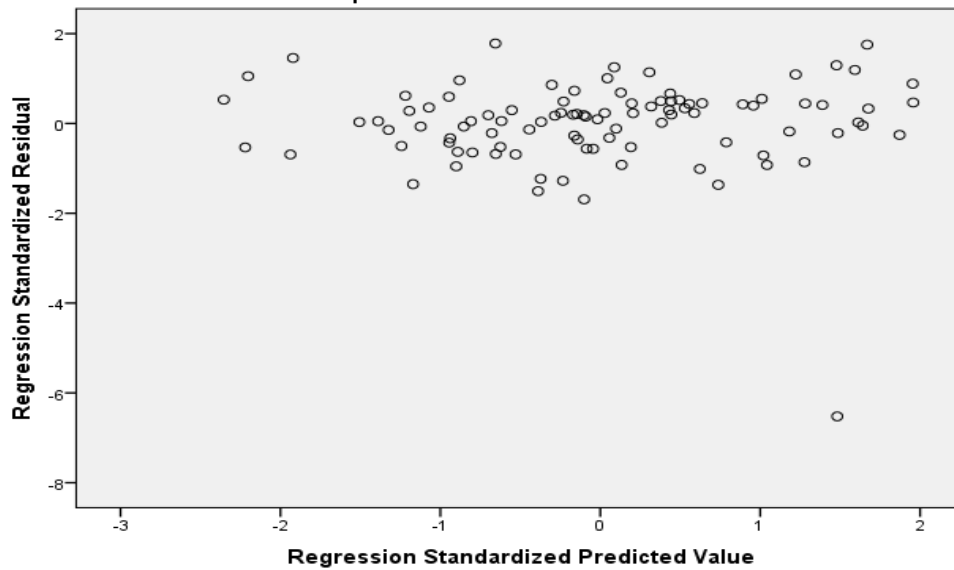


Figure 4.7 Scatterplot
Dependent Variable: SCOP



The assumptions of normality and homoscedasticity of residuals were evaluated through figure 4.5 (histogram), figure 4.6 (P-P plot) and figure 4.7 (scatterplot). The histogram and P-P plot show evidence of normality of residuals. However, there is slight negative skewness in the histogram which

was not considered restrictive. The scatterplot (figure 4.7) plotted between the standardized residuals and standardized predicted values shows that it has no sign of association. Thus, the homoscedasticity of residuals assumption is considered satisfied. The Tolerance and VIF columns of the Coefficients table (table 4.16) are used to evaluate multicollinearity. The lowest tolerance value is 0.314 and the highest VIF is 3.188. Both of these values are within the benchmarks. Thus, the absence of multicollinearity assumption is considered satisfied.

Multiple regressions was conducted to determine the best linear combination of strategic supplier partnership, customer relationship, information sharing, information quality, internal lean practice and postponement for predicting supply chain management operational performance. The means, standard deviations and intercorrelations can be found in Table 4.15 and 4.16. This combination of variables significantly predicted supply chain operational performance, $F(6,91) = 1.78$, $p < .001$, with all six variables significantly contributing to the prediction. The beta weights, presented in Table 4.16, suggest that internal lean practice contribute most to predict supply chain performance, and that customer relation, information sharing, information quality (all positively) and postponement (negatively) contribute to this prediction. This finding is similar to the finding of Seyyed (2014), and Adebayo (2012) that strategic supplier partnership, customer relationship and information sharing are important positive determinant of supply chain management performance. Regarding postponement the findings of both Li et al., (2006), and Adebayo (2012) showed that it has least contribution in measuring supply chain performances.

Moreover, Sukati et al. (2012) finding showed that supply chain management practices have a significant relationship with supply chain performance statically.

Now regression equation can be constructed using the slopes and constant values found in the Coefficients table (Table 4.16) as follows:

$$Y = 0.858 + 0.053(SSP) + 0.156(CR) + 0.165(IS) + 0.052(IQ) + 0.287(ILS) - 0.009(POS)$$

The Adjusted R Square value from the Model Summary table (Table 4.19) is evaluated to determine the proportion of variance explained by the independent variable. The adjusted R squared value was .524. This indicates that 52.4% of the variance in supply chain management performance was largely explained by the model. Therefore, hypothesis 1 that states “SCM practices have a direct positive impact on supply chain management operational performance” is supported.

Hypothesis 2

It was hypothesized that: “There is a positive relationship between SCM operational performance and SCM related organizational performance”.

To test this hypothesis the assumption of multiple regressions were checked with the research data as follows.

Output in Table 4.20 provides the usual descriptive statistics for all six variables. Note that all the 98 participants are included in the analysis.

Table 4.20 Descriptive Statistics SCORP

	Mean	Std. Deviation	N
SCORP	3.7191	.70138	98
SCF	3.0773	.93657	98
SCI	3.2194	.98851	98
RTC	3.4691	.96034	98
SP	3.2789	.95085	98
PQ	3.6648	.86318	98

Table 4.21 Coefficients ^a SCORP

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
(Constant)	2.087	.313		6.659	.000	1.464	2.709					
SCF	.047	.114	.063	.414	.680	-.180	.274	.405	.043	.036	.323	3.095
SCI	.119	.096	.168	1.248	.215	-.071	.309	.419	.129	.108	.415	2.408
RTC	.026	.090	.035	.287	.774	-.153	.205	.320	.030	.025	.497	2.013
SP	-.053	.080	-.072	-.662	.510	-.211	.106	.142	-.069	-.057	.646	1.548
PQ	.324	.090	.398	3.593	.001	.145	.503	.526	.351	.312	.613	1.630

