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School of Business and Economics
Department of Management

**Effect of Supply Chain Management Practices on Operational
Performance in Selected Wheat Flour Factories in Adama**

By
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June, 2015
Adama, Ethiopia

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A Thesis Submitted to the School of Business and
Economics Department of Management in Partial
Fulfillment of the Requirements for the Degree of Master
of Business Administration

**June, 2015
Adama, Ethiopia**

Declaration

I, Yohana Abeya declare that this entitled ***“Effect of Supply Chain Management Practices on Operational Performance in Selected Wheat Flour Factories in Adama”***, is the outcome of my own effort and study and that all sources of materials used for the study have been duly acknowledged. I have produced it independently except for the guidance and suggestion of the Research Advisor.

This study has not been submitted for any degree in this University or any other University. It is offered for the partial fulfillment of the degree of Masters of Business Administration (MBA).

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Approved by Board of Examiners

As members of thesis Approval Board of Examiner we certify that we have read the thesis prepared by Yohana Abeya, entitled “*Effect of Supply Chain Management Practices on Operational Performance in Selected Wheat Flour Factories in Adama*” and submitted in partial fulfillment of the requirements for the degree of Master of Arts in Business Administration complies with regulation of the university and meets the accepted standards with to originality and quality.

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Acronyms

ICT	Information Communication Technology
IIN	Internal Integration
ISH	Information Sharing
IT	Information Technology
OP	Operation Performance
SCR	Supplier and Customer Relationship
SCM	Supply Chain Management
SPSS	Statistical Package for Social Science
UNIDO	United Nation Industrial Development Organization

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Abstract

The purpose of this study was to investigate supply chain management practices and its effect on operational performance of the selected wheat flour factories found in Adama City. Descriptive and explanatory research designs were employed in this study. Both primary and secondary source of data were collected using questioners. The questioner was used to collect data from sample respondents which were selected using purposive sampling technique considering their job position and responsibility related to SCM. Initially the questionnaires were distributed to 62 respondents selected from 13 flour factories. Out of this 59 (95.16%) of them were correctly filled and returned. The data collected was analyzed using both descriptive statistics (tables, mean and standard deviation) and inferential statistics (correlation and multiple regression analysis). The results of the data analysis showed that, SCM practices were found below satisfactory level in the study factories; the relationship of the factories internal integration with suppliers and customers was positive but weak. Almost similar relationship of the factories with customers and suppliers was observed. Concerning the effects of SCM practices on operation performance, except ICT the remaining variables of SCM practices have a positive effect on operation performances of the factories. From this it is concluded that the factories are doing business as usual and no attention was given to modern SCM theories and practices in the sector yet. Based upon the findings and the conclusions made, recommendations like networking the functional units of the factories with integrated information system; investing on IT facilities to enhance information sharing both internally and externally; focusing on maintaining and partnering long term relationship with suppliers; and improving the relationship with customers through a continuous follow-up and obtaining feedback, monitoring their perceptions towards the products, and conducting market research for better responsiveness were forwarded.

Key terms; Supply Chain management Practice, Operational Performance, Wheat flour factories

Chapter One

Introduction

This introduction includes a description of background of the study and the problem statement. Also, the objective and the basic research questions of the paper are mentioned and described. The chapter ends with an outline of the thesis structure.

1.1. Background of the Study

In today's competitive business environment there is an increased focus on delivering value to the customer. Concurrent to the focus on customer value, the marketplace in which businesses operate today is widely recognized as being complex and turbulent. The fast introduction of new products with shorter life cycle, growing customer satisfaction and ongoing development of information and communication technologies (ICT) and transportation infrastructure have forced business to invest in and give direct attention to their supply chains (Christopher, 2005).

A supply chain is the network of all the individuals, organizations, resources, activities and technology involved in the creation and sale of a product, from the delivery of source materials from the supplier to the manufacturer, through to its eventual delivery to the end user (Simatupang et.al, 2005).

SCM is the task of integrating organizational units along a supply chain and coordinating material, information and financial flows in order to fulfill (ultimate) customer demands with the aim of improving the competitiveness of a supply chain as a whole (Stadtler, 2008). Therefore, supply chain management practices play decisive roles in competitive positioning and new sources of business competition that lie outside the walls of the company; SCM determined by how effectively firms link their internal operations with their supply chain partners such as suppliers, distributors, wholesalers, retailers and end customers (Burt et al., 2002)

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 (Li et al., 2006). Therefore,

organizations have begun to realize that it is not enough to improve efficiencies within an organization, but their whole supply chain has to be made competitive. The understanding and practicing of supply chain management has become an essential pre requisite for staying competitive in the global race and for enhancing profitably (Tan et al., 2002).

Ethiopia is the origin for the production of wheat in the world. Some parts of the country like Arsi-Bale region is well known for the production of high quality wheat. As a result, Ethiopian manufacturing is mainly dominated by food production especially in wheat flour sector (UNIDO, 2009).

The wheat flour industry in Ethiopia is currently growing investment and the demand for the product is increasing highly and as a result there are new entrant of investors to this investment sector and the existing ones are also engaged in the expansion of the production to further food complexes such as production of biscuit, macaroni and spaghetti parallel with the production of the flour. Wheat flour is both industrial as well as consumer goods. Increased application of wheat flour for industrially processing of food products such as spaghetti and macaroni would also have great bearing of future wheat flour demand. It is also applied for bread making, cakes and biscuits and porridge at household level. The byproduct bran is used as animal feed preparation (Sutton and Kellow, 2010).

Agricultural resources that are the base for biscuit, spaghetti and macaroni manufacturing are available in fairly large quantities, being the main source of comparative advantages of the sector. However, actual utilization of the sector largely depends on the ability to operate efficiently and the ways industries are managed. It is generally believed that resources in the flour manufacturing industries are being utilized inefficiently.

Thus, managing the Supply Chain practice in this flour factories have a major impact on the performance of all parties involved in the chain and the production of wheat flour for industrially processing food products and for consumer's consumption. Therefore, this research was made to investigate the practical supply chain management practices and its effect on the factories operational performances of wheat flour producing factories in Adama city.

As stated in the profile of Adama City Administration (December,2014), in the recent decades Adama is developing in all aspects and business activities are bustling in the City; as a result

Adama was obtained the name called “the Sparkling City of the Great Rift Valley”. Concerning investment, in recent few years more than 784 investors had invested on different business sectors in Adama City with more than 12.4 Billion Birr and created job opportunities for 43,000 individuals; implying the suitability of Adama City for investment than other Cities found in the Region and the Country.

Furthermore, Adama’s proximity to the market, availability of the raw materials, good infrastructural facilities such as electricity, water and transportation facilities and also the availability of human resource make the city attractive for the investors to plant their industry (Adama City Administration, 2014). As per the data obtained from Adama City Industry Development Office, currently there are 19 factories that engaged on wheat flour production. Out of those, this study was carried out on 13 selected wheat flour factories found in Adama City. The selection of the case factories was based on their year of establishment and experiences they had on wheat flour production.

1.2. Statement of the Problem

Companies significantly can improve their customer service and operational performances by recognizing the opportunities that exist in the supply chain management that develop a competitive supply chain based on speed, flexibility, innovation, quality and responsiveness (Thatte, 2007). Therefore, the primary goal of supply chain management is to enhance competitive performance by closely integrating the internal functions within a company and closely linking them with external operations of suppliers, customers, and other channel members (Kim, 2006).

Food supply chain needs effective management, integration, knowledge, and due attention throughout the supply chain. If properly implemented SCM can improve the company’s responsiveness, flexibility and production efficiency (Makweba and Xu, 2009).

Even though, the supply chain management practice of manufacturing industries in Ethiopia is at its infancy stage of doing things and production procedures; the existing high market competition forced the firms to discover modern methods that will enable them to perform high and become competitive advantageous than their competitors. That is through their effective supply chain managements.

As to the knowledge of the researcher, in Ethiopia there are few studies that are conducted on supply chain management which assess the practice in different manufacturing sub sectors. For example, Daniel (2013) SCM practice on chemical and chemical product manufacturing firms in Ethiopia, Assefa (2011) on SCM practice of Kality food complex, Hailemickael (2011) on Supply Chain Performance of selected leather Footwear firms in Addis Ababa and Admaw (2010) Impact of supply chain management practices on competitive positioning of Ethiopian Textile firms.

The researcher was attracted to make this study on the SCM practice of the wheat flour factories and its effect on their operational performance in Adama city. As per the researcher's knowledge is concerned there was no study made on any manufacturing sector on SCM practices in Adama. Since flour manufacturing sector is the dominant one in the city making the study on this specific sector can let to know the existing SCM practice. Therefore, the researcher needed to study commonly advocated SCM practices used in previous researches Li, et. al (2005), Li, et. al (2006), Sohal et. al (2001) that include strategic supplier and customer relationship, internal operations ,information sharing and application of information technology (ICT) in flour factories in Adama city.

1.3. Basic Research Questions

In this study the researcher attempted to answer the following basic research questions:

1. What are the practices of supply chain management in terms of Supplier and Customer Relationship, Information Sharing, Internal integration and Information Technology (IT) of wheat flour factories in Adama city?
2. What is the level of factory's relationship with suppliers and customers in wheat flour factories in Adama City?
3. What is the overall effect of supply chain management practices on the operation performances of the wheat flour factories in Adama City?

1.4. Objectives of the Study

1.4.1 General Objective

The general objective of this study was to investigate supply chain management practice of wheat flour factories and its effect on operational performance of the factories found in Adama city.

1.4.2 Specific Objectives

The specific objectives of the study include the following

1. To assess the existing practices of supply chain management in terms of Supplier and Customer Relationship, Information Sharing, Internal integration and Information Technology (IT) perspectives in the wheat flour factories found in Adama
2. To analyze the level of factory's relationship with suppliers and customers in wheat flour factories in Adama City
3. To explore the effects of supply chain management practices on the operational performance of wheat flour factories found in Adama

1.5. Significance of the Study

The significance of this study lies in serving the following purposes:

- It helps the given manufacturing sector to know the real practice of the supply chain management and to what extent it influences the operational performance of the selected wheat flour factories found in Adama city.
- It enable the firms in the sector to understand the current practices of the SCM and to apply the supply chain management practices effectively in order to increase their operational performance to meet the high demand of the society for the wheat flour product and to make their company competitively advantageous through effective and efficient utilization of the resource in the sector.
- The study is helpful to enhance the level of understanding about supply chain management in members of manufacturing sector in Ethiopia.
- It gives insight for concerned government organs to identify aspects and direction of

support provided in order to encourage this investment and to control high food product crisis that occur in the present market.

- It serves as additional sources of information and gives green-light for academicians to further research on related areas.

1.6. Scope of the study

The scope of the study was delimited to 13 wheat flour factories found in Adama City. The selection of the case factories was based on their year of establishment and experience they had in flour production. Adama was selected as settings of the study because of large number of flour factories next to Addis Ababa (Sutton and Kellow, 2010).

Furthermore, the researcher's observation about the issue of SCM of the factories found in Adama and to carry out the research effectively within the given timeframe. SCM practices are very wide field of area. Out of those different SCM practices, however, conceptually the scope of this study focused only on four SCM dimensions: strategic supplier and customer relationship, internal integration, information sharing and information technology and the practices effect on operational performance on wheat flour factories.

1.7. Limitation of the study

Some limitations were observed in this study. One apparent limitation was that most of the respondents were busy. There was shortage of updated and organized data related to flour factories and their progressive development needed for sampling decisions. Moreover, unwillingness of some managers to give as much information as expected during the interview. The other limitation of this study was that the research sample didn't incorporate all the SC participants namely the suppliers, whole sellers or retailers and the customers in the sample due to time constrained. The study validly can be generalized only from the manufacturer perspective.

1.8. Definition of Key Terms

Effectiveness- is the extent to which a customer's requirements are met

Efficiency- measures how economically a firm's resources are utilized when providing a pre specified level of customer satisfaction.

Internal integration: - a process of inter-departmental interaction and collaboration within the organization that brings departments together into a cohesive organization.

Operation performance: - is defined as the manufacturer's performance in serving its customers, that is, how the manufacturer performs for a key customer in areas of quality, flexibility, delivery, and so forth

Performance-is the act of performing a task, an action, a play and something doing task. It is also refers to an act of performing or execution of accomplishment, operation of function, usually will regard to effectiveness a formal exhibition of skill or talents capability to achieve desired results.

Relationship with customers- refers to the process of interaction and collaboration between an organization and its customers to ensure an effective flow of final product. Customer integration for this study concentrates on major customers such distributors, retailers and households.

Relationship with suppliers- refers to the process of interaction and collaboration between an organization and its suppliers in order to ensure an effective flow of supplies.

Supply chain- is important aspect of business strategy that requires integrated decision making and includes the entities from the origin point to the final consumption such as suppliers, customers and the organization itself.

Supply chain management: is the management of material flow, information flow and money flow along the pipeline in a supply chain

Supply chain management practice:- as a set of activities undertaken in an organization to promote effective management of its supply chains that leads to value creation to end customer.

1.9. Organization of the paper

This study was organized in five chapters. The first chapter deals with introduction in relation to the topic under study. Specifically it tried to discuss in brief about background of the study, statement of the problem and basic research questions, objective of the study, scope, and significance of the study and definition of key terms.

The second chapter of the paper presents review of related literature. Specifically it reviewed different books and journals, under the conceptual section. The previous related studies have been critically discussed in order to show how supply chain management practices contribute to the competitive positioning of firms and support the findings of this research.

The third chapter concentrates on methodology, specifically discussion on research design, sampling, data collection tools and method of data analysis as well as the reliability and validity issues of the instrument.

