Addis Ababa University

School Of Commerce

MA Program in Logistics and Supply Chain Management

The Critical Factors Affecting Supply Chain Management In the Brewery Industry.

Thesis for Partial Fulfillment of MA in Logistics and Supply Chain Management

By: Daniel Demmissie

Advisor: Dr.Temesgen Belayeneh

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The Critical Factors Affecting Supply Chain Management

In the Brewery Industry.

Approved by Board of Examiners

APPROVED BY:

_____	_____	_____
Chair person, Department of Graduate Committee	Signature	Date
_____	_____	_____
Advisor	Signature	Date
_____	_____	_____
Examiner, Internal	Signature	Date
_____	_____	_____
Examiner, External	Signature	Date

Candidate‟s Declaration

I hereby declare that the work which is presented in this thesis entitled The Critical Factors Affecting Supply Chain Management in the Brewery Industry is original work of my own and has not been presented for a degree of any other university. All sources of material used for this thesis have been duly acknowledged.

Daniel Demmissie _____

(Candidate) Date

This is to certify that the above declaration made by the candidate is correct to the best of my Knowledge.

Dr. Temesgen Belayeneh _____

(Thesis Advisor) Date

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Abstract

The major objective of this study was to explore the Critical Factors Affecting Supply Chain Management in Brewery Manufacturing firms in Ethiopia. The research design was used to investigate the factors that affect the supply chain management in brewery industry in Ethiopia. Hence, this study used quantitative and qualitative research design (a mixed research). The relationship of factors, production scale and product quality has a less correlation with supply chain integration (r=0.341) and a moderate correlation with customer focus and innovation (r= 0.479) and a strong correlation with marketing and distribution (r = 0.724). The chi-square for the factor called production scale and product quality was 3.379 and the significant level was 0.066 (insignificant). The factor called supply chain integration had a chi-square test of 3.379 (sig: 0.066) and indicates insignificant value. The chai-square result of customer focus and innovation showed as 5.586 with sig blow 0.05 (0.018) indicated customer focus and innovation was a determinant factor that had a relationship in the supply chain management important in Ethiopia brewery industry. A very low chi-square result was registered on marketing and distribution and it was expressed as marketing and distribution was not a determinant factor. The breweries companies in Ethiopia may identify the portfolio of key initiatives that will help transform their traditional supply chain into a demand-driven value network.

Key Words: Key Words: Organizational performance, Supplier, Supplier Relation Management

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Acronym

EDI – Electronic Data Interchange

EFT- Electronic Fund Transfer

ERP - Enterprise Resource Planning

IT - Information technology

LAN - Local Area Networks

MRP - Material Requirement Planning

MRPII - Manufacturing resources planning

SCM - Supply Chain M

SC - Supply Chain

VAN - Value Added Network

VAP - Value-Added

WAN - Wide area networks

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Chapter 1

Introduction

1.1 Background of the study

Supply chain management is applied by companies across the globe due to its demonstrated results such as delivery time reduction, improved financial performance, greater customer satisfaction, building trust among suppliers, and others. According to Paul (2014), companies resort to supply chain practices to improve their performance. Thus, it is important to first understand how their supply chains work. The supply chains that add the most value of customers with the lowest cost in the chain make up the winning network of individual companies. Mamun (2011) added today the new source of competition lies outside the walls of organizations, and is determined by how effectively companies link their operations with their Supply Chain partners such as suppliers, distributors, wholesalers, retailers and end customers. SCM offers a management philosophy to manage activities and integrate with downstream and upstream partners as well as firms‟ internal Supply Chain.

As companies are now seeking how to integrate decisions across supply chain functions, across geographically dispersed facilities, and across time, the facts based supply chain management is crucial. The essence of fact based supply chain management is integrated planning and control, which has three important dimensions. The first dimension is functional integration involving decisions about purchasing, manufacturing and distribution within the company and between the company and its supplier and customers. The second dimension is geographical integration of these function across physical facilities located on one or several continents. The third dimension is inter-temporal integration of strategic, tactical and operational supply chain decision. To put it simple, strategic planning and control focus on resource allocation and refinement, and operational planning and control are concerned with business execution (Andrew, 2001).

Supply Chain Management is the systemic, strategic coordination of the traditional business functions and the tactics across these business functions within a particular company and across businesses within the supply chain, for the purposes of improving the long-term performance of the individual companies and the Supply Chain as a whole (Bowersox et al., 2007).

Supply Chain Management, as the concept is now called, consists of the entire set of processes, procedure, the supporting institutions, and business practices that link buyers and sellers in a

marketplace for effectively managing the flow of materials from suppliers to final customers. Many companies have successfully implemented supply chain concepts with spectacular results. Efficient supply chains have enabled these firms to compete better (DiStefano et al., 2009).