Table 4.22. ANOVA ^a SCORP

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	14.633	5	2.927	8.138	.000 ^b
1 Residual	33.085	92	.360		
Total	47.718	97			

a. Dependent Variable: SCORP

b. Predictors: (Constant), PQ, SP, SCI, RTC, SCF

Table 4.23 Model Summary ^b SCORP

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.554 ^a	.307	.269	.59968

a. Predictors: (Constant), PQ, SP, SCI, RTC, SCF

b. Dependent Variable: SCORP

Figure 4.8 Histogram
Dependent Variable: SCORP

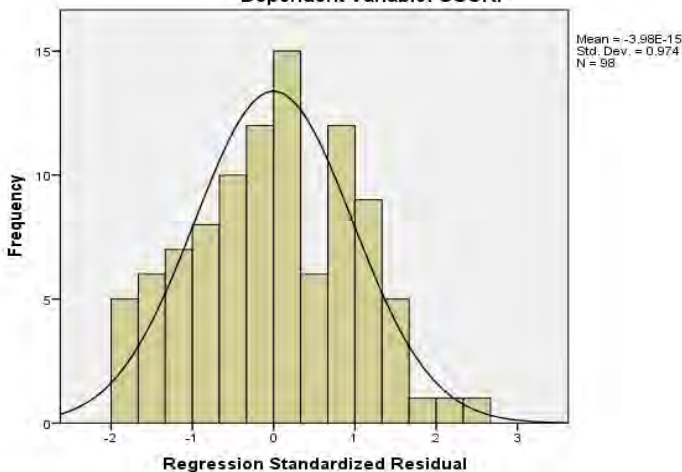


Figure 4.9 Normal P-P Plot of Regression Standardized Residual

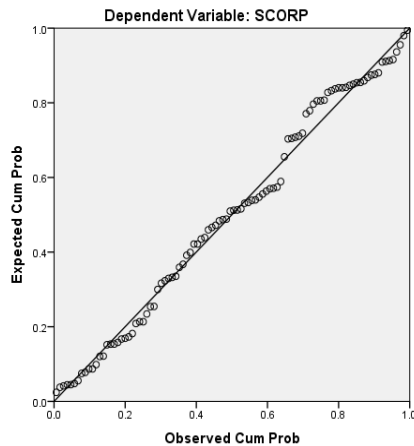
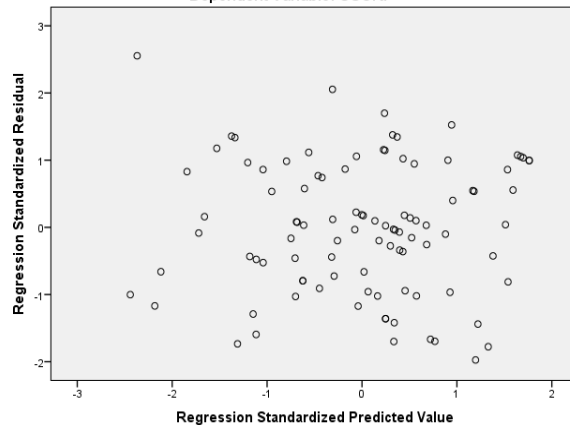


Table 4.10 Scatterplot
Dependent Variable: SCORP



The assumptions of normality and homoscedasticity of residuals were evaluated through figure 4.8 (histogram), figure 4.9 (P-P plot) and figure 4.10 (scatterplot). The histogram and P-P plot show evidence of normality of residuals. However, there is slight positive skewness in the histogram which may not be considered restrictive. The scatterplot (figure 4.10) plotted between the standardized residuals and standardized predicted values shows there is no sign of association. Thus, the homoscedasticity of residuals assumption is considered satisfied. The Tolerance and VIF columns of the Coefficients table (table 4.21) are used to evaluate multicollinearity. The lowest tolerance value is 0.323 and the highest VIF is 3.095. Both of these values are within the benchmarks. Thus, the absence of multicollinearity assumption is considered satisfied.

Multiple regressions was conducted to determine the best linear combination of supply chain flexibility, supply chain integration, responsiveness to customer, supplier performance and partnership quality for predicting supply chain management organizational performance. The means, standard deviations and intercorrelations are shown in Table 4.20 and 4.21. This combination of variables significantly predicted supply chain organizational performance, $F(5,92) = 8.138, p < .001$, with all five variables significantly contributing to the prediction. The beta weights, presented in Table 4.21, suggest that partnership

quality contribute most to predict supply chain organizational performance, and that supply chain flexibility, supply chain integration, responsiveness to customer and supplier performance contribute to this prediction. Supplier performance is a negatively performance indicator of SCM organizational performance. Now regression equation can be constructed using the slopes and constant values found in the Coefficients table (Table 4.21) as follows:

$$Y = 2.087 + 0.047(SCF) + 0.119(SCI) + 0.026(RTC) + 0.324(PQ) - 0.053(SP)$$

Y = dependent variable representing SCMORP

The Adjusted R Square value from the Model Summary table (Table 4.23) is evaluated to determine the proportion of variance explained by the independent variable. The adjusted R squared value was .269. This indicates that 26.9% of the variance in supply chain management organizational performance was explained by the model. Therefore, hypothesis 2 that states “There is a positive relationship between SCM operational performance and SCM related organizational performance” is supported. This finding is also supported by Mutuerandu (2014).

Hypothesis 3

It was hypothesized that: “SCM practices have positive relationship with SCM related organizational performance”.

To test this hypothesis the assumption of multiple regressions were checked with research data collected as follows.

Output in Table 4.24 provides the usual descriptive statistics for all six variables. Note that all the 98 participants are included in the analysis.