In fourth chapter the collected data analyzed in detail and presents the findings of the research. Finally, the paper ends up by reaching on conclusions based on the findings and by suggesting relevant recommendations believed to help organizations and future researchers.

Chapter Two

Review of Related Literature

This chapter begins by introducing the basic concept of supply chain, and then focuses on past research works on different dimensions of supply chain practices related with the topic under the study, and finally conceptual framework of the study also presented on the basis of the reviewed literatures.

2.1. Supply Chain: An Overview

Organizations are facing different kinds of challenges in their effort of competing in today's dynamic global markets. many organizations continue to struggle to understand the complex issues associated with the coordinated planning and supply activities amongst the members of their supply networks (Palmer, 2012).

Cox, (2001) defines supply chain as a formation of a value chain network consisting of individual functional entities committed to provide resources and information to perform its operation in the most efficient way. These functional entities include procurement, production, inventory management, supplier management and efficient flow of information among the customers that cut across functions in the organization (Arnold and Chapman, 2004).

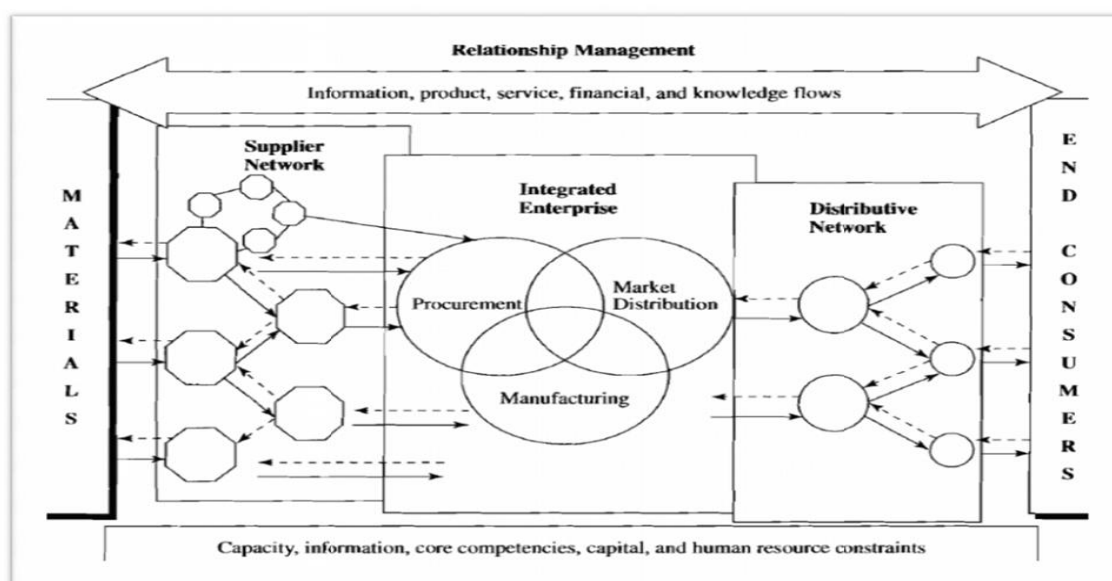
A supply chain consists of two or more legally separated organizations, being linked by material, information and financial flows. These organizations may be firms producing parts, components and end products, logistic service providers and even the (ultimate) customer himself (Stadtler, 2008). On the other words Wadhwa and Saxena, (2007) also describe supply chain as important aspect of business strategy that require integrated decision making and includes the entities from the origin point to the final consumption such as suppliers, customers and the organization itself.

The pace of change and the uncertainty about how markets will evolve has made it increasingly important for companies to be aware of the supply chains they participate in and to understand the roles they play. Those companies that learn how to build and participate in strong supply chains will have a sustainable competitive advantage in their markets (Hugos, 2003).

As a result of complexity of activities involved, an organization practically cannot perform all its activities alone. Collaboration is necessary among other organization for effectiveness in terms of time, cost and performance (Bowersox et al., 2010). Each organization focuses on a particular area of competence and then depends on other partners in achieving other parts of the process. These interdependence among organization in supply chain has enhances the proactiveness and responsiveness to customers' needs and great reduction in time to bring new products and services to the market in order to meet the continuous change in the demand of customers. This leads to increase in creativity in the system and also changes business dynamics and priority often (Wadhwa & Saxena, 2007; Bowersox et al., 2010).

organizations now focus on the arrangement and re-arrangement of supply chain processes and activities to create further opportunities in terms of cost reduction, market responsiveness, facilities utilization and human resource optimum utilization (Christopher, 2005). Clearly, there is much to be gained by managing the supply chain network to improve organizational performance and efficiency (Collins, 2003).

The supply chain includes suppliers, manufacturers, distributors, retailers and customers. Within each of these companies a supply chain includes all functions involved in fulfilling customers' needs.



Source: Adapted from supply chain faculty. Michigan State University. As cited in Bowersox, Donald J. (2002)

Figure 2.1: Generalized Supply Chain Net Work

2.2. Definition of SCM

The term supply chain management was coined by two consultants, Oliver and Webber, as early as 1982 (Stadtler, 2008) and came into widespread use in the 1990s. The lack of a universal definition of supply chain management is, in part, due to the way the concept of supply chain has been developed (Chen et al., 2004). In fact, the concept of supply chain management has been considered from different points of view in related body of literature.

As per the definition made by supply chain council, (2006) SCM is the process targeted in managing activities that encompasses every effort involving producing and delivering a final product or service, from the supplier's supplier to the customer's customer. The basic activities involved in the chain are managing supply and demand, sourcing raw materials and parts, manufacturing and assembly, warehousing and inventory tracking, order entry and order management, distribution across all channels, and delivery to the customer. SCM can be known as set of processes which an organization performs in order to control its SC behaviors and achieve its predefined goals.

Other common and widely accepted definitions of SCM include the following

- SCM is a set of approaches utilized to effectively integrate suppliers, manufacturers, warehouses, and retailers, so that goods are produced and distributed at the right quantities, to the right locations, and at the right time, in order to minimize total cost while satisfying service level requirements (Simchi-Levi et.al, 2003)
- Mentzer et al (2001) also defined supply chain management as managing of a set of supply chains directly linked by one or more of the upstream and downstream flows of products, services, finances, and information from a source to a customer. From these definitions it is clear that supply chain management comprises all activities , processes and relationships included the flow of material, finance and information from end to end of the supply chain partners.
- SCM is the coordination of production, inventory, location, and transportation among the participants in a supply chain to achieve the best mix of responsiveness and efficiency for the market being served (Hugos, 2003).

For the purpose of meeting customer needs better than what the competitors can do, companies have tried to design effective business models as success depends on building processes that can design, make, and deliver the innovative, high-quality, low cost products and services that customer demands. However, most companies lack the necessary resources and skills. Therefore, managers are beginning to look more proactively beyond their companies' wall to consider how the resources of suppliers can be used to create value for customers. These efforts to align goals, share resources, and collaborate across company boundaries are the essence of supply chain management (Fawcett et.al, 2002).

Supply chain management is the management of materials and information flow in a firm to provide the highest degree of customer satisfaction at the lowest possible cost (Palmer, 2012). It requires the commitment of supply chain partners to work closely to coordinate order generation and order fulfillment. It is concerned with cost effective way of managing materials, information and financial flows from the point of origin to the point of utilization to satisfy customer requirements (Narasimhan et.al, 2002).

Wisner et al., (2000) also observed that the practice of supply chain management is a recent trend because many businesses are only beginning to realize the benefits and problems that accompany an integrated supply chain. The implication is that businesses that practice supply chain management concepts continually improve their ability to reduce waste, decrease time, be flexible and cut costs which ensures future profitability. However, as competitive situations, products, technology and customers change, the priorities for the supply chain should also change. Supply chains always require being more flexible in responding quickly to these changes.

2.3. Objective of SCM

The basic objective of supply chain management is to optimize performance of the chain to add as much value as possible for the least cost possible. In other words, it aims to link all the supply chain agents to jointly cooperate within the firm as a way to maximize productivity in the supply chain and deliver the most benefits to all related parties (Finch, 2006).

The objective governing all endeavors within a supply chain is to increase competitiveness. This is because no single organizational unit now is solely responsible for the competitiveness

of its products and services in the eyes of the ultimate customer, but the supply chain as a whole (Stadtler, 2008).

The dual focus of Supply Chain Management is on the application of models to increase the efficiency of organizations by improving the performance of an individual organization as well as that of the entire supply chain. Additionally the supply chain management reduces organization total cost (Li et al, 2006). The main reason and objective of SCM is to provide a strategic weapon to build up and enhance sustainable competitive advantage by cost reduction without compromising customer satisfaction (Mentzer, *et. al*, 2001).

2.4. SCM practices

Supply chain management practices have been defined as a set of activities undertaken in an organization to promote effective management of its supply chains that leads to value creation to end customer (Li et al. 2006). Many manufacturers and distributors are waking up to the potential for the major cost reduction and service improvements offered by implementing best practices in their supply chain. Supply Chain Management is now recognized as a critical business process for companies manufacturing or distributing products. This is because customers' demand for most products are ever more demanding in response time, in choice and in seeking more competitive prices and customers can choose from an increased number of suppliers (Lazarovic et al., 2007).

Several studies have examined SCM practices which involve various dimensions. For example, Chow et al., (2008) suggest that supply chain features, integration, and customer services are typical SCM practices. Chen et al., (2004) viewed SCM practices rather loosely as a set of practices consisting of customer channel, supplier channel, material flows, information technology and corporate culture. Sohal et al. (2001) considered five aspects of SCM, which are: Supplier and Customer Relationship, Information Sharing, Internal Operation, Information Technology and Supply Chain performance. Li et al., (2006) propose that for an effective SCM the firm should consider the following practices: strategic supplier partnership, customer relationship, level of information sharing, quality of information sharing, and postponement. This study considered four of them as the basic supply chain practices from Sohal et al. (2001), which are: Supplier and Customer Relationship, Information Sharing, Internal integration and Information Technology.

2.4.1. Suppliers and Customer Relationship

Stank et al (2001) explained that business leaders increasingly build competencies to integrate with suppliers and customers; and find that these competencies lead them to supply chain excellence. Supplier involvement in product development allows firms to make better use of their suppliers` capabilities and technology to deliver competitive products. Coordinating operational activities through joint planning with suppliers also results in inventory reduction, makes production process smooth, improve product quality and lead time reductions.

Sheu et al, (2006) suggested that strategic partnership emphasizes direct, long-term association and encourages mutual planning and problem solving efforts. Such strategic partnerships are entered into to promote shared benefits among the parties and ongoing participation in one or more key strategic areas such as technology, products, and markets. 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.

According to Li et al (2006), customer relationship is defined as the entire array of practices that are employed for the purpose of managing customer complaints, building long-term relationships with customers, and improving customer satisfaction. The ultimate objective of supply chain management practices is to deliver products to the satisfaction of end customers. Close customer relationships allow companies to be more responsive to customer`s needs by proactively seeking their requirements. The ability to build close relationship with customers will bring companies into a lasting competitive edge.

As pointed out by Day & Lichtenstein (2006), committed relationships are the most sustainable advantages because of their inherent barriers to competition since changes in technology and globalization of products and services have resulted in more dynamic markets and greater uncertainty in customer demands. Customers have greater access to new products that are emerging at a faster pace (Cheung et al., 2010).

In general the success of supply chain management encompasses customer integration at the downstream and supplier integration at the upstream, considering that each entity in a supply chain is a supplier as well as a customer (Tan et al., 1999; Thatte, 2007). Good relationship with business partners, including key customers are important role to success of supply chain management practiced by organization (Moberg et al, 2002; Thatte, 2007). Close customer

relationship allows an organization to differentiate its product from competitors, help to sustain customer satisfaction and loyalty, and dramatically extend the value provide to customer (Zhang et al., 2003).

2.4.2. Internal Integration

Additional to supplier and customer relationship, SCM also emphasize on the importance of both effectiveness and efficiency of firm's internal integration on its operational performance. Internal integration is defined as a process of inter-departmental interaction and collaboration that brings departments together into a cohesive organization (Mentzer et.al, 2001).

Internal integrations are a significant element of SCM practice and they are the basis for developing a competitive advantage before embarking into external integrations. Poor internal integrations can lead to failure in coordinating with external partners such us supplier ,customers and distributors (Narasimhan et.al, 2002).

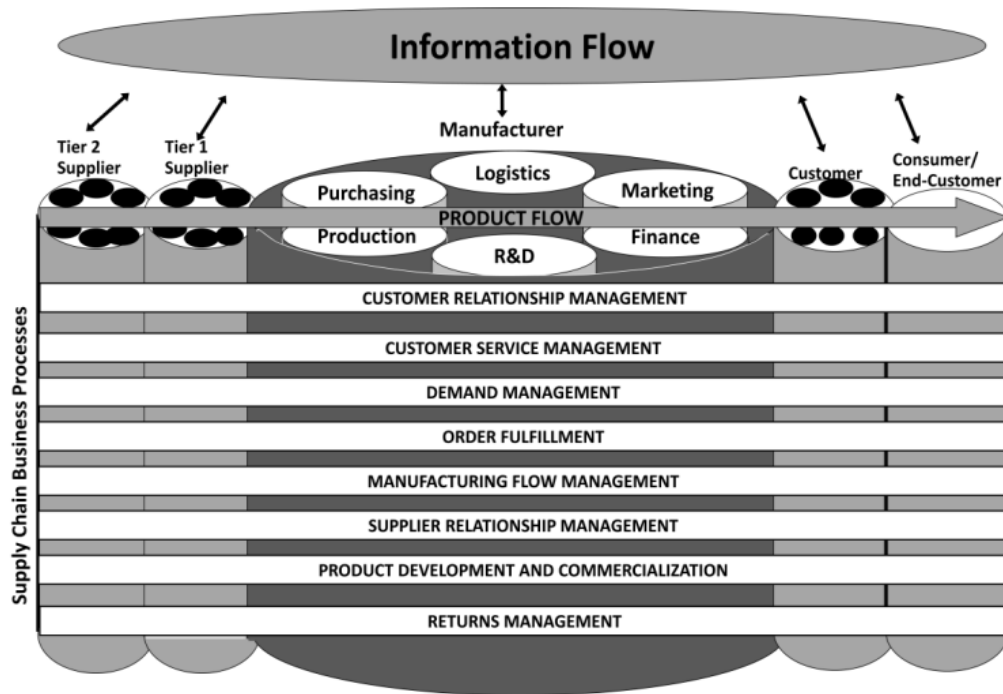
Moreover, to achieve greater customer satisfaction, it is characterized by full system visibility within an organization from the point of purchasing through to distribution. In practice, special attention must be given to the interactions between functional areas such as procurement, production, logistics, marketing, sales and distribution (Morash and Clinton, 1998).