A customer focused definition is given by Bowersox et al. (2007) cited Mentzer et al. (2009) as supply Chain strategies require a total systems view of the linkages in the chain that work together efficiently to create customer satisfaction at the end point of delivery to the consumer. As a consequence costs must be lowered throughout the chain by driving out unnecessary costs and focusing attention on adding value.

The brewery industry in Ethiopia has great potential to enhance manufacturing and export production, and thereby to increase employment opportunities and reduce poverty. It has several competitive advantages in different areas. Thus, managing the Supply Chain in this business environment has a major impact on performance of all parties involved in the chain. In this thesis, different SCM perspective including Supply chain performance in selected brewery industries has been investigated.

1.2 Statement of the problem

Although, Supply Chain Management practice in our country is still in the infancy stages, there are small numbers of manufacturing companies integrating it to their organizational system. Furthermore, the Brewery industry in particular is weak in its SCM practice. In addition, there are some challenges in the industry which resulted in reducing the quality and demand of products manufactured domestically. One of the problems is poor SCM practice of organizations in the industry.

In addition, the findings from other research were tempered by the limitations of the study, which was recommended future research. Those researches conducted previously were in other countries and in different sector of manufacturing industries which possesses completely different culture and development stage respectively. Thus, one could assume that the finding will be different in developed countries where SCM practice are more advanced and under developed countries like Ethiopia.

There is such a gap in the brewery sector in Ethiopia about the factors that affecting Supply Chain Management in the Brewery Industry. According to Elzarka et al. (2011) a research problem can be based on question, an unresolved controversy, a gap in knowledge or an unrequited need within the subject. Therefore, precisely, the problem that initiated the researcher to conduct this study is the information gap about the factors affecting Supply Chain Management in the Brewery Industry which makes this study researchable. From these, the following research questions are developed as follows:

1) What are the Critical Factors that affecting Supply Chain Management in the Brewery Industry
2) What is the relationship of the factors that affect the supply chain management in brewery industry?
3) What constraints did brewery industry in Ethiopia face in relation to supply chain management?

1.3 Objective of the Study

The major objective of this study is to explore the Critical Factors Affecting Supply Chain Management in Brewery Manufacturing firms in Ethiopia. The specific objectives of this research are indicated as follows:

1 To investigate the factors that affecting Supply Chain Management in the Brewery Industry
2 To assess the relationship of the factors that affect the supply chain management in brewery industry
3 To assess the constraints of brewery industry in Ethiopia face in relation to supply chain management?

1.4 Significance of the Study

The result of this study will give an insight to any individual who has interest on Supply Chain Management, if he or she needs to undertake further study on this area. In addition, it will show the current supply chain management practices of the selected Brewery firms and their differences in Supply Chain (SC) performance. Moreover, it will contribute an empirical study to the area of research undertaken on SCM.

In addition, this study will fill the gap in the brewery sector in Ethiopia about the factors that affecting Supply Chain Management in the Brewery Industry. In this case, a research problem can be based on question, an unresolved controversy, a gap in knowledge or an unrequited need within the subject. Therefore, precisely, this study definitely will fill the problem that initiated the researcher to conduct this study is the information gap about the factors affecting Supply Chain Management in the Brewery Industry which makes this study researchable.

1.5 Scope of the Study

This study is bounded to the supply chain management practice of brewery industry in our country. It is basically revolved on the beer manufacturing companies that integrating it to their organizational system. Furthermore, it is focused on the Brewery industry SCM practices with the special focuses on the quality and demand of products manufactured domestically.

It is indicated as the main future of the stud is to review the gap in the brewery sector in Ethiopia about the factors that affecting Supply Chain Management. It is based on question, an unresolved controversy, a gap in knowledge or an unrequited need within the subject. Therefore, precisely, the problem that initiated the researcher to conduct this study is the information gap about the factors affecting Supply Chain Management in the Brewery Industry which makes this study researchable.

This study is basically confined in different perspectives of supply chain management practices. The supply chain management practices that bound the study on only seven variables of SCM, which are environmental uncertainty, information technology, supply chain relationships, value-added process (manufacturing), supply Chain Management performance (SCM), business management and customer satisfaction and bounds only the Brewery firms which has been already operational in Ethiopia beer market.

1.6 Limitation of the study

On one hand, the major limitation of this study was on the emphasis that has been given only to explore current SC performance of selected Brewery manufacturing firms and to compare the mean performance difference in SCM among the selected firms; no attempt was made to analyze interdependency of the variables selected for the study. In addition, the limited sample size that will be applied to the study creates a challenge to generalize about the industry. On the other hand, it is also a challenge to collect the questionnaire distributed for managers, and it may take more many days to gather the questionnaires, because of many unknown and confidential reasons.