Table 4.24 Descriptive Statistics SCORP 2

	Mean	Std. Deviation	N
SCORP	3.7191	.70138	98
SSP	3.5943	.80394	98
CR	3.5438	.80259	98
IS	3.4837	.90903	98
IQ	3.3898	.98750	98
ILP	3.3929	.87711	98
POS	3.0255	.86192	98

Table 4.25 Coefficients^aSCORP 2

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
(Constant)	1.789	.288		6.202	.000	1.216	2.362					
SSP	.139	.122	.160	1.146	.255	-.102	.381	.507	.119	.093	.341	2.934
CR	.057	.127	.065	.446	.657	-.196	.309	.508	.047	.036	.314	3.188
IS	-.035	.089	-.046	-.399	.691	-.212	.141	.356	-.042	-.032	.500	2.000
IQ	.139	.082	.195	1.687	.095	-.025	.302	.474	.174	.137	.494	2.025
ILP	.316	.109	.396	2.891	.005	.099	.534	.596	.290	.235	.354	2.826
POS	-.064	.092	-.078	-.691	.492	-.247	.119	.376	-.072	-.056	.517	1.936

a. Dependent Variable: SCORP

Table 4. 26 ANOVA^aSCORP 2

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	18.936	6	3.156	9.978	.000 ^b
	Residual	28.782	91	.316		
	Total	47.718	97			

a. Dependent Variable: SCORP

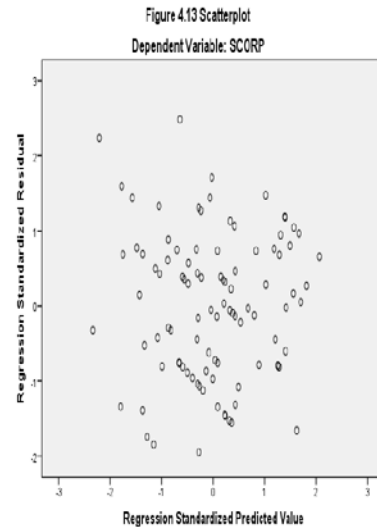
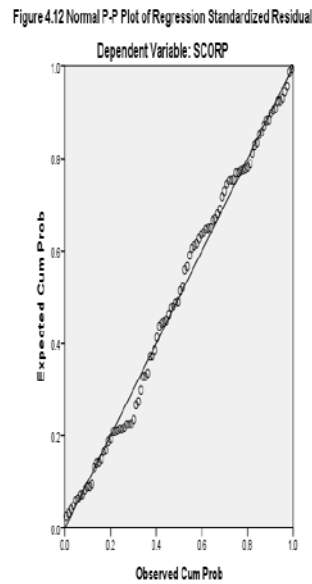
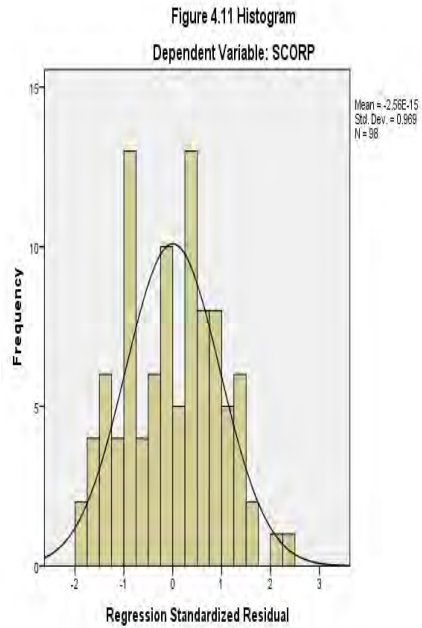
b. Predictors: (Constant), POS, IS, CR, IQ, ILP, SSP

Table 4.27 Model Summary^bSCORP2

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.630 ^a	.397	.357	.56239

a. Predictors: (Constant), POS, IS, CR, IQ, ILP, SSP

b. Dependent Variable: SCORP



The assumptions of normality and homoscedasticity of residuals were evaluated through figure 4.11 (histogram), figure 4.12(P-P plot) and figure 4.13 (scatterplot). The histogram and P-P plot show evidence of normality of residuals. The scatterplot (figure 4.13) plotted between the standardized residuals and standardized predicted values shows there is no sign of association. Thus, the homoscedasticity of residuals assumption is considered satisfied. The Tolerance and VIF columns of the Coefficients table (table 4.25) are used to evaluate multicollinearity. The lowest tolerance value is 0.314 and the highest VIF is 3.188. Both of these values are within the benchmarks. Thus, the absence of multicollinearity assumption is considered satisfied.

Multiple regressions was conducted to determine the best linear combination of strategic supplier partnership, customer relationship, information sharing, information quality, internal lean practice and postponement for predicting supply chain management organizational performance. The means, standard deviations and intercorrelations are shown in Table 4.24 and 4.25. This combination of variables significantly predicted supply chain organizational performance, $F(6,91) = 9.978$, $p < .001$, with all six variables significantly contributing to the prediction. The beta weights, presented in Table 4.25,

suggest that internal lean practice contribute most to predict supply chain organizational performance, and that strategic supplier partnership, customer relationship, information sharing, information quality and postponement (negatively) contribute to this prediction. Negative relation of information sharing is supported by the finding of Tan (2002) but against the findings of Sundram et al., (2011) who stated that both information sharing and information quality have positive correlations with supply chain performances. Now regression equation can be constructed using the slopes and constant values found in the Coefficients table (Table 4.25) as follows:

$$Y = 1.789 + 0.139(SSP) + 0.057(CR) + 0.139(IQ) + 0.316(ILP) - 0.034(IS) - 0.064(POS)$$

Where: Y is the dependent variable (SCORP).

The Adjusted R Square value from the Model Summary table (Table 4.27) is evaluated to determine the proportion of variance explained by the independent variable. The adjusted R squared value was .357. This indicates that 35.7% of the variance in supply chain management organizational performance was explained by the model. Therefore, hypothesis 3 that states “SCM practices have positive relationship with SCM related organizational performance.” is supported. This result is similar to the research finding of Li et al, (2006), Ince et al, (2013), Ibrahim and Hamid (2014), Salhieh (2011), Karimi and Rafiee, (2014), Sah et al., (2014) and Mensah et al., (2014).

The following table briefly summarizes the overall outcome of the research hypotheses.

Table 4.28 Summary of the regression analysis (hypothesis testing)

No.	Hypothesis	Independent variable	Dependent variable	Statistical result					Decision on hypothesis
				R ²	Adj. R ²	df	F	Sig.	
1	SCMP and SCMOP	SCMP	SCMOP	.553	.524	(6, 91)	18.780	.000	Accepted
2	SCMOP and SCMORP	SCMOP	SCMORP	.307	.269	(5, 92)	8.138	.000	Accepted
3	SCMP and SCMOR	SCMP	SCMORP	.397	.357	(6, 91)	9.978	.000	Accepted

CHAPTER FIVE

SUMMARY, CONCLUSION AND SUGGESTIONS

5.1. Introduction

In this chapter summary of findings, conclusion and recommendations are discussed based on the findings from the study. Based on the findings and conclusions drawn recommendations are suggested for practitioners and for further researchers.