An organization is considered to have a high level of internal integration when the information systems used by different functions are linked together with all functions able to access accurate and real-time information from other functions and there are also effective means of communication across functions (Frohlich and Westbrook, 2001). Furthermore, there should be seamless links between functions in terms of business processes as well as strong relationships which support interaction and collaboration across the functions (Morash and Clinton, 1998).

2.4.3. Information Sharing

Information sharing refers to ability of enterprises to share knowledge and information with supply chain partners with effective and efficient manner. Information sharing in interactive system of supply chain includes information between direct partners and all network of supply chain. For effective and efficient use by partners is needed sharing

information. The level of information sharing is closely linked with accountability and efficiency (Rahmanseresht and Afsar, 2008).



Source: Adopted from Lambert, Cooper and Pagh, 1998 as cited in Otchere et. al (2013).
Figure 2.2 Integrating and Managing Business Processes across the Supply Chain

Supply chain partners that exchange information regularly are able to work together as a single entity. They are better able to understand the needs of the final consumer and hence are able to respond quickly to changing market (Li et.al., 2006). Effective use of relevant and timely information by all the functional elements in the supply chain is considered as a competitive factor and distinctive (Moberg et al., 2002).

Thatte (2007) states that information sharing ensured competitive advantage when the right information is available for the right supply chain partners in the right place at the right time. According to Li et al (2005), shared information can vary from strategic to tactical in nature and could pertain to logistics, customer orders, forecasts, schedules, markets or more. Some of the elements that comprise information sharing include data acquisition, processing, storage, presentation, retrieval and broadcasting of demands and forecasting data, inventory status and locations, order status, cost related data, and performance status. Through information sharing the demand forecasting information flows upstream from the point of sales,

while product availability information flows downstream in a systematic manner that can reduce the bullwhip effect and business risk.

According to Li et al (2006) information quality includes the accuracy, timelines, adequacy and credibility of information exchanged. Many researchers suggested that the key to success of supply chain is making available information about every point of supply chain and its quality. Making the information available throughout the supply chain can be used as a source of competitive advantage.

2.4.4. Information Technology

Telecommunications and computer technology allow all the actors in the supply chain to communicate among each other. The use of information technology allows suppliers, manufacturers, distributors, retailers, and customers to reduce lead time, paperwork, and other unnecessary activities. It is also mentioned that managers will experience considerable advantages with its use such as the flow of information in a coordinated manner, access to information and data interchange, improved customer and supplier relationships, and inventory management not only at the national level but also internationally (Handfield and Nichols, 1999). Also the advantages will include supply contracts via internet, distribution of strategies, outsourcing and procurement (Simchi-Levi et al., 2003).

Li et al, (2005) revealed that, the objectives of IT in SCM are; to provide the information availability and visibility to supply chain partners, to enable the collaboration with organizations in the supply chain and to allow the decision making based on the total supply chain information.

IT will improve collaboration and coordination between supply chain members in the environment where trust and long-term commitment between partners exist (Chae, 2005). Power and Sohal (2001) find that technology utilization, continuous improvement and computer based automation in manufacturing are some of characteristics of agile/flexible organization. Thus, the effectiveness of SCM can be examined by the ultimate effect it would have on customer satisfaction. Automated orders and automated productions are the key enablers to realize the quick response program (Sohal et.al, 2001).

Using the latest information and communication technologies to interconnect manufacturers, retailers, and transporters, these companies can easily exchange information with others. It is

even more important to effectively manage the relationships with all supply chain partners (Li and Lin 2006). It is impossible to achieve an effective supply chain without IT. Since suppliers and customers are located all over the world, it is necessary to integrate the activities both inside and outside of an organization. This requires an integrated information system for sharing information on various activities along the supply chain. IT is similar to a nerve system for SCM (Gunasekaran et.al, 2004).

2.5. Organization Performance

Performance measurement plays an important role in the improvement of an organization. Performance measures can determine the level of progress of the organization and determine the necessary action needed for improving the organization. From a management perspective, performance measurement has the role of providing feedback information, which is very useful for managers to monitor the progress of the company's performance as an initial step in the development of the company, to increase motivation and communication and to diagnose problems (Naresh, 2005).

There are several points of departure that can be used to assess performance of an organization (Jharkharia & Shankar, 2006). These include, among others, accounting perspective (assessment of financial measures of performance), marketing perspective (assessment of marketing inputs,) and operations perspectives (assessment of effectiveness and efficiency) (Neely, 2002).

Operation performance measurement is the process of quantifying the effectiveness and efficiency of an activity into measurable value. Effectiveness is the extent to which a customer's requirements are met and efficiency measures how economically a firm's resources are utilized when providing a pre-specified level of customer satisfaction. Performance measurement systems are described as the overall set of metrics used to quantify both the efficiency and effectiveness of action (Shepherd and Gunter, 2006).

The operation system in manufacturing sector cover the activities of converting some resource inputs into the outputs resulting from the conversion of inputs, and information feedback about the activities Naresh (2005). As reported by Schenk R. (2007), the expression effectiveness will be used to depict the extent to which an aim is accomplished, while the expression efficiency will be used to depict the resource economy utilization in achieving goals when

examined on particular identified criteria. According to Naresh (2005) efficiency is measured by delivery performance, product quality, reduction in wastage of resource, backorders and inventory level, where as effectiveness is measured by service needs.

The principle of lean operations also used to evaluate the operational performance in terms moving towards the elimination of all waste in order to develop an operation that is faster, more dependable, produces higher quality products and services and operates at low cost (Schenk R, 2007). Lean systems focus on elimination of all kinds of waste. Some types of wastes are over production, Waiting time wastage, Transportation waste and Processing waste (Finch 2006).

Benchmarking is one of the instruments that used in order to measured the operational performance of manufacturing industries and it is the practice that used to evaluate companies products, services and business practices against the toughest competitors and those companies recognized as industry leaders. It is the process of continuously measuring and comparing one's business performance against comparable processes in leading organizations to obtain information that will help the organization to identify and implement improvements. It is crucial for a company because it enables useful and relevant performance measures to be developed based on good practice (Benson, 1998).

2.6. SCM Practices and Organizational Performance

The end customer in the marketplace determined by the success or failure of supply chains management practices. Getting the right product, at the right price, at the right time to the customer is not only improved competitive success but also the key to survival (Thatte, 2007).

Long term competitiveness therefore depends on how well the company meets the customer preferences in terms of service, cost, quality and flexibility, by designing the supply chain, which will be more effective and efficient than the competitors. It is not enough to improve efficiencies within an organization, but their whole supply chain has to be made competitive and quality and service needs. The understanding and practicing of SCM becoming an essential prerequisite for staying competitive in the global race and for enhancing profitability (Moberget et al., 2002 and Tan et al., 2002).

Effective supply chain management 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 (Li et al., 2006). In their research Li et al., (2006) tested the relationships between the SCM practices and organizational performance. The result indicated that higher levels of SCM practice can lead to enhanced organizational performance. Similarly, Tracey et al., (2004) had tested the impact of supply-chain management (SCM) capabilities on business performance so as to determine to what degree customer oriented SCM issues influence organizational performance. The result showed that considerable positive relationships were existed.

2.7. Wheat Flour Industries in Ethiopia

Ethiopia is an agrarian country with more than 80% of its population living in the rural area. In recognition to the national food insecurity problem, the Government has given priority to food security and improvement of productivity. Yet nowadays, due attention is also given to value addition of agricultural products with the continuous economic growth.

The private manufacturing sectors are attracted to agro industry manufacturing in order to meet the demand of the society for the food product. This can contribute to solve the issue of food insecurity, as stable economic growth and on other hand can create new job opportunities and revenue can be re-invested to solve the existing food insecurity problem in sustainable manner.

The type of wheat can be classified into hard, soft and medium type. As a result, in a sample there could be very soft wheat as well as hard wheat and the average value may tend to be hard or soft. Wheat factories are demanding these categories since it will determine the purpose it will be used at the end. The soft wheat will be used solely for wheat flour production while the harder wheat used to produce macaroni and spaghetti. In such cases there is price difference paid for wheat and such initiative need to be strengthen to improve the quality of the final product. Little effort is there in terms of targeting the wheat research and development towards the quality requirement as there is already food gap that has to be filled. The processing companies usually mix different quality wheat to attain a certain standards of the final product (Habtamu, 2010).

2.8. SCM Practices of Wheat Flour Factories

In wheat flour industry's strengthening the downstream actors and their business to business relationships will maximize market opportunities and provide market intelligence to the

more upstream actors or customers. To access a market, the supplier sector needs to guarantee a quality supply of wheat for the factories. In order to obtain the right quantities and qualities of wheat, it requires investing in the upstream supply, with not only market intelligence, but also with specific services. These services can be technical, financial and organizational and will be increasingly supplied embedded in business transaction by private service providers or own staff. Embedding therefore lowers the threshold for the business to business supply chain actors to access services and requires the need to develop the service market.

In wheat production, the issue of quantity and quality wheat production was emphasized and in order to overcome such problems lists of options could be identified. In this the major target is to produce quality marketable surplus that could feed the increasing demand for wheat for industrial processing. Some of the bigger options could be giving Support for the existing commercial farmers to improve productivity, identifying the possibility of irrigated wheat production and improving the productivity of small scale farmers.

2.9. Empirical Evidences on SCM Practices

The issue of SCM practice was not obtained proper focuses by most researchers particularly Ethiopia. As far as the researcher's knowledge is concerned, there is no study that made an investigation specifically on wheat flour factories .However, the researcher comes across five recently carried out researches (Table 2.1) related to SCM practices on different manufacturing sector in Ethiopia. These are:

- 1) Impact of supply chain management practices on competitive positioning of Ethiopian Textile firms(Admaw,2010)
- 2) Study on supply chain management practices of Kality food share company (Assefa, 2011)
- 3) Supply Chain Performance of selected leather Footwear firms in Addis Ababa (Hailemickael, 2011)
- 4) The effect of supply chain integration on operational performance and associated challenges a study on chemical and chemical product manufacturing firms in Ethiopia (Daniel,2013)
- 5) Integrating Developing Country Manufacturing Industries into Global Supply Chain (BeteGeorgise et al., 2014)

Table 2.1 Summary of empirical evidences on SCM

N ^o	Title and Author	Objectives of the studies	Major findings
1	Impact of supply chain management practices on competitive positioning of Ethiopian Textile firms (Admaw, 2010)	To create awareness about the concept, principle and practices of supply chain management in Ethiopian textile firms so as to make them more competitive in the global textile marketplace	Supply chain management practices in Ethiopian textile firms are weekend the firms do not use SCM as competitive weapon.
2	Study on supply chain management practices of Kality food share company (Assefa, 2011)	To study the practices of supply chain management from the five SCM practices perspectives i.e. Supplier and customer relationship, internal operations, information sharing, information technology and training and to see the integrations among SC partners	Most SCM practices are moderately practiced with in the KFSC's SC
3	Supply Chain Performance of selected leather Footwear firms in Addis Ababa (Hailemickael, 2011)	To explore the extent to which selected Medium and Large Size leather footwear manufacturing firms in Addis Ababa performs in those SCM variables and to compare the mean performance difference among firms in implementing those SCM variables.	There was significance performance differences of SCM among these Medium and Large footwear firms selected for the study
4	The effect of supply chain integration on operational performance and associated challenges a study on chemical and chemical product manufacturing firms in Ethiopia (Daniel, 2013)	To empirically examine the effect of supply chain integration on organizational performance and to identify the associated challenges that affect firms supply chain integration	Significant positive relationship between supply chain integration construct and operational performance of firms
5	Integrating Developing Country Manufacturing Industries into Global Supply Chain (BeteGeorgise et al., 2014)	To examine the level of inter - organizational and intra-organizational supply chain integration practices in developing country, Ethiopia.	Low level of supply chain relationship both in intra and inter organizational supply chain integration level among members

Source: Compiled by the researcher from empirical evidences.

The objective of those five studies were focused to investigate SCM practices in manufacturing industries like leather footwear, chemical products, food complex, and textile factories. Moreover they emphasized on intra and inter organizational SCM integration, effects of SCM on organizational performances, extent of SCM practices, and to create awareness about the concept and principles of SCM practices. However, regarding the practices of SCM in flour producing factories and its effect on operational performance of the factories were not get attention by any of the studies listed in table 2.1.