Chapter 2

Literature Review

2.1 Theoretical Review

In modern business environment characterized by ever increasing competition and economic globalization, manufacturers have been exploiting innovative technologies and strategies to achieve and sustain competitive advantage. Many organizations today are forced to increase their global market share in order to survive and sustain growth objectives. And this new and modern business environment needs partnership between organizations in the Supply Chain.

There are different definitions given to Supply chain Management. In the study of Hines (2004) defines SCM as homogenous management concept. The overall objective of Supply Chain Management is to contribute to improvement in the company‟s bottom line or profitability. Related objectives include, reducing the costs mainly by reducing the inventory level and increasing the revenues by improving customer service through coordination and integration along the material flow, win-win relationships and end-customer focus.

Supply Chain Management as a management philosophy takes a system approach to viewing the Supply Chain as a single entity. This means that the partnership concept is extended in to a multi-firm effort to manage the flow of goods from suppliers to the ultimate customer. Each firm in a Supply Chain directly or indirectly affects the performance of other Supply Chain members, as well as the overall performance of the Supply Chain (Cooper et al. 2000).

As it has been agreed by many academicians as well as practitioners, Supply Chain Management (SCM) is an important issue facing many organizations worldwide. SCM is an important area that helps maximize competitiveness and profitability for the company as well as other Supply Chain (SC) members which integrate and coordinate across their whole extended network (Cooper et al., 1998). They underlined that managing the SC has become a way of improving competitiveness by reducing uncertainty and enhancing customer service. Identification of Supply Chain Management factors

In order to understand how a supply chain works, it is important to identify the factors affecting supply chain management. The identification of these factors has been based on previous work by Li (2002). The following sections show generic supply chain management factors and sub-factors that might affect supply chain management activities.

2.1.1 **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 was experienced 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 et al. 2005). Also the advantages included supply contracts via internet, distribution of strategies, outsourcing and procurement (Simchi-Levi et al., 2003). All companies are looking for cost and lead time reductions with the purpose of improving the level of service but also to enhance inter-organizational relationships.

A study carried out by Tim (2007) states that through the use of communication tools, such as the web sites, industrial organizations can build value in their supply chain relationships.

According to Turner (1993), another key for supply chain management success is the use of planning tools. He also mentions that without the use of information systems, companies cannot handle costs, offer superior customer service and lead in logistics performance.

Turner (1993) indicates that firms cannot effectively manage cost, offer high customer service, and become leaders in supply chain management without the incorporation of top-of-the-line information technologies. Li (2001) identified 14 such information technology tools, among them electronic data interchange (EDI), enterprise resource planning (ERP), internet, and extranets. Li grouped these tools into three groups in terms of their primary purpose: communication tools, resource planning tools, and supply chain management tools. Given this classification, two subfactors are considered in this research: communication and planning tools.

2.1.2 **Communication tools**

Communication tools are used to facilitate data transfer and communication between the trading parts and this might include EDI, electronic fund transfer (EFT), intranet, internet, and extranet (Li 2002). Electronic Data Interchange (EDI) is used for procurement (purchase orders, order status, and order follow-up). EDI serves as electronic catalogs for customers who can get information, dimensions, and cost about a specific product. EFT provides trading partners with an effective way to transfer funds from one account to another through a value added network (VAN) or the internet. Intranets are

corporate local area networks (LAN) or wide area networks (WAN) that communicate through the internet and are secured by firewalls. Usually this type of communication tool is used inside a corporation that features different locations. On the other hand, extranet allows business to communicate and share business with external collaborators with a certain degree of security and privacy. Another type of communication tool is the internet, a uniform interface that allows global communication with the use of browsers (Bowersox et al., 2007).

According to O‟Neill (2008) the advances in information technology have made communication tools easier for users, allowing its presence in components to extend in the supply chain. Another significant communication tool is the internet based information and communication technology (ICT), mentioned by Tan et al. (2009). This study suggested that the use of ICT is a strategic communication tool that improves the organization‟s competitiveness, allowing cost reduction and permitting the company‟s effectiveness.

2.1.3 **Planning tools**

Supply chain management planning tools are intended to integrate the resource planning activities in a firm or organization. Some of the most common planning tools are: material requirment planning (MRP), manufacturing resources planning (MRPII), and Enterprise Resource Planning (ERP). A MRP is a tool that allows an organization to schedule production activities to meet specific deadlines based on the bill of materials, inventory levels, and master production schedule. An improvement of MRP tools is MRPII which integrates manufacturing capabilities and capacities with the benefits of MRP. An ERP tool allows the organization to integrate all processing information tasks related to all processes in the value chain. This is usually a single system that might include order management, inventory fulfillment, production planning, financial planning, and customer service in a company. It is the backbone of the logistic systems for a variety of firms (Bowersox et al., 2007).