5.2. Summary of the Findings

The research was aimed to assess supply chain management practice in National Tobacco Enterprise (Ethiopia) SC (NTE). Moreover, it was aimed to test the relationship among supply chain management practice and SCM operational and organizational performance. The extent of supply chain management practice was assessed by using descriptive statistics and rankings and it is concluded that supply chain management is practiced in NTE. Furthermore the relationships (correlations) between supply chain management practice and SCM operational and organizational performance was tested through Pearson correlation analysis and the findings in this study show that there is a positive relationship among SCM dimensions, SCM performance measures and organizational performance measures which is in line with most similar researches.

Multiple regression analysis was used to test how supply chain management practices constructs can predict both supply chain management operational and organizational performance. In addition to this multiple regression analysis was also used to test if supply chain operational performance can predict supply chain organizational performance. The multiple regression analysis showed that SCM practice can predict both SCM operational and

organizational performances. Furthermore SCM operational performance can also predict SCM related organizational performance. Among the different supply chain management practice constructs internal lean practice is found the most significant construct to predict SCM operational performance. Postponement is found to be the least and negative predictor of SCM operational performance. Supply chain integration is found the highest construct to predict SCM organizational performance and supplier performance is found negative predictor of SCM organizational performance. Internal lean practice is found the highest to predict supply chain related organizational performance and information sharing and postponement are negative predictor of SCM organizational performance.

5.3. Recommendations

This research has shown that supply chain management practices are found statistically significant in enhancing SCM operational and organization performance. Hence all business organizations are advised to practice SCM so that they can reap the benefits of adopting these practices. The case company (NTE) is also advised to extensively practice the current practice of supply chain management. NTE is also advised to strengthen its internal lean practice and supply chain integration that greatly affects its operational and organizational performance.

5.4. Limitation of the study

The findings of this study are based on only one agro-processing company. Distributors located outside Addis Ababa and final consumers are not included in the study. Therefore, the findings may not be applicable directly to other organizations.

5.5. Suggestions for future research

The concept of SCM practices is complex and involves a network of various parties in its effort in producing and delivering a product (goods and services) to the final consumer. These include suppliers, producers, customers and several other parties around. This includes banks, insurance companies and governmental organizations (like customs, revenue authority, and other regulatory bodies) in which most supply chain management researchers are not considering in their studies. In fact these parties may have significant impact on the performance of supply chain.

In addition to the multitude parties involved in a supply chain management there are many different additional supply chain functions like logistics integration, outsourcing, geographical proximity, risk and award sharing, cross functional coordination, agreed supply chain leadership that needs to be addressed in supply chain management researches. These domains were not included in this research as all domains cannot be covered in just one study.

Therefore, future researches can expand the domain of SCM practices by considering these additional supply chain dimensions and supply chain parties. Moreover, future researches shall be done with multiple organizations and with large number of respondents to enhance the research findings.

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APPENDIX ONE QUESTIONNAIRE (ENGLISH)

ADDIS ABABA UNIVERSITY COLLEGE OF BUSINESS AND ECONOMICS SCHOOL OF COMMERCE POST GRADUATE PROGRAM QUESTIONNAIRE

This questionnaire is aimed at gathering data on supply chain management (SCM) practices in relation to supply chain management operational performance and organizational performance in the National Tobacco Enterprise (Ethiopia) SC. The study is purely for academic purpose. So, your genuine and timely response is appreciated for success of the study. Therefore, I kindly ask you to respond to each items of the question very carefully.

General Instructions

- There is no need of writing your name
- Please put a tick (✓) marks in the appropriate box of your answer

Contact Address: If you have any questions please contact me and I am available as per your convenience @Mobile: 09-11-44-41-13 or e-mail: finote96@yahoo.com

Thank you in advance for sacrificing your time to fill this questionnaire!

Part I: General information: Demographic Information

1. Your Sex:

Male Female

2. Your relationship with National Tobacco Enterprise (Ethiopia) SC (NTE)

Tobacco out-grower Customer
Supplier NTE Employee

3. Your years of service/partnership in the organization

Under 2 years 2 to 5years 5 to 10 years ≥ 10 years

4. Your working field:

Purchasing Warehouse Production

Marketing Information Technology (IT) Finance

5. Educational Qualification:

Under 10th grade College diploma
 Grade 10/12 completed First Degree
 Certificate Second Degree and above

Part II: Instruments for supply chain management practices, operational performance and organizational performance

Section One: supply chain management practices

With regard to SCM practices please put a (√) the appropriate number to indicate the extent to which you agree or disagree with each statement.

The item scales are five-point scales with 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 =agree, 5 = strongly agree.

No	Description of supply chain management construct	Level of your agreement				
		①	②	③	④	⑤
1	Strategic supplier partnership (SSP)	x	x	x	x	x
1.1	NTE relies on a few high quality suppliers					
1.2	Quality is the most considerable criterion in selecting suppliers					
1.3	NTE's aim is to establish long-lasting relationship with suppliers					
1.4	NTE regularly solve problems jointly with suppliers					
1.5	NTE helps suppliers to improve their product quality					
1.6	NTE has continuous improvement programs that include key suppliers					
1.7	NTE includes key suppliers in planning and goal-setting activities					
1.8	NTE actively involves key suppliers in new product development processes					
2	Customer relationship (CR)	x	x	x	x	x
2.1	Formal and informal customers complaints are frequently evaluated					
2.2	There is a frequent follow-up of customers for quality/service feedback					
2.3	Customer satisfaction is frequently measured and evaluated					
2.4	Future customer expectations is frequently determined					
2.5	Customers' ability to seek assistance from us is frequently facilitated					
2.6	NTE periodically evaluate the importance of its relationship with its customers					