Similarly, with respect to the findings of the five researches, they had certain variations as that of their objectives. However, in relation to SCM, it is possible to recognize the following findings of these studies:

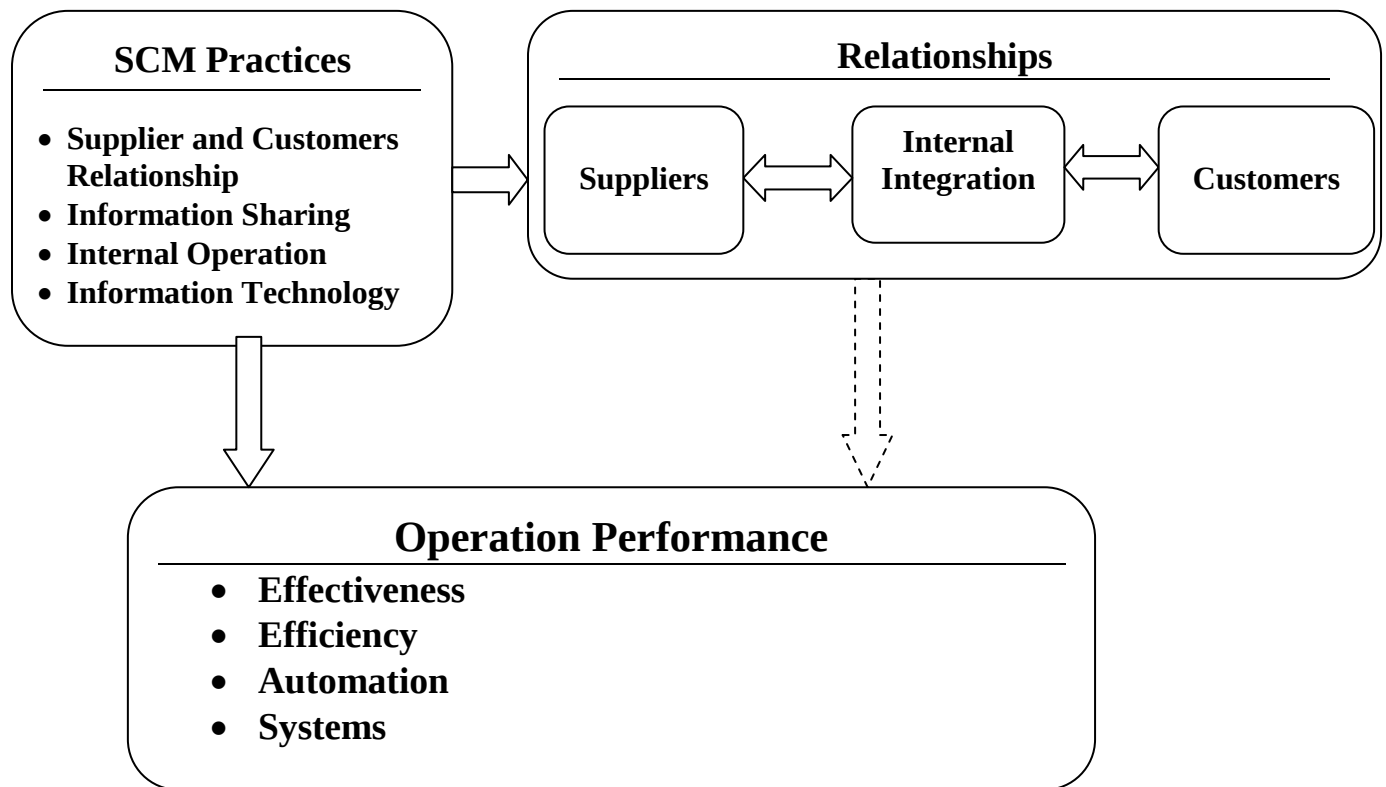
- (i). Low level of supply chain relationship both in intra and inter organizational supply chain integration level among members of the Ethiopian manufacturing industries (Bete Georgise et.al, 2014)
- (ii). The SCM practice in the manufacturing sector is at its infancy stage and is on sale-buy transaction (Assefa, 2013; Hailemickael, 2013);
- (iii). Effective SCM practice in a given manufacturing sector have significant relationship with the operational performance (Betegiorgis, 2013; Daniel, 2013; Betegeorgis, 2014)

Moreover, in most of the studies they took supplier and customer relationship, internal integration, information sharing and information technology as the basic variables to evaluate the SCM practice on the study area (Assefa, 2011; Hailemickael, 2011; Admaw, 2010) and attempt to study the role of SCM practice on their study area.

In general, through, all the studies were made attempt to assess the issues of SCM on different manufacturing sector; none of them was made the study on wheat flour manufacturing sector and the effect of SCM practices on operational performance of the factories; particularly in Adama and its surroundings.

2.10. Conceptual Framework of the Study

Conceptual framework of SCM practice and its effect on the operational performance of selected wheat flour factories is defined according to combination of analyzed theoretical findings of different researchers. Consequently, the SCM practices that were selected in this study were classified into four dimensions. These were strategic suppliers and customers' relationship, internal integration, information sharing and application of information technology. These four SCM practices can cover upstream (supplier partnership), downstream (customer relationship), internal integration and information sharing and ICT that coordinates both focal firms, and upstream and downstream supply chains. Based on the SCM practices, the following conceptual framework was developed (See Figure 2.3).



Source: compiles by the researcher from different literature

Figure 2.3: Conceptual Framework

The assessment of SCM practices and its effects on operational performance of flour factories is therefore, carried out first by investigating the practices of SCM using the variables; supply and customers relationship, internal integration, information sharing and application of Information technology. Then, degree of their relationship with operational performance and its effect on operational performance were assessed.

Chapter Three

Research Design and Methodology

This chapter presents the methodology of the study, which includes description of the study area, research design, sources and types of data, sample and sampling techniques, data collection tools and procedures, method of data analysis and ethical considerations.

3.1. Research Design

A study design is an important part of a research because it serves as a guideline as how to carry out the study. Since the purpose of this study was to assess SCM practices and its effect on the operational performance of wheat flour factories; descriptive and explanatory research design were considered more appropriate and selected to figure out what exists at present by determining the nature and existing practice of the issue in the study area.

In this regards, as stated by Cohen et.al (2007), descriptive research is used to collect information through interview or administering a questionnaire or other data collection tools from a sample of individuals, and analyzed to describe the current situation of the topic under study. Descriptive research answers who, what, where, when and how questions. The major purpose of descriptive research is describing the state of affairs as it exists. It helps to describe the situations of the issue under study quantitatively and qualitatively using the data collected through questionnaire and interview.

Furthermore, Kothari (2004:318) stated that, explanatory technique is used and appropriate when the researcher has a single, metric criterion variable; which is supposed to be a function of other explanatory variables. The main objective in using this technique is to predict the variability the dependent variable based on its covariance with all the independent variables. One can predict the level of the dependent phenomenon through regression analysis, given the levels of independent variables.

Thus, in order to answer the basic research questions and achieve the intended objectives, the student researcher adopted descriptive research methodology for SCM practices and explanatory research methodology for the effect of SCM practices on operation performances of the factories.

3.2. Sources and Types of Data

In this study both primary and secondary source of data were used. The primary source of data were collected through questionnaire from general manager, production or technical manager, supply or purchasing manager, marketing manager, commercial manager and inventory manager of 13 Flour factories found in Adama City. The secondary data were collected from official documents of the selected factories and government offices related to Supply Chain Management practices.

Moreover, both qualitative and quantitative data were used to get relevant and appropriate information on the specific issues of the study. The quantitative data were used to analysis and describe the numerical aspects of the study; while the qualitative data can serve to explain about the selected wheat flour factories and served as supportive evidences for numerical data collected and analyzed in this study.

3.3. Research Population, Sample and Sampling Techniques

The population of the study were senior officers/executives in charge of SCM practice of the targeted factories who can be expected to have an experience about the operation and management of supply chain practice in their respective factories. Those executives include general manager, production or technical manager, supply or purchasing manager, marketing manager, commercial manager and inventory manager. The researcher assumed that those respondents have enough knowledge to comprehend and respond to questions concerning the operational performance and SCM practices in their respective factories and included all of them to respond the questionnaire (Table 3.1).

The sampling technique used in this study was absolute sampling that enables to select all existing respondents. As stated by Chapin (2004) Absolute (Census) sampling is used takes place when the researcher included all members of the population in the study; usually if the population number is too small. Thus, this sampling technique was used considering respondents' job position and their responsibilities directly related to supply chain management's practices in the wheat flour factories and their number was small.

Table 3.1: Population and Sample Respondents

N ^o	Factories	Population	Sample	Responded	%
1	Africa Flour Factory	6	6	6	100.00
2	Ahwan Flour Factory	6	6	6	100.00
3	Awufat Flour Factory	5	5	5	100.00
4	Bereket Flour Factory	4	4	4	100.00
5	Bolo Flour Factory	4	4	4	100.00
6	Brothers Flour & Biscuit Factory	6	6	6	100.00
7	Family Flour Factory	5	5	4	80.00
8	Fana Flour Factory	4	4	3	75.00
9	Kiya Flour Factory	4	4	4	100.00
10	Rediet Flour Factory	4	4	4	100.00
11	Sofia Flour Factory	4	4	3	75.00
12	Web Flour & Biscuit Factory	5	5	5	100.00
13	Yisalemush Flour Factory	5	5	5	100.00
	Total	62	62	59	95.16

Source: Secondary data obtained from Adama City Industry Development Department (2015)

Accordingly, as illustrated in table 3.1, a total of 62 managers in the 13 factories were considered as a population and all of them were taken as a sample for this study purposively to respond the questionnaire. Thus, initially the questioners were distributed to 62 sample respondents selected from the 13 factories. Out of 62 questionnaire distributed to the respondents, 59 (95.16%) were correctly filled and returned. However, three (4.84%) of them were not correctly filled and responded the questioner.

3.4. Data Collection Tools and Procedures

The major data collection tools used in this study was questioner and interview. In the questioner a set of questions on each aspects of the SCM were derived from extensive literature as well as the researcher's discussion with Supply Chain professionals were included.

The questionnaire consists of three set of questions; the first section contains demographic questions such as, work experience and job position of respondents in their organization. The

second section elicits the practices of SCM with respect to suppliers and customer relationship, internal integration, information sharing and information technology. The third part includes questions related to the operational performance of the factories. In the questionnaire the respondents were asked to answer all of the questions using Likert scale ranging from 1 to 5 (1= Very Low and 5= Very High).

The process of data collection was carried out by the researcher with one assistance trained data collector. The questionnaires were directly distributed to the sample respondents and explanation was made for those requests clarification on some questions. After the respondents were completed their responses the collection was carried out by the researcher.

In addition to the questionnaire, interview questions were prepared and administered with general managers of the factories to obtain information that support the data collected through the questionnaire. The interview session was conducted on one-to-one base directly by the researcher.

3.5.Validity and Reliability of the Data Collection Tools

According to Cohen et.al (2007), validity of a measurement instrument is about the extent to which the instrument measures what it is actually intended to measure. Whereas reliability of measurement instrument is referred as the extent to which the instrument yields consistent result when the characteristics being measured has not changed.

In order to assure data quality, the questionnaire prepared for this study was validated and tested at pilot level for its reliability before distributed for sample respondents and used as data collection tool.

Primarily, the validity of the instruments was tested by two experts of the department including the research advisor to judge the items on their appropriateness and clarity of the contents. Based on the comments forwarded by the experts, amendment was made on data collection instruments. Then, the reliability of the instruments was tested through the pilot study. In the pilot study the questionnaire was distributed to randomly select 12 respondents from two flour factories of the city not included in the study; namely Fikir and Aynage flour factories. Finally, to test the reliability of the questionnaire Cronbach's alpha coefficient was calculated and the results were illustrated in Table 3.2.

Table 3.2: Reliability Statistics: Cronbach's Alpha of the Pilot Test

No	Items	Cronbach's Alpha	Number of Items
1	Suppliers and customers relationship	.9712	8
2	Internal Operation Practices	.8813	8
3	Information Sharing Practices	.9174	5
4	Information technology	.7641	5
5	Operation Performance	.8472	8
All Items		.8614	37

Source: SPSS output of the data collected for Pilate test

Concerning the acceptance level of Cronbach's alpha results, Bryman (1990) suggest that, the reliability level is acceptable if it is 0.67 or above. Besides, Cohen, et al (2007:506) also suggested that, Cronbach's alpha can be used on the basis of the following guidelines: >0.90 = very high reliable; $0.80-0.89$ = highly reliable; $0.70-0.79$ = reliable; $0.60-0.69$ = marginally reliable; and <0.60 = lowly reliable or unacceptable.

The calculated Cronbach's alpha coefficients for all items of the questionnaire in this study and illustrated in the table shows the reliability level of the questionnaire was highly acceptable ($r=0.8614$ for all items of the questionnaire). However, there were differences between the variables of SCM practices and operation performances; in that very high reliability was identified for items of Suppliers and customers relationship (0.9712) and Information Sharing Practices (0.9174). Moreover, concerning items related Internal Operation Practices (0.8813) and Operation Performance (0.8472) highly reliable results were identified. While regarding items related to Information technology (0.7641), the results of Cronbach's alpha coefficients showed the reliability of the items above the recommendations of the authors.

3.6. Methods of Data Analysis

In this study, the analyses of data were conducted using descriptive statistics and multiple regressions. For the analysis of demographic characteristics of the respondents frequency and percentage was used. With regards to items of SCM practices and operation performances the results of descriptive statistics were used in analyzing the data.

In addition, correlation coefficient was calculated to see the relationship between SCM practices and operation performance of the factories. Furthermore, multiple regression analysis was made to analyze the effect of SCM practices on the operational performances of the factories. Moreover, the regression analysis was used to identify the extent of influences of each variable of SCM practices on operation performances.

In the process of data analysis; the data collected for the study were processed using Statistical Package for Social Science (SPSS-V20) software. This software was preferred by the researcher and used for the study considering the potential it has to process the collected data accurately within few minutes.