Some other IT tools exist that can be used to execute or manage the various activities and relationships in the entire supply chain. These may include: data warehouse (DW), vendor managed inventory (VMI), distribution requirement planning (DRP), and customer service management (CRM).

2.1.4 **Supply chain relationships**

Supply chain relationships play an important role in achieving the firm‟s goals. The coordination and integration of activities with suppliers and understanding of customer‟s needs results in greater benefits for companies. According to Fraza (2000), supply chain management is directly

related to relationship management, which includes suppliers and customers. Strategic supplier partnerships and customer relationships are main components in the supply chain management practices (Li et al., 2005), leading to information sharing, which is one of the five pillars in achieving a solid supply chain relationship (Lalonde, 1998). Two sub-factors are considered in the model relationship with suppliers and customers.

2.1.5 **Relationships with suppliers**

Companies are inclined to work with different suppliers in different ways. It is important that the relationship with suppliers satisfies their company needs. Hines (2004) mentioned that in commodity products, it is common to find an adversarial relationship mainly based on price between buyer and supplier. This type of relationship with suppliers does not allow for cost reduction in the supply chain. It may be beneficial to network the supplier, to develop partnerships and alliances that will benefit both partners. This could be based on production, personal, and or symbolic networking, that will turn on strategic alliances (Hines, 2004), allowing the information sharing, risk sharing, obtaining mutual benefits and coordinating plans, permitting the improvement of the supply chain.

2.1.6 **Relationships with customers**

The global markets offer a variety of products of different quality and cost. As a result, companies are always competing and trying to reduce costs and improve quality. According to Hines, (2004), customers look for more choices, better service, higher quality, and faster delivery. The relationship with customers has turned a strategic issue for today‟s companies.

2.1.7 **Value-added process (manufacturing)**

Value-added products can be commodity processes or products that already exist; you only have to use smart modifications and apply them. According to Bishop (1990), value-added is defined as “adding those manufacturing or service steps to a commodity product, which the customer perceives as increasing its value”. Customers always want to pay the cost that they think is correct, and if they get something additional to the product, they got value-added.

Two factors are significant when we talk about value-added: flexibility and quality. And, as stated by Hines (2004), production processes contribute to improve value-added. For example, Hines (2004) cited Dramm who affirmed that the forest products industry is mainly focused on acquiring the highest value throughout the manufacturing process at the lowest cost, improving efficiency, quality,

and productivity. Thus, it is important to include the production system as a part of the value-added process.

2.1.8 **Flexibility**

The complex markets, fierce competition and fast changes in demand require that companies be ready to react promptly to customers‟ needs. Flexibility can be understood as the ability to react and adapt quickly to changes in the market due to an increase or decrease of customers‟ requirements, accelerating or decelerating the manufacturing processes when It is requested. Bowersox, Closs, and Cooper (2007) mention that a logistical competency of a firm can be measured by how well it is able to adapt to unpredictable situations.

2.1.9 **Quality**

Quality is not a bonus for the customer; it is expected. Quality is also important for the acceptance of a product. High costs, low productivity, and loss of market share are directly related to poor quality (Hines, 2004). Quality is meeting or exceeding the expectations of your customer (Bishop, 1990). This could be achieved, for example, by the use of quality metrics, which improves the production system (Hines, 2004). Achieving better efficiency, quality and productivity, and acquiring the highest value of a product at lower cost will improve the business performance of a company.

2.1.10 **Production system**

A study made in the automotive glass business showed how changing the industrial structure of the production system adds value to processes, which will help to expand their business future (Just-Auto, 2010). This value-added could be achieved by reducing activity time, cost processes, and identifying bottlenecks that will improve the production processes. As a result, it will give value-added to the products (Mehta, 2009).

2.1.11 **Supplier Markets**

According to Yushan and Cavusgil (2006), changes in the market create sensible companies regarding firm-supplier relationship. For manufacturers it is more important to build supplier‟s trust and to rely on suppliers, focusing on customer orientation, competitor orientation, and inter-functional coordination. The current competitive environment makes manufacturers aware of the need to reduce costs and to develop new products quickly. This is when supplier‟s expertise plays an important role.

Superior supply chain management requires significant information with respect to supplier markets. Implementation of strategies in the supply chain will make the precious firm-supplier relationship difficult to copy by competition (Eltantawy, 2005).