No	Description of supply chain management construct	Level of your agreement				
		①	②	③	④	⑤
3	Information sharing (IS)	x	x	x	x	x
3.1	NTE business units' proprietary information is shared with trading partners					
3.2	Trading partners are made informed in advance of changing needs					
3.3	NTE's trading partners keep NTE fully informed about issues that affect the business					
3.4	NTE and its trading partners exchange information that helps establishment of business planning					
3.5	NTE's and its trading partners keep each other informed about events or changes that may affect the other partners					
4	Information quality (IQ)	x	x	x	x	x
4.1	Information exchange with trading partners is timely					
4.2	Information exchange with trading partners is accurate					
4.3	Information exchange with trading partners is complete					
4.4	Information exchange with trading partners is adequate					
4.5	Information exchange with trading partners is reliable					
5	Internal lean practices (ILP)	x	x	x	x	x
5.1	NTE has the ability to reduces set-up time					
5.2	NTE has continuous quality improvement program					
5.3	NTE uses a pull production system					
5.4	NTE pushes suppliers for shorter lead-times					
5.5	NTE produces only what is demanded by customers when they request (JIT)					
6	Postponement (POS)	x	x	x	x	x
6.1	NTE's production process modules can be re-arranged so that customization can be carried out later at distribution centers					
6.2	NTE is able to delay final product assembly activities until customer orders have actually been received					
6.3	NTE can delay final product assembly activities until the last possible position (or nearest to customers) in the supply chain					
6.4	NTE's goods are stored at appropriate distribution points close to the customers in the supply chain					

Section two: supply chain management practices and operational performance

With regard to SCM practices in relation to operational performance please put a (√) mark in the appropriate number to indicate the extent to which you agree or disagree with each statement.

The item scales are five-point scales with 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree.

No	Description of supply chain management construct	Level of your agreement				
		①	②	③	④	⑤
1.	Supply chain flexibility	x	x	x	x	x
1.1	NTE supply chain is able to handle difficult nonstandard orders					
1.2	NTE supply chain is able to meet special customer specification					
1.3	NTE supply chain is able to produce products characterized by numerous features, sizes and colors					
1.4	NTE supply chain is able to rapidly adjust capacity so as to accelerate or decelerate production in response to changes in customer demand					
1.5	NTE supply chain is able to rapidly introduce large numbers of product improvements/ variations					
1.6	NTE supply chain is able to handle rapid introduction of new products					
1.7	NTE supply chain is able to respond to the needs and wants of the firm's target market(s)					
2	Supply chain integration	x	x	x	x	x
2.1	There is a high level of communication and coordination between all functions in NTE					
2.2	Cross-functional teams are frequently used for process design and improvement in NTE					
2.3	There is a high level of integration of information systems in NTE					
2.4	NTE supply chain characterized by full system visibility from suppliers' suppliers to customers' customers					
3	Responsiveness to customers	x	x	x	x	x
3.1	NTE fills customer order on time					
3.2	NTE has short order-to-delivery cycle time					
3.3	NTE has fast customer response time					
4	Supplier Performance	x	x	x	x	x
4.1	NTE's suppliers deliver materials on time					
4.2	NTE's suppliers provide dependable delivery					
4.3	Materials that NTE's suppliers provide are highly reliable					
4.4	NTE's supplier base has reduced over the past three years					
5	Partnership quality	x	x	x	x	x
5.1	NTE does not wish to terminate current partnerships with trading partners and establish new ones					
5.2	NTE believes its relationship with trading partners is profitable					
5.3	Any risk that can occur in the supply chain are shared between NTE and NTE's trading partners					
5.4	Benefits obtained from SCM are shared with trading partners					
5.5	There is a high degree of harmonized relationship with NTE's trading partners					
5.6	There is a satisfactory relationship with trading partners					

Section three: supply chain management practices and organizational performance

With regard to SCM practices in relation to organizational performance please put a (√) mark in the appropriate number to indicate the extent to which you agree or disagree with each statement.

The item scales are five-point scales with 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 =agree, 5 = strongly agree.

SN	Overall Performance of the firm in relation to supply chain management practices	Level of your agreement				
		1	2	3	4	5
1	NTE's market share has increased through SCM					
2	NTE's has got return on investment by applying SCM					
3	NTE's volume of sales has increased					
4	There is growth of NTE's return on investment					
5	NTE's profit margin on sales has increased					
6	Overall competitive position related to illicit cigarette has increased.					

Thank you for your valuable input and kind cooperation.

This is the end.

**APPENDIX TWO
QUESTIONNAIRE (AMHARIC)**

**አዲስ አበባ ዩኒቨርሲቲ
ቢዝነስና ኢኮኖሚክስ ፋኩልቲ
የንግድ ሥራ ትምህርት ቤት
የድህረ ምረቃ ፕሮግራም**

የተከበራችሁ የዚህ ጥናት ተሳታፊዎች ይህ መጠይቅ የተዘጋጀው በብሔራዊ ትምህርት ድርጅት (ኢትዮጵያ) አክሲዮን ማህበር የተለያዩ ምርቶችን ለማምረት የሚጠቀሙባቸውን የተለያዩ ግብዓቶችን፣ መለዋወጫዎችን፣ ማሻሻያዎችንና ሌሎች ዕቃዎችን ለማቅረብ ብሎም ምርቱን ወደ ተጠቃሚዎች ለማድረስ ሳይንሳዊ የአቅርቦት ሰንሰለትን እየተጠቀመ ስለመሆኑ፤ ብሎም በዘመናዊ የአቅርቦት ሰንሰለትን በመጠቀሙ በአፈጻጸሙ ላይ ያመጣውን ለውጥ ለማጥናት የተዘጋጀ መጠይቅ ነው።