3.7. Ethical Considerations

There are a number of key ethical issues that protect the rights of research participants. These are protection from harm, informed consent, the right to privacy and honesty with professional colleagues (Leedy & Ornrod, 2005).

The principle of informed consent requires that respondents not be forced to participate in research. This means that prospective research participants must be fully informed about the procedures and risks involved in research and must give their consent to participate. In this study, the participants were well informed about the nature of the study and participation was on voluntary basis.

Ethical standards also require that researchers not to put participants in a situation where they might be at risk or harm both physical and psychological as a result of their participation. The researcher assured that the participant's responses will be treated confidentially and with anonymity of the respondents.

During the data collection, a letter from the ASTU was used as introductory means to get permission to collect data from the sample in wheat flour factories found in Adama. The data collection processes was conducted by informing the respondents the right they have to participate or not in the research activities to respond the questionnaire or interview questions. They have been informed that they can withdraw from the study at any time without explaining their reasons. Thus, all data for this study were collected from sample respondents by their own will and interest enthusiastically.

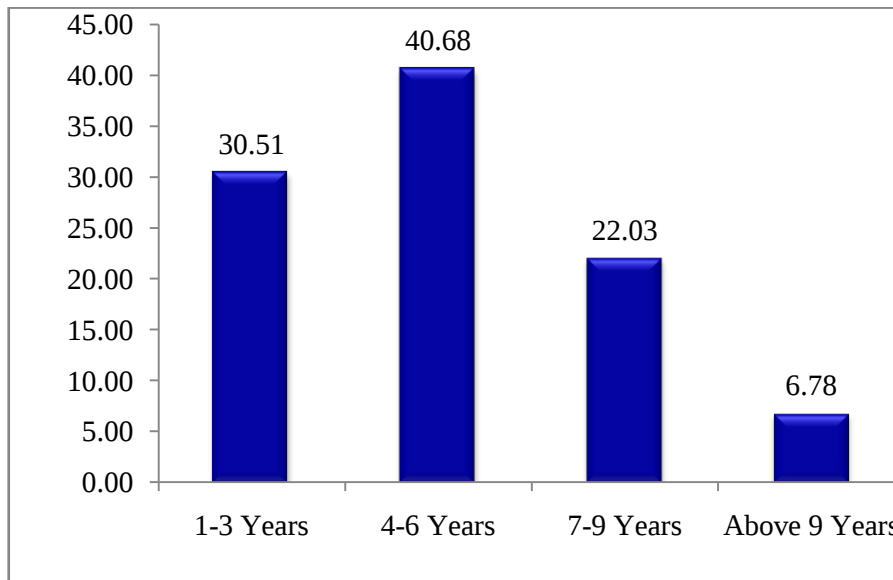
Chapter Four

Data Presentation and Analysis

This chapter presents the results of statistical analysis of the data collected from the respondents. First, the demographic information of the respondents that describe job position, educational status and work experience of respondents were stated. This was followed by data presentation and analysis of respondent's responses on supply chain management practices. Then, correlation coefficient results about internal integration of the factories with suppliers and customers were presented and analyzed. Finally, data related to the effect of SCM practices on operational performance of wheat flour producing factories were presented and analyzed.

4.1. Background Information of the Respondents

Background information of the respondents includes work experiences, educational status and job positions of the respondents. The analyses of them were presented using three figures here under.

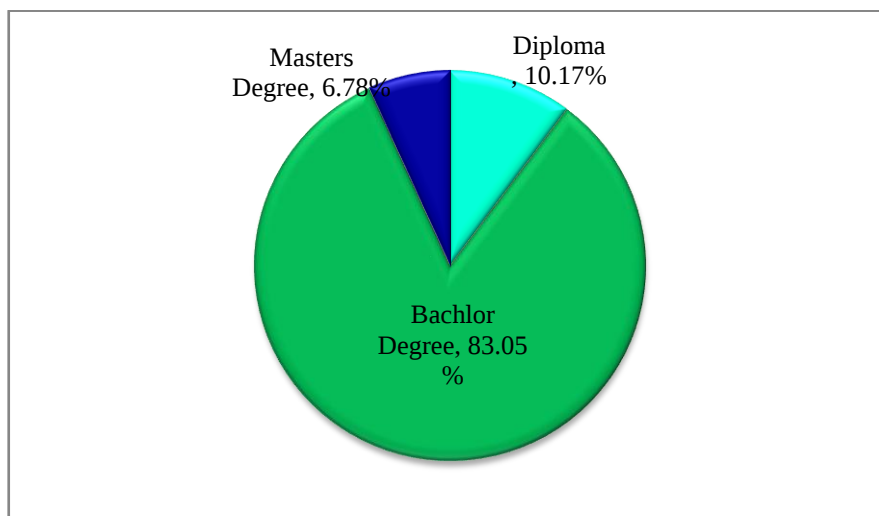


Source: Primarily data collected by the researcher from field Survey (March, 2015)

Figure 4.1: Respondent's service year in the current company

Regarding service years of the respondents in current company the data in figure 4.1 showed that, most of the respondents (40.68%) were worked in their firms for 4 to 6 years, 30.51% for one to 3 years and 28.81% of them were served for seven to nine years.

The remaining 28.81% of them were worked in their respective firms for more than nine years. In general, the data of the figure shows, the majorities of the respondents were served in their respective factory for more than three years and can be considered as they are well familiar about their company's supply chain management practices to respond the questioner.

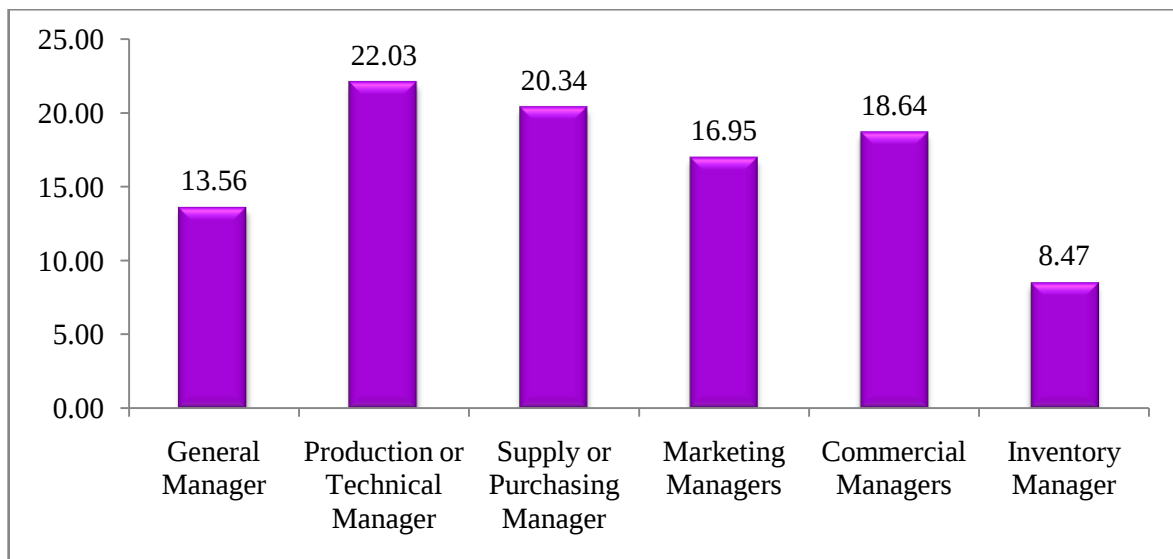


Source: Primarily data collected by the researcher from field Survey (March, 2015)

Figure 4.2: Educational background of the respondents

Figure 4.2 Illustrates educational background of the respondents participated in this study. As it depicted in the figure majority of the respondents (83.05%) were bachelor degree holders, and few respondents (6.78%) were graduated at master's degree level. The remained respondents (10.17%) were with diploma level of education. This shows that, as they are top level managers and technician of the factories most of them are educated and they can easily understand the questionnaire presented for them. Therefore, the researcher took this opportunity so as to collect the required data without translating the questionnaire to other language convenient for them.

Concerning current job position of the respondents, the data in figure 4.3 indicated that the highest share of respondents were Production/Technical Managers (22.03%), followed by Supply/ Purchasing Manager (20.34%). The next were commercial managers (18.64%) and marketing managers (16.95%). On the other hand the number of general managers and inventory manager accounts only 13.56% and 8.47% respectively. This shows that almost all respondents are valid respondents because; they can represent the practices of supply chain management at different stages and expected to be well informed about study variables.



Source: Primarily data collected by the researcher from field Survey (March, 2015)

Figure 4.3 Current job positions of the respondents

4.2. The Practices of Supply Chain Management

The data were collected using questioner and interview. Initially the questioners were distributed to 62 sample respondents selected from the 13 factories. Out of 62 questionnaire distributed to the respondents, 59 (95.16%) were correctly filled and returned. However, three (4.84%) of them were not correctly filled and responded the questioner. Thus, data presentation and analysis in this study was based on the responses of these 59 respondents' responses. In addition, interview responses obtained from eight general managers of the factories was also used in data presentation and analysis.

The data collected for this study were organized and presented in tables and graphs. Subsequently, analysis and interpretation of the data were made. In addition, discussions on the findings of the study were made by comparing the results with literature review and empirical evidences.

This part focus on the intensity of wheat flour manufacturing factories towards supply chain management practice. It focused on respondents responses related to the first basic research question: What are the practices of supply chain management in terms of Supplier and Customer Relationship, Information Sharing, Internal Operation and Information Technology of wheat flour factories found in Adama city. The data related to each of the supply chain management practice are presented and analyzed separately as follows.

Table 4.1: Suppliers and Customers Relationship

No	ITEMS	N	Mean	SD	Std. Error	95% Confidence Interval for Mean	
						Lower Bound	Upper Bound
1	Long term strategic partnership with few dependable suppliers	59	2.59	0.698	0.091	2.411	2.775
2	The trends of solving problems jointly with suppliers	59	2.47	0.704	0.092	2.291	2.658
3	Supplier shares their production schedule with the factories	59	2.27	0.639	0.083	2.105	2.438
4	Support for major supplier to improve their process to better meet the needs	59	3.17	0.562	0.073	3.023	3.316
5	Long-term relationship with major customers	59	3.02	0.601	0.078	2.860	3.174
6	Close involvement of major customers in deciding upon issues such as transportation, production, distribution, inventory management and customers relationship management	59	2.51	0.626	0.082	2.345	2.672
7	Frequent measuring and evaluating customer satisfaction	59	3.85	0.638	0.083	3.681	4.014
8	Customers give us feedback on product quality and delivery performances	59	4.20	0.637	0.083	4.037	4.369
All Items		59	3.01	0.569	0.074	2.862	3.159

Source: Researcher's field Survey, March, 2015

Concerning suppliers and customers relationship with the firms in SCM practices, Lambert and Cooper (2000), Sohal et.al (2001), stated that ideally, in a typical SCM structure, suppliers and customers brought together in one concurrent business process which spans the entire chain from initial source to the ultimate consumer. Furthermore, as argued by Li et.al (2006), the major purpose of every SCM is to minimize system-wide costs while satisfying customer service level requirements. Indeed, it is a customer oriented process for integrating business planning and balancing supply and demand across the entire supply chain system.

Considering the above facts respondents were asked to rate the current SCM practice and their responses were organized and presented in table 4.1. Thus, the data in the table illustrate the respondents' responses on the extent of relationship that exists between suppliers, customers and the case factories on eight items.

Accordingly, out of the eight items of the table, the first four items focused on the extent of supplier's relationship with the firms practice in terms of long term stable strategic partnership, problem solving, sharing production schedule and improvement to better meet the needs of the firms. While the remaining four items focused on customers relationship of the firm in terms of long-term relationship, close involvement of major customers in decision making, frequently measuring and evaluate customer satisfaction and customers feedback on product quality and delivery performances.

Regarding relation with suppliers, the data of the table shows that, factory's support to suppliers in order to improve their process to meet their needs tend to be the highest result ($M=3.17$, $SD=0.563$). The results of other two items results relating with the suppliers depict below moderate results; in that, the practices of the factories relating with the factories long term strategic partnership with suppliers ($M=2.59$, $SD=0.698$) and solving problems jointly with them ($M=2.48$, $SD=0.704$) were resulted below moderate levels. However, SCM practices of the factories regarding sharing of production schedule with suppliers was found at lower level ($M= 2.27$ $SD=0.639$) than all other items.

These implies, the practice of the factories regarding relationship with suppliers was somewhat focused on helping them to meet factory's needs rather than building long term stable strategic partnership, sharing their production schedule and jointly solving problems.

In fact, the findings indicate that suppliers and the company have adopted good relation in order to meet the companies' requirement. Moreover, as per interview responses of general manager, concerning the assistance they make for major suppliers the majorities of the interviewees said that, in order to get good quality of wheat from the suppliers they tend to support them by giving them money in advance and rarely transportation facilities.

Concerning customer relationship with firms, that comprises activities like managing customer complaints, building long-term relationships with customers and improving customer satisfaction the data of the table shows that from the four items, receiving feedback from customers' on product quality and delivery performances was practiced higher than the remaining three items ($M=4.20$, $SD=0.637$). Next to this measuring and evaluating customer satisfaction was almost highly practiced by the factories ($M=3.85$, $SD=0.638$).

However, the practice of having long term relationship with customer was found at moderate level ($M = 3.02$, $S.D = 0.601$). The least practiced item, with 2.51 mean score ($S.D = 0.626$) was about the involvement of major customers in deciding upon major issues of SCM, such as transportation, production, distribution and inventory management.