2.1.12 **Material Sourcing**

Companies in any manufacturing sector are always looking for low-cost raw material, domestic or imported. With the objective of improving their competitive advantage, some of them see importing as an appealing option. As there are some advantages when importing resources, such as lower labor cost and lower cost of resources, there are also some disadvantages that companies have to take into account when evaluating whether or not to work with offshore companies. Importing raw materials, components or products increases the dependence on suppliers (Lockamy and McCormack, 2010), and some risks are identified such as culture, language, foreign exchange rate, regulations, quality, political and economic stability, and transportation delays (Canbolat et al., 2008).

2.2 **Supply Chain Management lessons**

Paul Lord, 2014, on his article on Gartner about supply chain lessons and innovations from the history of U.S. brewing industry indicated that beer market demonstrates some fundamental supply chain truths and has been transformed by a few innovations. These are five major factors and four basic and fundamental factor were selected for this study as indicated below.

1. Production scale and product quality. These basics determined the early entrants who came to dominate the industry. The successful German immigrants who settled in Milwaukee took great pride in their craft, using high quality ingredients (often imported) and good yeast for fermentation. Bad beer ruined a reputation, while consistent beer brewed at scale (with quality control labs and European trained chemists) allowed Pabst and Schlitz to become dominant in the marketplace. The brewers got carried away chasing scale though, expanding their breweries before existing capacity was full. This would later lead to price wars before brewers discovered marketing and distribution as a core competency. Substitution with cheaper ingredients later sealed the fate of Schlitz under competitive pressures of the 1960‟s and 1970‟s.Product quality (and scale) was also a major hurdle for the thousands of microbrewers trying to make it in the 1970‟s to 1980‟s. When Fritz Maytag (yes, an heir of that famous family) bought Anchor Brewing in San Francisco, he inherited a reputation for terrible beer that had to be fixed with better product. Sierra Nevada was the first

start-up (founded in 1978) to make it big due to the resourcefulness and fastidious attention of its founder Ken Grossman (it stood as the 9th largest brewer in 2000).

2. Supply chain integration. The brewers integrated vertically to maximize cost competitiveness. Pabst owned a power company and a horse farm. Other brewers operated barrel and bottle making companies, lumber and glass factors. Anheiser Busch even owned a railroad. This only served to heighten the use of price as a main competitive weapon.
3. Customer focus and innovation. The German brewers produced Bavarian ale which has a heavy taste and is very filling. This suited German drinkers who preferred to savor one or two beers as part of a „liquid meal". American's had different drinking habits (shall we say more „competitive"?) and preferred a lighter flavor. Adolphus Busch, while German, was not a brewer by trade (he was a world class salesman who sold brewing ingredients) and unencumbered by tradition. He researched and commercialized Bohemian recipes in the 1870's which produced lager beer made with a mixture of barley, rice and corn, using less hops, special Bohemian yeast and a beechwood aging process. The lagering process was more expensive, requiring refrigerated storage. He also researched and applied a new technique called „pasteurization" which prevented spoilage and improved product safety. The new Budweiser beer re-defined and came to dominate the industry as it perfectly suited American tastes.
4. Marketing and distribution. Busch was once again the leading innovator, since he had a marketing and distribution problem to solve. Rather than „export" into the Chicago market and compete with the Schlitz, Pabst and other Milwaukee brews he set his sights on the Southwest, particularly Texas. He secured his supply chain by shipping in labeled bottles (pasteurized to protect it from spoilage). In addition to being easier to handle during shipment than kegs, the bottles also prevented pub owners from substituting lesser quality into their taps and damaging the Budweiser brand. He encountered numerous copycat versions of his prize brew, which he needed to protect through labeling and supply chain security. Busch also invented the refrigerated railcar to make transit from St. Louis to Texas and the Southwest U.S. possible. After prohibition, the leaders „had to forget we were brewers" as the beer market became redefined by marketing and distribution, with wholesaler networks and relationships a competitive advantage that A-B used masterfully.

2.3 **Empirical Studies**

Ana et al., (2011) studied on Factors affecting the adoption of supply chain management practices: Evidence from the Brazilian electro-electronic sector and they indicated as on the factors affecting the adoption of supply chain management (SCM) practices develops four hypotheses based on a literature review, and tests them using survey data of Brazilian electro-electronic firms. The results revealed the big picture of the SCM practices in the sector and suggest that contextual factors such as size, position and bargaining power affect the adoption of SCM practices, which are also more customers oriented. Sector characteristics are very important in analyzing SCM practices. Contrary to the findings of literature, the relationship between competitive priorities and SCM practices was not supported statistically.