በመሆኑም ይህ ጥናት የተዘጋጀው ሙሉ ለሙሉ ለትምህርታዊ ጥናት ብቻ ስለሆነ የመጠይቁ ተሳታፊዎች ትክክለኛ የሆነ መረጃን በመስጠትና መጠይቁንም በቶሎ ሞልቶ በመመለስ እንድትተባበሩኝ እጠይቃለሁ።

ግዜዎትን ሰውተው ይህንን መጠይቅ ስለሞሉልኝ በቅድሚያ ክልብ አመሰግናለሁ።

አጠቃላይ መረጃዎች

- መጠይቁን ለመሙላት ስም መጻፍ አያስፈልግም
- ለቀረቡት ጥያቄዎች በተዘጋጀው ቦታ ላይ የ (✓)ምልክት በማድረግ መልስዎትን መስጠት ይቻላል።

በመጠይቁ ላይ ጥያቄ ካለዎት በስልክ ቁጥር 0911-44 41 13 ወይም በኢሜይል አድራሻ finote96@yahoo.com መጠየቅ ይችላሉ።

ክፍል አንድ፡ አጠቃላይ መረጃዎች

1. ያታ፡
ወንድ ሴት
2. ከብሔራዊ ትምህርት ድርጅት ጋር ያለዎት ግንኙነት
ትምህርት ቅጠል ማምረት የድርጅቱን ምርት ደንበኛ (ገዥ)
አቅራቢ የድርጅቱ ሠራተኛ
3. ከድርጅቱ ጋር አብረው የሠሩበት ጊዜ፡

ከሁለት ዓመት በታች

ከ2 -5 ዓመት

ከ5-10 ዓመት

ከ10 ዓመት በላይ

4. የሚሠሩበት የሥራ መስክ:

ግዥ

ግምጃ ቤት

ምርት/ቴክኒክ ክፍል

መረጃ (IT)

ገበያና ሽያጭ

ፋይናንስ

5. የትምህርት ደረጃዎ

ከ10ኛ ክፍል በታች

10ኛ ወይም 12ኛ ያጠናቀቀ

የምስክር ወረቀት

የኮሌጅ ዲፕሎማ

የመጀመሪያ ዲግሪ

ሁለተኛ ዲግሪና ከዚያ በላይ

ክፍል ሁለት: የድርጅቱን የአቅርቦት ሰንሰለት መለኪያዎችን በተመለከተ

ከዚህ በታች ለቀረቡት የአቅርቦት ሰንሰለት ሥራዎች ላይ ያለዎትን አስተያየት ከቀረቡት አማራጮች ውስጥ የመረጡትን የ (✓) ምልክት በማድረግ መልስ ይስጡ።

1 ማለት በጣም አልስማማም፣ 2 ማለት አልስማማም፣ 3 ማለት ምንም ማለት አልፈልግም፣ 4 ማለት እስማማለሁ፣ 5 ማለት በጣም እስማማለሁ ማለት ናቸው።

ተ.ቀ.	ዝርዝር መለኪያ	የስምምነት ደረጃ				
		1	2	3	4	5
1	ከድርጅቱ አቅራቢዎች ያለ ግንኙነትን በተመለከተ	X	X	X	X	X
1.1	ድርጅቱ ብቃት ካለቸው ጥቂት አቅራቢዎች ጋር ይሠራል።					
1.2	አቅራቢዎችን ድርጅቱ ለመምረጥ ለጥራት ቅድሚያ ይሰጣል።					
1.3	የድርጅቱ ዓላማ ከአቅርቢዎች ጋር ዘላቂነት ያለው ግንኙነት መመስረት ነው።					
1.4	ችግሮች ሲከሰቱ ከአቅራቢዎች ጋር በጋራ በመወያየት መፍትሔ ይፈልጋል።					
1.5	ድርጅቱ አቅራቢዎች የምርት ጥራታቸውን እንዲያሻሽሉ ድጋፍ ያደርጋል።					
1.6	ድርጅቱ አቅራቢዎችን ያካተተ ቀጣይነት ያለው የመሻሻል ፕሮግራምን አለው።					
1.7	ድርጅቱ ዕቅድ ሲያወጣና አላማውን ሲያስቀምጥ አቅራቢዎችንም አካቶ ነው።					
1.8	ድርጅቱ አዳዲስ ምርቶችን በማስተዋወቅ ሂደት ላይ አቅራቢዎች እንዲሳተፉ ያደርጋል።					