In general, the overall mean results for items listed in table 4.1 ($M = 3.011$, $SD = 0.911$) indicates moderate level of factories practices concerning their relationship with suppliers and customers. Thus, it is important to consider what was stated by Chang et.al (2006), in that, building long-term relationship with suppliers and customers helps to improve the flexibility of the supply chain by creating a mutual understanding among the members.

Table 4.2: Internal Operation Practices

No	Items	N	Mean	SD	Std. Error	95% Confidence Interval for Mean	
						Lower Bound	Upper Bound
1	There is a real-time integration among all internal functions from procurement up to sales	59	3.68	0.776	0.101	3.48	3.88
2	There is a joint decision making with internal departments on the issues of procurement, inventory management, production and distribution	59	3.54	0.727	0.095	3.35	3.73
3	Employees in the company consider that the goals in their respective departments are in harmony with each other	59	3.29	0.789	0.103	3.08	3.49
4	The extent of continuous and instantaneous product and service improvement is high	59	3.25	0.863	0.112	3.03	3.48
5	Marketing department consults operation department before accepting special feature requests	59	3.81	0.798	0.104	3.61	4.02
6	Marketing and distribution departments consults operation departments before accepting early delivery requests	59	3.92	0.772	0.101	3.71	4.12
7	Periodic interdepartmental meetings among internal functions are commonly utilized	59	2.98	0.841	0.109	2.76	3.20
8	There is little/no conflict between departments /functional units related to the practice of supply chain management of the factory	59	2.83	0.769	0.100	2.63	3.03
All Items		59	3.41	0.737	0.096	3.22	3.61

*. Significant at the 0.05 level (2- tailed)

Source: Primarily data collected by the researcher from field Survey (March, 2015)

Internal operations are the basis for developing a competitive advantage before embarking into the external partners such as suppliers and customers. As stated by Narasimhan et.al, (2004), in order to effectively operate the production process and to achieve high customer's satisfaction, full system visibility within an organization from the point of purchasing through

distribution is essential. Poor internal operations can cause failure in production efficiency and relationship with external partners.

The data in the table 4.2 illustrates respondents responses on eight variables that were used to see the extent of internal integration of the case factories in terms of real-time integration, joint decision making, employees perception of company's goals with respect to their department, extent of continuous and instantaneous product and service improvement and consultation and discussion practices during decision making internally, and extent of conflict between departments related to the practice of supply chain management in the factories.

Thus, the overall mean value of the respondents ($M=3.41$, $SD=0.867$) reveals that there is good internal operation within the factories in which most of the mean results convey above average results.

The highest mean value was identified with the practice of consultation between marketing, operation and distribution departments; in that the practice of consultation between marketing and distribution department ($M=3.92$, $SD=0.772$) was a little higher than between marketing and operation departments ($M=3.81$, $SD=0.798$). Similarly, concerning the practice of a real-time integration among all internal functions from procurement up to sales ($M=3.68$, $SD=0.776$) and joint decision making with internal departments on the issues of procurement, inventory management, production and distribution ($M=3.54$, $SD=0.727$) were identified above overall mean result of the table.

On the other hand, the last two items, which is the extent of conflict between departments related to the practice of supply chain management of the factory ($M=2.83$, $SD=0.769$) and commonly practicing periodic inter departmental meetings among internal functions of the factory ($M=2.98$, $SD=0.841$) are relatively the lowest mean value which is out of other items listed in the table used to see the extent of internal operation practices of SCM in the factories.

Since, internal operation is the most critical factor to measure factory's internal efficiency and the potential to go for external integration; it is expected to be higher and stronger. Thus, companies should be internally efficient and effective before embarking on external integration (Lazarevic et. al, 2007). However, the results of this study regarding internal operation practice of flour factories were found at moderate level.

Table 4.3: Information Sharing Practices

No	Items	N	Mean	SD	Std. Error	95% Confidence Interval for Mean	
						Lower Bound	Upper Bound
1	There is effective information sharing with customers on sales forecast and new product development	59	2.53	0.728	0.095	2.336	2.715
2	There is effective information sharing with suppliers on sales forecast and new product development	59	2.41	0.853	0.111	2.184	2.629
3	The firm has adequate ability to share both standardized and customized information internally	59	2.47	0.858	0.112	2.251	2.698
4	The firm maintains an integrated database and access method to facilitate information sharing within internal departments	59	2.47	0.815	0.106	2.258	2.683
5	The firm effectively shares production information between the internal departments	59	3.18	0.813	0.106	2.970	3.394
All Items		59	2.73	0.782	0.102	2.525	2.933

Source: Primarily data collected by the researcher from field Survey (March, 2015)

Information sharing is the backbone of supply chain management practice that let the supply chain partners to exchange information regularly and able to work together as a single entity (Stadtler et. al, 2008). As a result the factories can understand and fulfill the needs of the end customer better and hence can respond quickly to changing market (Li et. al, 2006).

Considering the above facts, in this study five items related to information sharing practice were used for the respondents to rate the existing information sharing practice status of their factories. The variables indicate the extent of firms' information sharing practices in terms of sales forecast and new product development with customers and suppliers, sharing standardized and customized information internally, maintaining integrated data base between departments and effectively sharing of production information internally.

Accordingly, the data in Table 4.3 shows, the mean value of each items and overall mean that can indicates the information sharing practice of the case factories internally and with its suppliers and customers.

The overall mean score of the table (M=2.73, SD=0.782) depicted that the information sharing practice of the case factories was found below moderate level, indicating insufficient information sharing practice with its suppliers, customers and internally within the

organization. According to the data of the table, effective information sharing on sales forecast and new product development with customers and suppliers scored 2.53 (SD=0.728) and 2.41 (SD=0.853) mean respectively.

Furthermore, maintaining an integrated database and access method to facilitate information sharing between departments (M=2.47, SD=0.815) and adequately sharing of standardize and customized information internally (M=2.47, SD=0.858) also indicted insufficient information sharing practice of the factories internally. However, the practice of sharing production information between departments related to SCM scored moderate results (M=3.18, SD=0.833).

Besides, the information obtained from interview results shows that, most of the factories have the trend of making decisions on sales forecast and new product development without sharing information externally as well as internally. According to the response of these interviewees, they did it because in most of the factories they have no such close intimacy and strategic partnership with suppliers and customers and the suppliers as well as customers had no roll on the information shared about sales forecast and new product development. In addition the management of the companies assumed that, not sharing information sufficiently with suppliers and customers externally and among internal departments, considered as competitive advantage to control the market share.

Moreover, the actual practices observed in the factories showed, almost in all of them most of the information was controlled and managed by the owner or the general manager and without the permission of the owner any information is not shared for others even for the departments directly linked with the SCM of the factories.

In general, all the above data confirmed that information sharing practice of the factories with the suppliers, customers as well as internally within departments was not satisfactory. In this regard as argued by Lee and Whang (2000); and Lee (2002), information sharing is one of the key that enable factories to achieve effective supply chain management and the basement for successful integration among the supply chain partners. However, if there is no sufficient information sharing between partners in a supply chain, it will result poor coordination that will lead to many serious problems such as high inventory levels, inaccurate forecasts, low resource utilization, and high production costs. Thus, with respect to this, the factories in

this study need to view their information sharing practice as a strategic asset and ensure that it flows with minimum delay and distortion.

Table 4.4: Information Technology

No	Items	N	Mean	SD	Std. Error	95% Confidence Interval for Mean	
						Lower Bound	Upper Bound
1	There is a high level of linkage with major customer through ICT	59	2.32	1.025	0.133	2.055	2.589
2	There is high level of information exchange with major supplier using ICT	59	1.71	0.720	0.094	1.524	1.900
3	There is up-to-date IT technologies throughout the supply chain management of the factory	59	1.53	0.774	0.101	1.324	1.727
4	There is adequate IT system throughout the supply chain management of the factory	59	1.66	0.710	0.092	1.476	1.846
5	The level of IT based production process was effectively practice	59	1.54	0.703	0.091	1.359	1.726
All Items		59	1.75	0.376	0.049	1.655	1.850

Source: Primarily data collected by the researcher from field Survey (March, 2015)

Nowadays companies spend large amount of money for redesigning internal organizational and technical processes, changing traditional product distribution channels and customer service procedures to achieve IT-enabled supply chain (Humphreys et. al, 2001).

Information and communication technology (ICT) is an important enabler of efficient supply chain integration, and many ICT applications have recently gained popularity. This is due to their ability to facilitate, coordinate, and integrate the flow of information across the supply chain. ICT is an enabler for helping supply chain members to establish partnerships for better performance (Jharkharia & Shankar, 2006).

In relation to this, five items were used to measure IT application of the case factories as listed in table 4.4. Accordingly, the data in the table revealed , out of five items developed to see the extent of IT application four of them scored very poor practices with below 2 mean score.

Particularly, concerning up-to-datedness of IT application throughout the supply chain management of the factories and the level of effective implementation of IT based production process identified the lowest with mean value of 1.53 (SD=0.774) and 1.54 (SD=0.703) respectively. Moreover, the availability of adequate IT system throughout the supply chain

management of the factory and the level of information exchange with the major supplier using information technology also scored the lowest practiced in the factories with mean 1.66 (SD=0.710) and M=1.71 (SD=0.72) correspondingly. However, the level of linkage with major customers through information technology in the factories was practiced better than the remaining items of the table resulting a mean value of 2.32 (SD=1.025)

Generally, the overall mean value of all items of the SCM practice in terms of information technology (M=1.75, SD=0.376) was interpreted as very poor application of information technology in the wheat flour factories under study. Furthermore- test results showed statistically absence of significant differences at 0.05 levels of significances among the respondents responses of the items listed in the table.

Table 4.5: Summary of Supply Chain Management Practices

Items	N	Mean	SD	Std. Error	95% Confidence Interval for Mean	
					Lower Bound	Upper Bound
Suppliers and customers relationship	59	3.01	.569	.074	2.862	3.159
Internal Integration Practices	59	3.41	.737	.096	3.221	3.605
Information Sharing Practices	59	2.73	.782	.102	2.525	2.933
Information technology	59	1.75	.376	.049	1.655	1.850
All Items	59	2.82	.486	.063	2.691	2.945

Source: Primarily data collected by the researcher from field Survey (March, 2015)

The results obtained from respondents concerning the basic SCM practices in the wheat flour producing factories of the study area where summarized and illustrated in table 4.5. According to the results shown in the table the overall mean score 2.82 (SD=0.486) indicated the practices of supply chain management in the factories was found below moderate level.

The maximum mean score was 3.41 (SD=0.737) concerning internal operation practices of the factories; and the minimum mean 1.75 (SD=0.376) was regarding application of information technology in the practice of SCM. This indicate the factories are relatively better in internal operation practices which was resulted above moderate level than the practice of others SCM practices included in this study. On the contrary utilizing information technology, in order to facilitate the practice of SCM effectiveness in the flour factories not obtained sufficient attention in the factories and poorly practiced.

Besides, the data illustrated in table 4.5 also shows the practice of the factories regarding their relationship with suppliers and customers (M=3.01, SD 0.911) and information sharing practices both internally and externally (M=2.73, SD=0.901) identified as they were practiced almost at moderate level in the case factories.

According to Lambert, (2000) SCM offers the opportunity to capture the full potential of intra and inter-company integration and management. Therefore, SCM deals with business process excellence and represents a new way of managing the business and relationships with other members of the supply chain. Lambert (2000) added that if executives understand the supply chain management processes and how they should be implemented, they will be able to create more integrated supply chains which will lead to higher revenues and increased profitability for all member firms.

In general, the summary of items related to supply chain management practices illustrated in the table, signified below satisfactory level of flour producing factories practices in the study area without statistically significant differences among the responses of respondents. This confirms the success and achievement of the SCM objectives in those flour factories were not effectively practiced.

4.3. Relationship of Internal Integration with Suppliers and Customers

In this part, data collected on internal integration and relationship of the factory with suppliers and customers were presented and analyzed to answer the second basic research question of the study; that is, what is the level of factory's internal integration and collaboration with suppliers, distributors and customers in wheat flour factories in Adama city.

Table 4.6: Descriptive Statistics on Relationship of Internal Integration with Customers and Suppliers

Items	N	Mini	Max	Mean	Std. Error	SD	F-test	P-Value
Internal Integration	59	1.75	4.88	3.41	.096	.737	1.968	.099
Relation with Suppliers	59	1.25	3.75	2.63	.077	.595	1.876	.114
Relation with Customers	59	2.50	4.75	3.39	.073	.559	1.629	.168

Source: Primarily data collected by the researcher from field Survey (March, 2015)

According to the mean results illustrated in table 4.6 the practice of internal integration in wheat flour factories was identified as it was practiced better than suppliers and customers relationship of the factories; resulting 3.41 mean score (SD=0.737).

However, factories relationship with customers and suppliers was found below moderate level. Their relationship with customers was identified at 3.39 mean score (SD=0.559) ranging from 2.50 to 4.75; and with the suppliers was 2.63 mean score (SD=0.595); ranging from 1.25 to 3.75 average results. The data also shows absence of significant differences among responses of the respondents regarding the items related to internal integration, suppliers and customers relationship of the company.

In general the practice of the factories regarding their relationship with suppliers was found below its relationship with customers. The mean score results in this regard showed the relationship of the factories with suppliers was not satisfactory. This implies the practices of the factories relationship with suppliers and customers was simply focused on sale-buy transaction and lacking adequate emphasis for the relationship they had with the suppliers. If not get proper attention of the factories; this may affect effectiveness of SCM of the factories and their relationship with the suppliers for future business strategy.

Regarding creating stable strategic partnership with suppliers and jointly solving problems with suppliers Gunasekaran et. al (2004) argued that, a strategic partnership draw attention to long-term relationship between trading partners and promote mutual planning and problem solving efforts. He also suggests that strategic partnerships with suppliers lead company's working closely and effectively with a few suppliers rather than many supplier that have been selected on the basis of cost efficient. However, the result of this study identified insufficient level of factories practices in building long term stable strategic partnership and jointly solving problems with suppliers.