Chojar (2019) studied on factors affecting Supply Chain Management in Agribusiness: A Review of Key Concepts and indicated that commercial interest in supply chain management in agribusiness firms has increased due to greater urbanization and globalization. While product differentiation, improved quality, more cost-effective transport, and timely delivery have contributed to the development of supply chains from farmgate to retail level, it is the consumer demand for variety, quality, and yearround availability that has provided the stimulus for the formation of these chains. Traditional agricultural and food businesses that focus only on price are unable to meet consumers‟ expectations. Individually, chain members lack the means to respond to consumers‟ demands. Understanding the concepts of supply chain management provides a means to manage the changes required in the system to efficiently respond to consumer needs, integrating and coordinating the efforts of all supply chain members. These changes include consolidating organizations at the farm, processor, and supermarket levels; organizing production to achieve

economies of scale; and gaining market share and competitive strength to survive global competition. This paper highlights the importance of critical factors like mutual trust; leadership by one or two chain members; the use of information technology (IT) in input procurement, production planning, and market access; realignment of strategies to develop improved production methods to meet consumer preferences and food safety standards; and the intelligent use of market information to help small farmers to overcome production challenges and respond to the challenges of global markets.

Rajib et al., (2010) studied on factors Affecting Supply Chain Management Efficiency in Cross Border Outsourcing: A case study of H&M and its Outsourcing Operations in Bangladesh. Their background was on outsourcing that had been emerged as an important business and economic strategy for achieving competitive advantage to multinational companies these days. The comparative advantages of different countries and companies intention to maintain increased focus on their core businesses drive them to go for offshore production sourcing their needs by utilizing an effective supply chain system. They aimed to investigate how inefficiency factors affect the Supply Chain system of Multi National Corporations (MNC‟s) during outsourcing process. With that view we have analyzed what implications of these factors in overall efficiency in entire value chain System, how these factor affects Supply Chain efficiency and, in particular, which factors are significantly responsible for inefficiency. We will also analyze probable solutions to minimize inefficiency in Cross Border Outsourcing. They found that some factors acting as a hindrance to this smooth operation in cross boarder outsourcing. Finally we analyzed several factors and find out the potential ways to minimize the effect of these inefficiency factors and recommended some probable measures to increase overall supply chain efficiency in total value chain system.

2.4 **Variables**

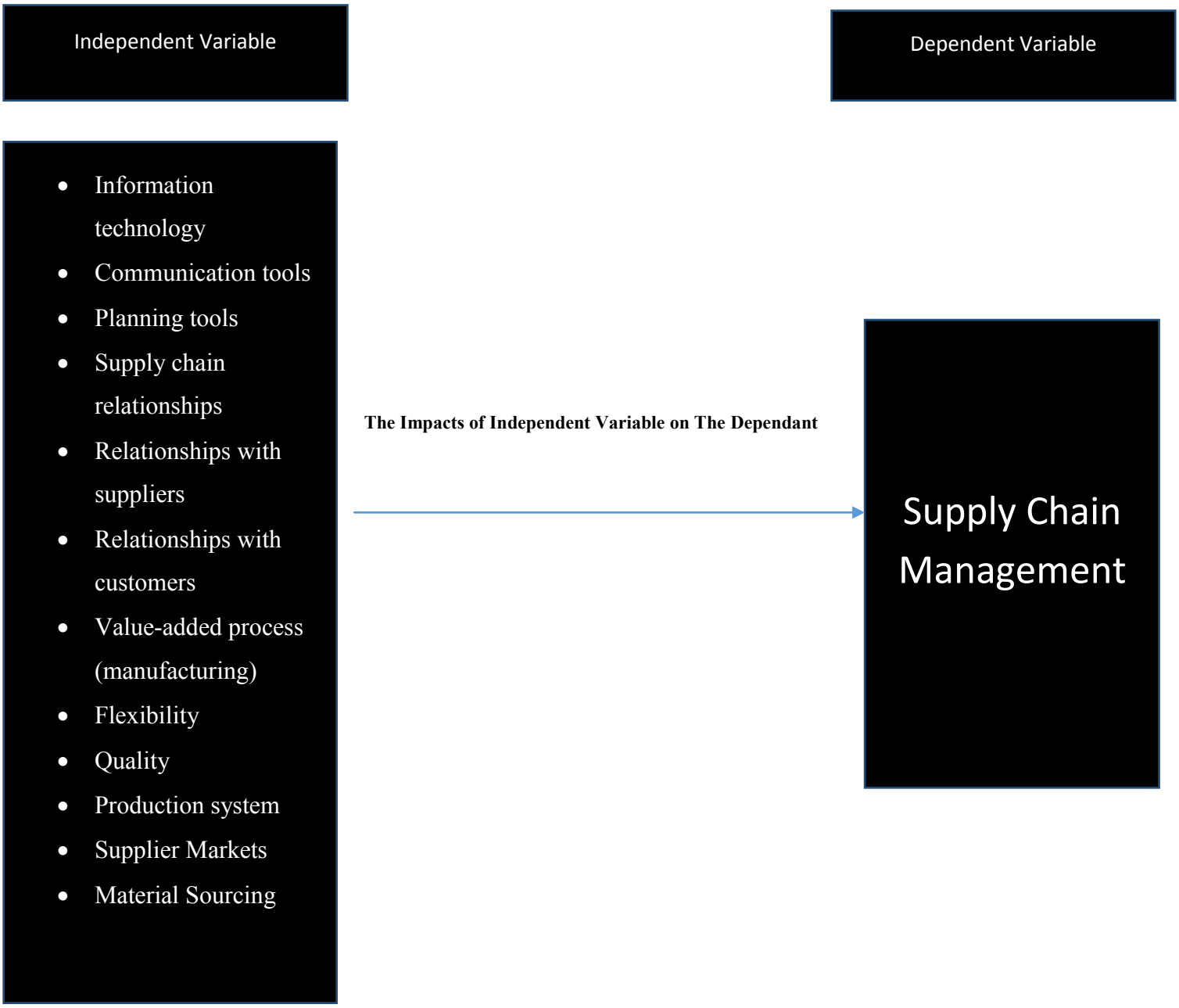
Factors of Supply Chain Management in the Brewery Industry