ተ.ቀ.	ዝርዝር መለኪያ	የስምምነት ደረጃ				
		①	②	③	④	⑤
2	ክድርጅቱ ደንበኞች /ገዢዎች/ ጋር ያለ ግንኙነትን በተመለከተ	X	X	X	X	X
2.1.	ክድርጅቶች የሚቀርቡ ቅሬታዎችን ቀጣይነት ባለው ሁኔታ ይገመገማል።					
2.2.	የምርት ወይም የአገልግሎት ጥራትን በተመለከተ ቋሚ በሆነ መንገድ ክትትል ያደርጋል።					
2.3.	የደንበኞች የአገልግሎት እርካታ በየጊዜው እየተለካ እርካታቸው ይገመገማል።					
2.4.	የደንበኞችን የወደፊት ፍላጎት አስቀድሞ ይወሰናል።					
2.5.	ደንበኞች ክድርጅቱ የሚፈልጉትን እርዳታ ካለ እርዳታውን እንዲያገኙ ያደረጋል።					
2.6.	ድርጅቱ ከደንበኞች ጋር ያለው ግንኙነት ጠቀሜታ ላይ በየጊዜው ይገመገማል።					
3.	መረጃ መለዋወጥን በተመለከተ	X	X	X	X	X
3.1.	ድርጅቱ የቢዝነስ መረጃዎችን ከንግድ አጋሮች ጋር ይለዋወጣል።					
3.2.	ድርጅቱ በተለያዩ ምክንያቶች ላይ የፍላጎት ለውጥ ሲኖር ንግድ አጋሮች የፍላጎት ለውጡን ያሳውቃል።					
3.3.	የንግድ አጋሮች ድርጅቱን ሊጎዱ የሚችል ሁኔታ ሲፈጠር ለድርጅቱ ቀድመው ያሳውቃሉ።					
3.4.	ድርጅቱና የንግድ አጋሮች የቢዝነስ ዕቅድ ለማውጣት እንዲያስችላቸው መረጃዎችን ይለዋወጣሉ።					
3.4.	ድርጅቱን ወይም የንግድ አጋሩን ሊጎዱ የሚችል ሁኔታ ሲፈጠር ሁለቱም ወገኖች አስቀድመው መረጃን ይለዋወጣሉ።					
4	በድርጅቱና በንግድ አጋሮች መካከል የመረጃ ልውውጥ ጥራት	X	X	X	X	X
4.1.	ድርጅቱ ከንግድ አጋሮች ጋር ወቅታዊ መረጃን ይለዋወጣል።					
4.2.	ድርጅቱ ከንግድ አጋሮች ትክክለኛ የሆነ መረጃን ያገኛል።					
4.3.	ድርጅቱ ከንግድ አጋሮች ሙሉ የሆነ መረጃን ያጋኛል።					
4.4.	ድርጅቱ ከንግድ አጋሮች በቂ የሆነ መረጃን ያጋኛል።					
4.5.	ድርጅቱ ከንግድ አጋሮች አስተማማኝ የሆነ መረጃን ያጋኛል።					
5	የማምረት ሂደትና አቅም	X	X	X	X	X
5.1.	ድርጅቱ በሚፈልገው መንገድ በአጭር ጊዜ ውስጥ የማምረት ሂደቱን መለዋወጥ ይችላል።					
5.2.	ድርጅቱ ቀጣይነት ያለው የጥራት ማሻሻያ ፕሮግራም አለው።					
5.3.	ድርጅቱ የደንበኛውን ፍላጎት መሠረት ያደረገ ምርት ያመርታል።					
5.4.	ድርጅቱ አቅራቢዎች ዕቃ የማቀረቢያ ጊዜን እንዲያሳጥሩ ግፊት ያደርጋል።					
5.5.	ድርጅቱ ደንበኞች የሚፈልጉትን ምርት በፈለጉበት መጠንና ሰዓት አምርቶ ማቅረብ ይችላል።					

ተ.ቀ.	ዝርዝር መለኪያ	የስምምነት ደረጃ				
		①	②	③	④	⑤
6	ሥራን ማስተላለፍ	X	X	X	X	X
6.1.	የድርጅቱ የማምረት ሂደት ለደንበኛው ያላለቀለት ምርት አዘጋጅቶ ደንበኛው በሚገኝበት ቦታ ላይ ማጠናቀቅ በሚያስችል ሁኔታ የማምረት ሂደቱን መቀያየር ይችላል።					
6.2.	ድርጅቱ ያላለቀለት ምርት አዘጋጅቶ ከደንበኞች ትዕዛዝ እስኪመጣ ድረስ መቆየት ይችላል።					
6.3.	ድርጅቱ ምርቱን አሰናድቶ ከደንበኛው ጥያቄ እስኪቀርብ ድረስ ያላለቀለት ምርት ደንበኞች በሚገኙበት አካባቢ ዝግጁ አድርጎ መቆየት ይችላል።					
6.4.	ድርጅቱ ምርቱን ደንበኞች በሚገኙበት አማካኝ የሆነ ቦታ ድረስ አስማችቶ በደንበኛው በተጠየቀ ጊዜ ማቅረብ ይችላል።					

ክፍል ሦስት: የድርጅቱን የአቅርቦት ሰንሰለት አፈጻጸምን በተመለከተ

ከዚህ ቀጥሎ የተመለከቱት ጥያቄዎች የድርጅቱ የአቅርቦት ሰንሰለት ላይ ተመስርቶ በተለያዩ የሥራ ሂደቶች ላይ ያመጣው ለውጥ ካለ ለማየት የተቀመጡ መለኪያዎች ናቸው። ከላይ በክፍል ሁለት እንደተጠቀሰው ስለመለኪያዎች ያለዎትን አስተያየት 1 በጣም አልስማማም፣ 2 አልስማማም፣ 3 ምንም ማለት አልፈልግም፣ 4 እስማማለሁ፣ 5 በጣም እስማማለሁ ለማለት ከተቀመጡት አምስት አማራጮች አንዱ ላይ የ (✓) ምልክት ያድርጉ።

ተ.ቀ.	ዝርዝር መለኪያ	የስምምነት ደረጃ				
		①	②	③	④	⑤
1	የአቅርቦት ሰንሰለት ተለዋወጭነት	X	X	X	X	X
1.1	የድርጅቱ የአቅርቦት ሰንሰለት አስቸጋሪና ወጥ ያልሆኑ ትዕዛዞችን በቀላሉ መወጣት ይችላል።					
1.2.	የድርጅቱ የአቅርቦት ሰንሰለት በዓይነቱ ልዩ የሆነ ደንበኞች የሚጠይቁትን መስፈርት (Special secification) ማሟላት ይችላል።					
1.3	የድርጅቱ የአቅርቦት ሰንሰለት በቅርጽ፣ በመጠን፣ በቀለም ወዘተ የተለያዩ ምርቶችን አምርቶ ማቅረብ ይችላል።					
1.4.	የድርጅቱ የአቅርቦት ሰንሰለት የደንበኛው ፍላጎት ሲጨምር ወይም ሲቀንስ የማምረት አቅሙን በቀላሉ መጨመር ወይም መቀነስ ይችላል።					
1.5.	የድርጅቱ የአቅርቦት ሰንሰለት በፍጥነት ብዙ የተለያዩ ምርቶችን ማምረት ወይም ማሻሻል ያስችላል።					
1.6.	የድርጅቱ የአቅርቦት ሰንሰለት በቀላሉ አዲስ አይነት ምርቶችን ለገበያ ማቅረብ ይችላል።					
1.7.	የድርጅቱ የአቅርቦት ሰንሰለት የደንበኞችን ፍላጎት በቀላሉ ምላሽ መስጠት ይችላል።					