According to Ramaseshan et al (2006), customer relationship management concerns the relationship between the organization and its customers. Customer service is the source of customer information. It also provides the customer with real time information on scheduling and product availability through interfaces with the company's production and distribution operations. Successful companies determine mutually satisfying goals for the company and customers; establish and maintain customer rapport; and produce positive feelings in the company and customers to build strong and effective customer relationship with them.

Table 4.7: Correlation matrix internal integration with customers and suppliers

Items		Internal Integration	Relationship with Suppliers	Relationship with Customers
Internal Integration	Correlation	1		
	Sig. (2-tailed)			
	N	59		
Relationship with Suppliers	Correlation	.495**	1	
	Sig. (2-tailed)	.000		
	N	59	59	
Relationship with Customers	Correlation	.518**	.941**	1
	Sig. (2-tailed)	.000	.000	
	N	59	59	59

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

Source: Primarily data collected by the researcher from field Survey (March, 2015)

As can be seen from the table the relationship of the factories internal integration with suppliers and customers was positive but weak. Almost similar relationship of the factories was observed with customers ($r=0.518$, $P<0.01$) and with suppliers ($r=0.495$, $P<0.01$) at 0.01 level of significance.

This means as the relationship of the factories with suppliers and customers strengthen; their internal integration also become strong. If the factories fail to strengthen its internal integration; their relationship with suppliers and customers could fail similarly. However, the current status is not satisfactory.

Relationship within supply chain partners enables the partners to jointly gain a better understanding of future product demand and implement more realistic program to satisfy that demand. The relationship can be manufacturer with suppliers and customers. Manufacturers can help both parties to enhance the value of the combined activities of the network. They could derive benefits in such key activities as product development, order fulfillment and capacity planning by close relationship with them. Relationship with suppliers and customers in product development enabled by sharing and modifying design documents can help manufacturers to develop products in better manner and with short time. Furthermore, in production scheduling with suppliers can eliminate the absence of raw materials and hence result in improved order fulfillment and increased capacity utilization of the manufacturers (Chang et.al, 2006).

However, the results of this study did not showed satisfactory relationship of flour factories with their suppliers and customers to gain the stated benefit for success.

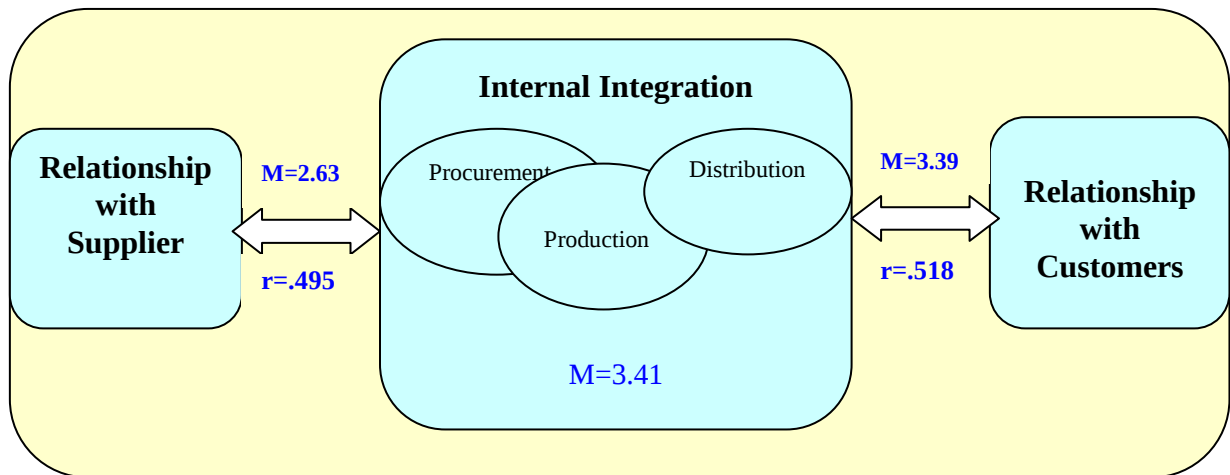


Figure 4.4: The results of Supply Chain Integration of Flour Factories in the study area

4.4. The Effect of SCM Practices on Operational Performances

In this part, the data regarding the consequences of SCM practices on operational performance of wheat flour factories were presented and analyzed using the results of descriptive statics and regression results calculated to respond the third basic research question of the study: What is the overall effect of supply chain management practices on the operation performances of the wheat flour factories in Adama.

Supply chain is a key framework for understanding how a product moves from the supplier to the customer. The supply chain perspective in wheat flour factories provides an important means to understand the business-business relationships, mechanisms for increasing efficiency, and ways to enable business to increase productivity and add value. Effective and efficient utilization of resources, product quality and development and good product delivery condition let the flour factories to boost their operational performance and increase customer satisfaction correspondingly (Day & Lichtenstein, 2006).

Table 4.8: The results of descriptive statics on Operation Performances of the factories

No	Item	N	Mean	SD	Std. Error	95% Confidence Interval for Mean	
						Lower Bound	Upper Bound
1	The company can quickly modify products to meet major customer's requirements.	59	3.63	0.869	0.113	3.401	3.854
2	The company can quickly respond to changes in market demand in terms of both volume and quality of the product	59	3.51	1.040	0.135	3.237	3.780
3	The company benchmark it's production performance with leading companies in the sector	59	3.49	0.917	0.119	3.253	3.730
4	The company pays attention for the reduction in wastage of resources	59	3.36	0.826	0.107	3.141	3.571
5	The production processes focuses on more efficient works involving less fatigue to workers	59	2.53	0.935	0.122	2.282	2.769
6	The company invest in more efficient equipment and technologies that facilitate automation	59	2.31	0.915	0.119	2.067	2.543
7	The company aims at the maximum utilization of resources for yielding as many goods as possible,	59	2.73	0.962	0.125	2.478	2.979
8	The company develops an attitude of mind and a constant urge to find better, cheaper, easier, quicker, and safer means of doing a job(manufacturing a product)	59	2.63	0.807	0.105	2.417	2.837
All Items		59	3.02	0.554	0.072	2.877	3.166

Source: Primarily data collected by the researcher from field Survey (March, 2015)

In this regard the data in table 4.8 illustrate responses related to operation performance of the flour producing factories under study.

According to the data of the table the overall operation performance of the factories was moderate resulting 3.02 mean score (SD=0.554). However, when the mean score of the items regarding operation management of the factories was compared the factories are relatively better in quickly modifying products to meet major customer's requirements (M=3.63, SD=0.869); quickly responding to changes in market demand in terms of both volume and quality of the wheat flour (M=3.51, SD=1.040) and benchmarking their performances with other wheat flour factories (M=3.49, SD=0.917).

However, the factories were not efficient in facilitating automation by investing on more efficient equipment and technologies (M=2.31, SD=0.915); focusing on more efficient works involving less fatigue to workers (M=2.53, SD=0.935) and developing an attitude of mind to find better means of doing things right (M=2.63, SD=0.807).

Moreover operation performance of the factories regarding maximum utilization of resource for yielding more wheat flour products in terms of both volume and quality was also found almost at moderate level (M=3.51, SD=1.04). However, the factories are better (M=3.36, SD=0.826) in paying attention for the reduction in wastage of resources when compared with maximum utilization of available resources (M=2.73, SD=0.963).

In general, operation performance of the company was found above moderate level in making effort to meet measure customer's requirements, responding to market demand and benchmarking with the leading similar factories. But they were weak in utilizing appropriate technologies that facilitates automation, focusing on more efficient production processes and developing an attitude of mind that enable doing things right; which are the most important elements for better operation performance of manufacturing sector.

Table 4.9: Correlation Matrix between SCM Practices and Operation Performances

Items		A	B	C	D	E
A). Suppliers and customers relationship	Correlation	1				
	Sig. (2-tailed)					
B). Internal Integration	Correlation	.514**	1			
	Sig. (2-tailed)	.000				
C). Information Sharing	Correlation	.276*	.459**	1		
	Sig. (2-tailed)	.035	.000			
D). IT Utilization	Correlation	.136	.240	.175	1	
	Sig. (2-tailed)	.306	.067	.185		
Operational Performances	Correlation	.601**	.657**	.489**	.489**	.311*
	Sig. (2-tailed)	.000	.000	.000	.000	.016

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

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

Source: Primarily data collected by the researcher from field Survey (March, 2015)

The correlation coefficient calculated between SCM practices and operational performances of wheat flour producing factories were illustrated in table 4.9. As seen in the table, the relationship between operational performance and all items of SCM practices were positive. This means, the practices SCM and operational performance have a direct relationship in wheat flour factories. That is, as the factories increases SCM practices; their operational performance will also increase.

Similarly, regarding the relationship of Operational Performance with 'Internal Operation' ($r=0.657$, $P<0.01$) and that of 'Supplier and Customer relationship' ($r=0.601$, $P<0.01$) the results of the table showed higher degree of correlation. This indicates Internal Operation of

the factories and their relationship with suppliers and customers was positive and strongly correlated with operational performances of them. So, the enhancement of Internal Operation of the factories and their relationship with suppliers and customers will results very significant incensement of operation performances in the flour factories.

Nevertheless, a moderate degree of correlation was identified between ‘operational performance’ and ‘Information sharing’ practices of the factories ($r=0.489$, $P<0.01$). Regarding the relationship between the application of Information Technology and operational performance of the factories; the results of the table showed weak or a lower degree of correlation ($r=0.311$, $P<0.05$) at 95% level of confidences. This implies the application of IT in operational management of the flour factories was weak and insignificant.

Table 4.10: Regression Results: on SCM Practices and operational Performance of the flour factories

Observation (N)	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson		
59	0.751	.564	.540	.37591	2.506		
ANOVA							
	SS	Df	MS	F	Sig.		
Regression	10.045	3	3.348	23.695**	.000		
Residual	7.772	55	.141				
Total	17.817	58					
Regressions							
	Un-standardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
(Constant)	.611	.295		2.069*	.043	.019	1.203
Suppliers and customers relationship	.336	.101	.344	3.314**	.002	.133	.539
Internal Integration	.285	.085	.380	3.375**	.001	.116	.455
Information Sharing	.156	.071	.220	2.191*	.033	.013	.298

Dependent Variable: Operation Performances

Predictors: (Constant), Information Sharing, Suppliers and customers relationship, Internal Integration

*. Significant at the 0.05 level (2-tailed).

**. Significant at the 0.01 level (2-tailed)

Source: Primarily data collected by the researcher from field Survey (March, 2015)

The multiple correlation coefficients (r), with a value of 0.751 represent the correlation ratio indicating the existence of a strong link between operational performance of the factories and their SCM practices. The determination coefficient–R Square has the value 0.564 and

expresses that 56.40% of the variation of factories operational performance can be explained by the practices of SCM variables taken into consideration. The adjusted correlation ratio also shows that 0.540 of the total variation is due to the regression line, given the number of degrees of freedom.

Test F shows the role of the independent variables to explain the evolution of the dependent variable. The value of test F (23.695) and of the materiality ($0.000 < 0.05$) shows that the regression model is valid and can be used to analyze the dependence between the variables.

The constant term (b_0), with the value of 0.611 is also the point of intersection of the regression line with the axis OY (zero and Y). Since the statistic $t=2.069$ and $P\text{-value}=0.000 < 0.05$, it means that the coefficient is significantly different from 0, with the confidence interval (0.019, 1.203).

The coefficient for the suppliers and customers relationship, with the value of 0.336, is positive and indicates the existence of a direct link between operational performance and suppliers and customers relationship of the factories, and the $P\text{-value}=0.002 < 0.05$, the coefficient is significant situated in the range of confidence [0.133; 0.539]. This indicates a unit increase in suppliers and customer relationship of the factories will result an increase of operation performances by 0.336 points.

The coefficient corresponding to the internal integration variable, with the value of 0.285, is positive and indicates the existence of a direct link between operational performance and internal integration of the factories, so that a unit increase of internal integration will determine the operational performance to increase with 0.285 points. Since $P\text{-value}=0.001 < 0.05$, the coefficient is significant situated in the range of confidence (0.116; 0.455).

Moreover, the coefficient corresponding to the information sharing variable, with the value of 0.156, is positive and indicates the existence of direct link between information sharing and operational performance; so that a unit increases of information sharing will determine operational performance to increase with 0.156 points. Since $P\text{-value}=0.033 < 0.05$, the coefficient is significant, situated in the range of confidence (0.013; 0.298).

Thus, the following regression model results from the analysis of the coefficients:

$$OPP = 0.611 + 0.336SCR + 0.285IIN + 0.156ISH + \varepsilon_i$$

Where: OPP= Operation Performance

SCR=Supplier and Customer Relationship

ISH= Information Sharing

IIN= Internal integration

ε_i = residual value

The results presented in Table 4.10 show that all the variables: operation performance is positively influenced by three variables taken under the SCM practices. However, one variable included under SCM practices (Application of Information Technology) was not statistically significant to influence the operation performance of wheat flour factories currently operating in Adama city.

Chapter Five

Summary, Conclusions and Recommendations

This chapter focuses on the summary of major findings, conclusions drawn from the findings and recommendations that the researcher forward in order to improve SCM practices in flour producing factories and the efficiency of their operation management.

5.1. Summary of Major Findings

The major purpose of this study was to investigate Effect of Supply Chain Management Practices on Operational Performance in Selected Wheat Flour Factories in Adama City. In order to achieve this objective attempt was made to answer basic research questions.