- Information technology
- Communication tools
- Planning tools
- Supply chain relationships
- Relationships with suppliers
- Relationships with customers
- Value-added process (manufacturing)
- Flexibility
- Quality
- Production system
- Supplier Markets
- Material Sourcing

The relationship between factors on Supply Chain Management in the Brewery Industry

- Production scale and product quality
- Supply chain integration
- Customer focus and innovation
- Marketing and distribution

2.5 **Conceptual Framework**



Adapted Conceptual Model of this Research Canbolat et al., 2008

Chapter 3
Research Methodology

3.1 Research Design

Such Type of research design was used to investigate the factors that affect the supply chain management in brewery industry in Ethiopia. Hence, this study used quantitative and qualitative research design (a mixed research). The data were used to assess the factors ta affect the supply chain practices of brewery.

The study was basically based on descriptive cross sectional study. Essentially, this type of research describes what exists and help to uncover new facts and meaning. The purpose of descriptive research is to observe, describe and document aspects of a situation as it naturally occurs. This involves the collection of data that provided an account or description of brewery supply chain and related fields professionals (brewery employees‟) opinions or perception. In this study, questionnaire as main instruments were employed to obtain data in descriptive studies. There is no experimental manipulation or indeed any random selection to groups, as there is in experimental research.

As study was focused on a gap analyses in the brewery sector in Ethiopia about the factors that affecting Supply Chain Management in the Brewery Industry. In the second part, previous studies were found a discussed appropriately in terms of how to reduce what may feel like an overwhelming amount of data gathered from in-depth interviews based on structure checklist.

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3.2 Data Sources and Types

For this study, primary data were collected from supply chain involved staffs executives, managers, and skilled and professional workers of the selected breweries in Ethiopiaas primary data. In addition, secondary data were collected from supply chain articles, journals and others as appropriate for a detailed knowledge. In addition, other secondary sources of data were collected from the selected breweries manuals, procedures and other relevant documents.

As method research, participants answer questions were adapted and then developed as self-administered questionnaires. After participants answer the questions, researchers describe the responses given. In order for the survey to be both reliable and valid it is important that the questions are

constructed properly. Questions should be written so they are clear and easy to comprehend. Another consideration when designing questions is to include closed-ended – yes or no type.

3.3 Measurement

The steps in measurement of this study were in twelve factors as independent variables related to supply chain factors which are identified as information technology, communication tools, planning tools, supply chain relationships with suppliers , relationships with customers, value-added process (manufacturing), flexibility , quality , production system , supplier Markets and material sourcing. There were also four variables that were extracted from the literature review and used to draft the questionnaire (respondents were questioned to provide data relating to their brewery) on the relationship between the factors. These are production scale and product quality, supply chain integration, customer focus and innovation and marketing and distribution. The questionnaire was structured as yes or no type as used to measure respondents' attitudes to supply chain factors. A pretest was properly done from experts of supply chain for measurement questionnaire and was supported to test for reliability and validity.

The lowest measurement level this paper can use, from a statistical point of view, is a nominal scale. A nominal scale, as the name implies, is simply some placing of data into categories, without any order or structure. The underlying spectrum is ordered but the names are nominal. It is known that in research activities a YES/NO scale is nominal. It has no order and there is no distance between YES and NO.

The chi-square goodness-of-fit test is a single-sample nonparametric test, also referred to as the one-sample goodness-of-fit test or Pearson's chi-square goodness-of-fit test. It is used to determine whether the distribution of cases in a single categorical variable follows a known or hypothesized distribution. The relationship of the factors was analyzed based on Pearson‟s correlations.