ተ.ቁ.	ዝርዝር መለኪያ	የስምምነት ደረጃ					
		①	②	③	④	⑤	⑥
2	የአቅርቦት ሰንሰለት መቀናጀትን በተመለከተ	X	X	X	X	X	X
2.1.	በድርጅቱ የተለያዩ የሥራ ክፍሎች መካከል ከፍተኛ የሆነ የመረጃ ልውውጥ እና መቀናጀት አለ።						
2.2.	ከየሥራ ክፍሎች የተወጣጡ የተለያዩ ኮሚቴዎች የድርጅቱን የሥራ ሂደት አዲስ በመቅረጽና በማሻሻል ለድርጅቱ መሻሻል አግዘዋል።						
2.3.	በድርጅቱ ውስጥ ከፍተኛ የሆነ የኢንፎርሜሽን ሲስተም ቅንጅት አለ።						
2.4.	የድርጅቱ ከአቅራቢው አቅራቢ እስከ የደንበኛው ደንበኛ ድረስ ሙሉ ለሙሉ ግልጽ የሆነ የአቅርቦት ሰንሰለት በድርጅቱ ውስጥ አለ።						
3	ለደንበኛው ፈጣን ምላሽ መስጠት	X	X	X	X	X	X
3.1.	ድርጅቱ የደንበኞችን ትዕዛዝ በአጭር ጊዜ ውስጥ ያሟላል።						
3.2.	ድርጅቱ በአጭር ጊዜ ውስጥ ትዕዛዝ ተቀብሎ ምርቱን ለደንበኛው ያስረክባል።						
3.3.	ድርጅቱ ለደንበኞች ፈጣን የሆነ ምላሽ መስጠት ይችላል።						
4.	የአቅራቢዎች ሥራ አፈጻጸም						
4.1.	የድርጅቱ ደንበኞች ዕቃዎችን በተጠየቁበት ሰዓት ያቀርባሉ።						
4.2.	የድርጅቱ አቅራቢዎች የሚጠየቁትን ዕቃዎች በአስተማማኝነት ማቅረብ ይችላሉ።						
4.3.	የድርጅቱ ደንበኞች የሚያቀርቧቸው ዕቃዎች በከፍተኛ ሁኔታ አስተማማኝ ናቸው						
4.4.	የድርጅቱ አጠቃላይ ዕቃ አቅራቢዎች ብዛት ካለፉት ሦስት ዓመታት ጀምሮ እየቀነሰ መጥቷል።						
5	የንግድ አጋርነትን በተመለከተ	X	X	X	X	X	X
5.1.	ድርጅቱ አሁን ያሉትን የንግድ አጋሮችን በመተው ከሌሎች አዳዲስ የንግድ አጋሮች ጋር አዲስ ግንኙነት የመመስረት ፍላጎት አለው።						
5.2.	ድርጅቱ ከንግድ አጋሮች ያለው ግንኙነት ትርፋማ እንደሆነ ያምናል።						
5.3.	በአቅርቦት ሰንሰለቱ ጋር በተገናኘ በድርጅቱ ላይ ሊከሰት የሚችል ችግር /Risk/ የንግድ አጋሮች ችግሩን ይጋራሉ።						
5.4.	ከአቅርቦት ሰንሰለቱ የሚገኝ ጥቅም የአቅርቦት ሰንሰለቱ ሌሎች አባላትም ጥቅሙን እንዲጋሩ ይደረጋል።						
5.5.	በድርጅቱና በንግድ አጋሮቹ መካከል ከፍተኛ የሆነ የተቀናጀ ግንኙነት ተፈጥሯል።						
5.6.	ድርጅቱ ከንግድ አጋሮቹ ጋር አመርቂ የሆነ ግንኙነት አለው።						

ክፍል አራት፡ የድርጅቱን የአቅርቦት ሰንሰለትና የድርጅቱ አጠቃላይ አፈጻጸምን በተመለከተ

ከዚህ ቀጥሎ የተመለከቱት ጥያቄዎች ደግሞ የድርጅቱ የአቅርቦት ሰንሰለት ላይ ተመስርቶ በድርጅት ደረጃ ያመጣው ለውጥ ካለ ለማየት የተቀመጡ መለኪያዎች ናቸው። ከላይ በክፍል አንድና ሁለት እንደተጠቀሰው ስለመለኪያዎች ያለዎትን አስተያየት 1 በጣም አልሰማማም፣ 2 አልሰማማም፣ 3 ምንም ማለት አልፈልግም፣ 4 እስማማለሁ፣ 5 በጣም እስማማለሁ ለማለት ከተቀመጡት አምስት አማራጮች አንዱ ላይ የ (✓) ምልክት ያድርጉ።

ተ.ቀ.	ዝርዝር መለኪያ	የስምምነት ደረጃ				
		①	②	③	④	⑤
	የአቅርቦት ሰንሰለትን በመጠቀም በድርጅት ደረጃ የተገኘ አፈጻጸም	X	X	X	X	X
1	የአቅርቦት ሰንሰለትን በመጠቀሙ የድርጅቱ የገበያ ድርሻ ጨምሯል።					
2	ድርጅቱ ሥራ ላይ ባዋለው ገንዘብ /investment/ መሠረት ገቢው /Return on investment/ ጨምሯል።					
3	የድርጅቱ የሽያጭ መጠን እድገት አሳይቷል።					
4	የድርጅቱ ሥራ ላይ ባዋለው ገንዘብ መሠረት የገቢው መጠን /Groth in Return on investment/ እድገት አሳይቷል።					
5	የድርጅቱ የትርፍ ህዳግ /Profit margin/ እድገት አሳይቷል።					
6	በሕገ ውጥ መንገድ ከሚገባው ሲጋራ ጋር ሲነፃፀር የድርጅቱ የመወዳደር አቅም አድጓል።					

// ተጠናቀቀ//

ግዚዎትን ሰውተው ይሕንን መጠይቅ ስለሞሉልኝ በድጋሚ ክልብ አመሰግናለሁ።

// መልካም ጊዜ//