In doing so the data were collected using questioner and interview. Initially the questioners were distributed to 62 sample respondents selected from the 13 factories. Out of 62 questionnaire distributed to the respondents, 59 (95.16%) were correctly filled and returned. In addition, interview responses obtained from general managers of the factories were also considered. Analyses and interpretation were made using the data illustrated in tables and graphs. Furthermore, the qualitative data was analyzed and narrated accordingly. In addition, discussions on the findings of the study were made by comparing the results with literature review and empirical evidences. Thus, based on the analysis made in accordance with the study objectives, major findings were summarized as follows.

5.1.1. Background information of the respondents,

Regarding service years of the respondents in current company the findings of this study showed that, most of the respondents (40.68%) were worked for four to six years, and 28.81% of them were served for seven to nine years in their respective factory. Concerning educational background of them, among 59 respondents participated in this study 83.05% of them were bachelor degree holders and 6.78% were graduated at master's degree level.

Background information of the respondents includes work experiences, educational status and job positions of the respondents. With regards to the job position of the respondents, the highest share of respondents was Production/Technical Managers (22.03%), followed by Supply/Purchasing Manager (20.34%). The next were commercial managers (18.64%) and marketing managers (16.95%). On the other hand the number of general managers and

inventory manager accounts only 13.56% and 8.47% respectively. This shows that almost all respondents are valid respondents because; they can represent the practices of supply chain management at different stages and expected to be well informed about study variables.

5.1.2. The Practice of SCM

As it was described in the literature review, the strength partnership a company had with supplier can influence strategic and operational capabilities of manufacturing firms in order to achieve significant ongoing benefits (Li et. al, 2006). However, the overall mean score 2.63 results of the firms relationship with the suppliers indicated the practice of the factories regarded the relationship with suppliers was weak. The variables tested in this regard including long term stable strategic partnership with suppliers, the trends of problem solving jointly with suppliers, sharing of suppliers production schedule and improvement to better meet the needs of the firms were given little or no attention by flour factories firms. This may affect effectiveness of SCM of the factories and their relationship with the suppliers for future business strategy.

On the other hand, the practice of the factories relationship with customers was scored moderate results ($M=3.39$). This implies in terms of the variables used to evaluate factories relationship with customers, that is, managing customer complaints, building long-term relationships with customers, improving customer satisfaction and receiving feedback from customers' on product quality and delivery performances, the flour factories had better interaction with customers.

However, the overall mean result ($M=3.01$) for all items of suppliers and customers relationship of the factories indicated moderate level of factories practices concerning their relationship with suppliers and customers. But, their relationship with customers ($M=3.39$) was higher than that of the suppliers ($M=2.63$ $SD=0.595$). This implies the practices of the factories relationship with suppliers was simply focused on sale-buy transaction and lacking adequate emphasis for the relationship they had with the suppliers.

The result of this study regarding internal operation practice of wheat flour factories was resulted above moderate level of respondents' responses ($M=3.41$). In this regards, eight variables were used in order to see the extent of the internal integration of the case factories; that is, in terms of real-time integration, joint decision making, employees'

perception of company's goals, extent of continuous and instantaneous product and service improvement and consultation and discussion practices during decision making internally and the existence of conflict between departments related to the practice of supply chain management in the factory.

From all the practices the periodic interdepartmental meeting among internal departments scores below average result and confirmed that they had no the trend of discussing and consulting the internal departments on timely base. But workplace meeting has benefits such as; better decisions, broader buy-in and consensus, a better understanding of complex problems and issues, more complete resolution of conflicts, and more thorough follow-up and follow-through. On the other hand, all the remained internal practices scored moderate results. Therefore it can be concluded that the wheat flour factories had moderate internal integration within the factory.

As described in the literature review , sharing important information between supply chain partners of wheat flour firms timely is an essential element to compete in highly competitive business environments. In this study, regarding the information sharing practices, the variables that can indicate the extent of firms' information sharing practices, like sales forecast and new product development with customers and suppliers, sharing standardized and customized information internally, maintaining integrated data base between departments and effectively sharing of production information internally were incorporated.

Accordingly, all information sharing variables mean values were below found at 3.00 mean score except effective sharing of production information between departments internally that scored 3.18. This means, information sharing practices in the supply chain of wheat flour firms were weak with suppliers as well as suppliers. The overall mean score regarding the information sharing practice of the case factories was found below moderate level $M=2.73$; indicating insufficient information sharing practice with its suppliers, customers and internally within the organization.

At the least side of SCM practices, the applications of ICT in wheat flour factories score overall mean value of 1.75, which was interpreted as poor application of information technology. The items used in this study to evaluate the application of ICT in the wheat flour factories were; linkage with major suppliers as well as with customers through ICT, the up-to-datedness of ICT application through the SCM, the availability of IT throughout the SCM of

the factory and the level of IT based production process were responded with very low level of respondents responses. The mean result of all these practices confirmed that the wheat flour factories were very weak in the application of ICT in the manufacturing process.

5.1.3. Relationship of Internal Integration with Suppliers and Customers

Regarding the relationship of the factories internal integration with suppliers and customers was positive; but weak. However, slightly, better positive relationship of the factories with customers ($r=0.518$, $P<0.01$) was observed than suppliers ($r=0.495$, $P<0.01$) at 0.01 level of significances.

This means as the relationship of the factory with suppliers and customers strengthen; their internal integration also become strong. Thus, if the factories fail to strengthen its internal integration; their relationship with suppliers and customers could fail similarly.

5.1.4. The Effects of SCM practice on operational performance

Concerning operational performances of the factories, the overall results of the respondents responses was found at moderate level ($M=3.02$); particularly, in making effort to meet measure customer's requirements, responding to market demand and benchmarking with the leading similar factories. But the factories were weak in utilizing appropriate technology that facilitates automation, focusing on more efficient production processes and developing an attitude of mind that enable doing thing right. Those are the most important elements for better operational performances.

The correlation coefficient results calculated between operational performances and all items of SCM practices showed positive correlation. However, strong correlation was identified between 'Over all SCM practices' and 'Operational Performance' ($r=0.733$, $P<0.01$). This means, the practices SCM and operational performance have a direct relationship in wheat flour factories. That is, as the factories increases SCM practices; their operational performance will also increase.

5.2. Conclusions

Efficient supply chain management practices have greater impact on organizational performance when properly identified and implemented. The central objective of the study was to assess the level of practical implementation of SCM practices; and to analyze the effects

SCM practices on operational performance in wheat flour producing factories in Adama. For this purpose, four key dimensions of supply chain management practices as well as operational performance indicators were used as research variables.

The results of the study show that the implementation of modern SCM practices is weak in wheat flour producing factories in Adama with the exception of some moderate results on supplier and customer relationships and internal integration practices which was performed better. The information sharing and the application of ICT practice resulted relatively weaker performance but all the variables except ICT practice in the SCM practices had positive influence on operational performance on the wheat flour producing factories. ICT practice had no significant effect on operational performance of the case factories.

It can, therefore be concluded that the sector is doing business as usual and no attention was given to modern SCM theories and practices in the sector yet. However, the existing literature advocates that the implementation of SCM practices can considerably improve the operational performance of a given organization.

5.3. Recommendations

From the research findings, we can conclude that wheat flour factories have been operating for a long time. However, modern supply chain management theories and practices are not given attention of business managers. Still the wheat flour sub-sector is doing business in traditional way of customer-supplier relationships. Their information sharing practices and internal operation flexibility to address customer's demand change is also weak. The sector relatively gives more attention to internal coordination rather than to collaboration with external supply chain partners mainly with suppliers. In general, supply chain management practice in wheat flour producing factories is not used as a weapon to enhance their operation performance.

Therefore, the following suggestions were forwarded in order to improve the Supply Chain Management of the case wheat flour factories.

It is noticeably explained that internal integration is vital in increasing the potential of the companies to get external integration. The flour factories are suggested to integrate the internal operational units, so as to bring about flexible, responsive and efficient production. This can be done by networking the functional units of the organization with appropriate IT and integrated information system. Breaking functional silos to encourage coordination and

interdependent work design accompanied with agile work force and multipurpose machineries to improve flexibility and responsiveness to market and customers' requirements are also required.

The current information technology practice of the case flour factories was poor and affects effective communication and integration of data within the company. The case Company should improve and invest on IT facilities to enhance information sharing both internally and externally. In addition, firms should focus on maintaining long term partnering relationship with customers and suppliers and they should involve on in joint planning and problem solving activities as well as organizing continuous improvement programs on different issues to reduce some challenges of the sector like inferior product quality, extended delivery time and low competitive prices of the products. Establishing long term contract agreement with dependable suppliers/customers could also reduce time and cost for supply chain members.

More importantly, the case factories are suggested to improve their relationship with suppliers from simply buy-sale relationship to a modern supply chain relationship through establishing strategic or long term relationship, contract, and continuous information sharing in order to minimize supply uncertainty which resulted in demand and supply unmatched and dissatisfaction of customers of the case company. Because, this could help the case factories to obtain the inputs at the right time and quantity from these suppliers and provide the required quantity by the customers when they need it.

Another important issue that is suggested to the case flour factories marketing department is improving the relationship with customers through a continuous information sharing, follow-up them and get feedback, monitoring customers' perceptions towards service of the company, improving its compliant management through conducting market research for better responsiveness.

5.4. Implication for Further Research

Finally, since in this study the researcher had gave attention only about operational performances of the case factories, other performance measures such as; finance and production performances are not included. Therefore, it is recommended for future research to consider other performance measures of those factories.

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Appendices

Adama Science and Technology University
School of Business and Economics
Department of Management
Questionnaire

The purpose of this questionnaire is to undertake a research for the partial fulfillment of Master of Business Administration (MBA) on the title “*Effect of Supply chain management practices on operational performance in selected wheat flour factories in Adama*”. The study is conducted for academic purpose and cannot affect you and your organization in any case. So, your genuine, honest and timely response is vital for successful accomplishment of this study on time. Therefore, I kindly ask you to give your response to each items/questions carefully.

Thank you in advance!!!

Part I. Personal information

Name of your organization _____

1. Year of work experience in the organization:

1-3 years ☐ 4- 6 years ☐ 7-9 years ☐ 10-12 years ☐ above 12 years ☐

2. Educational background

- | | |
|---|--|
| • Primary School ☐ | • Diploma ☐ |
| • Secondary School ☐ | • Bachelor degree ☐ |
| • Preparatory ☐ | • Master’s Degree and above ☐ |

5. Job title

- General Manager ☐
- Production/Technical manager ☐
- Supply/Purchasing manager ☐
- Marketing manager ☐
- Commercial manager ☐
- Inventory manager ☐
- Other (please specify) _____

Part II .Items related to Supply Chain Management Practices

Please indicate the extent to which you agree or disagree with the following statements regarding your company supply chain management practices. Please use "√/" to indicate your choice. (1: Strongly disagree, 2: disagree, 3: neutral, 4: agree, 5: strongly agree)

S.N	Items	Scale				
		1	2	3	4	5
A	Suppliers and customers relationship					
1	Our organization has built long term stable strategic partnership with suppliers					
2	We regularly solve problems jointly with our suppliers					
3	Our major supplier shares their production schedule with us					
4	We help our major supplier to improve their process to better meet our needs					
5	We have long-term relationship with our customers					
6	There is a close involvement of our major customers in deciding upon issues such as transportation, production, distribution, inventory management and customers relationship management					
7	We frequently measure and evaluate customer satisfaction					
8	Our customers give us feedback on our product quality and delivery performances					
B	Internal Integration Practices					
1	In our firm there is a real-time integration among all internal functions from procurement up to sales					
2	In our firm there is a joint decision making with internal departments on the issues of procurement, inventory management, production and distribution					
3	Employees in the company consider that the goals in their respective departments are in harmony with each other					
4	The extent of continuous and instantaneous product and service improvement is high					
5	Marketing department consults operation department before accepting special feature requests					
6	Marketing and distribution departments consults operation departments before accepting early delivery requests					
7	Periodic interdepartmental meetings among internal functions are commonly utilized					
8	There is little/no conflict between departments /functional units related to the practice of supply chain management of the factory					

C	Information Sharing Practices				
1	There is effective information sharing with our customers on sales forecast and new product development				
2	There is effective information sharing with our suppliers on sales forecast and new product development				
3	Our firm has adequate ability to share both standardized and customized information internally				
4	Our firm maintains an integrated database and access method to facilitate information sharing between:				
	• Procurement and production				
	• Production and inventory management				
	• Production and distribution/transportation				
	• Inventory management and distribution				
5	Our firm effectively shares production information between the following departments				
	Procurement and production				
	Production and inventory management				
	Production and distribution/transportation				
	Inventory management and distribution				
D	Application of Information Technology				
1	There is a high level of linkage with major customer through information technology				
2	There is high level of information exchange with our major supplier using information technology				
3	There is up-to-date IT technologies throughout the supply chain management of the factory				
4	There is adequate IT system throughout the supply chain management of the factory				
5	The level of IT based production process was effectively practice				

Part II. Operation Performance

	Items	1	2	3	4	5
1	Our company can quickly modify products to meet our major customer's requirements.					
2	Our company can quickly respond to changes in market demand in terms of both volume and quality of the product					
3	Our company benchmark it's production performance with leading companies in the sector					
4	Our company pays attention for the reduction in wastage of resources					
5	Our production processes focuses on more efficient works involving less fatigue to workers					
6	Our company invest in more efficient equipment and technologies that facilitate automation					
7	Our company aims at the maximum utilization of resources for yielding as many goods and services as possible,					
8	Our company develops an attitude of mind and a constant urge to find better, cheaper, easier, quicker, and safer means of doing a job, manufacturing a product and providing service.					

If you want to say anything about the practices of supply chain management and operation performance of your factory; please write briefly on the space provided below.