Another test was done by Statistically Pearson correlation that was used to show the impact of supply chain flexibility on perceived performance. Pearson correlation was used because it is relevant correlation tool for data that is ratio or interval type. As this study used questions of interval type Pearson was found relevant. Correlation is relationship between two variables or impact of one variable on other. In this study correlation coefficient shows the amount of

association or impact a given supply chain dimension has on perceived performance indicator. It is interpreted in the following manner.

- If r is 1, it shows a perfect positive impact
- If r is -1, it shows a perfect negative impact
- If r O, it shows absence of impact
- If r is positive, it shows positive correlation and if it is negative, it shows negative correlation and impact.

Classification of correlation and hence impact as strong or weak for this study is based on the classification of Marczyk et al (2005). Their known book entitled as *Essentials of Research Design and Methodology* classifies the strength of correlation as follows.

- If r falls in the range of 0.01 and 0.30, there is small or weak correlation
- If r falls in the range of 0.30 and 0.70, there is moderate correlation
- If r falls in the range of 0.70 and 0.90, there is large or strong correlation
- If r falls in the range of 0.90 and 1.00, there is very large or very strong correlation

The authors suggest large sample size as a factor to rely on this classification. This study has followed this particular classification of Marczyk et al (2005) so as to determine the strength of the impact of supply chain flexibility dimensions on perceived performance for the reason that this study used census and census is in line with large sample size requirement stated by the authors.

3.4 Data Collection Methods

In this study, data were collected from the four (Habesha, Meta and St Gorge and Waliya) breweries of supply chain experts and management using questionnaires. The prepared questionnaire was composed of questions of scale like1 = yes for agree, 0 = no for Disagree, as type of data collection method, questionnaire is chosen because it is supposed that respondents completed.

The questionnaire was adapted from Barasa et al., (2014) on the study of sustainable supply chain management as a strategic tool for Competitive Advantage in Tea Industry in Kenya. There were two type of questionnaire. The closed type questions were prepared on two parts for the study of the critical factors that affecting Supply Chain Management in the Brewery Industry and the relationship of the factors that affect the supply chain management in brewery industry. The open

type questions were prepared for studying the constraints did brewery industry in Ethiopia face in relation to supply chain management.

3.5 Sample Design

Employees at different levels who were expected as directly involved in the supply chain management and have experience on brewery are in all the three separate factories are the focus of this study. Since it is unwieldy to include all the relevant unit employees in the study, a reasonable sample of employees from the different hierarchy in all the factories shall be selected to collect the required data.

This study used non-probabilistic purposive sampling technique to select the Brewery factories which bases on their convenient accessibility and proximity to the researcher and employed census method to distribute the questioner. Since the employees included in the study are professionals, most of them assuming senior officer and higher positions, a high degree of rate of return and access to data are expected. Thus, as per initial interview with the four factories, data were collected from employees who directly related to supply chain professionals and a total of 60 participants were requested to fill the questionnaire. The population was 60 respondents.

3.6 Validity and Reliability

The questions used to measure supply chain management practices in brewery and factors of the supply chain indicators were adapted from previous standard researches of Barasa et al., (2014) on the study of sustainable supply chain management as a strategic tool for Competitive Advantage in Tea Industry in Kenya. The questions were well tested by previous researchers and hence it was believed that using those questions increases validity of this research too. In addition three supply chain managers from selected companies (beverage industry) were approached to test how they understand and respond to the questions in questionnaire. They all understood the questions and responded in the manner needed which has given confidence of validity. Moreover, one Masters Students of Logistics and Supply Chain Management (MALSCM) filled the questionnaire to strengthen its validity. Based on the comment the final questionnaire was amended accordingly. The test result was the same as what is perceived by the selected supply chain managers and professionals.

Reliability test was used to conduct and to assess the data quality. Cronbach‟s alpha was applied to measure the internal consistency of measurement items.

Table3.1: Reliability Test

	Cronbach's Alpha	N of Items
Critical Factors that affects Supply chain Management	.753	12
Supply Chain Management	.790	4

Source: its own survey, 2016

Cronach‟s alpha was used to test the reliability as it is relevant to interval and ratio data. Each question included is tested. The result was very close to 0.75 for the questions which shows that data is reliable. The overall reliability test result was over 0.75 that was 0.798 for 16 items and indicated as a very good test.

Chapter 4
Data Presentation, Analysis and Interpretation

4.1 Demographic Profile of the Respondents

In this study, it was conducted and analyzed the profile of the respondents but it is not the foremost objective or destination of this research. Nevertheless, it is a vital instrument towards the major findings and an indicator for the collective data quality. That is because the study is based on perception of the respondents and understanding the profile of the respondents is good information to comprehend about the research findings. Consequently, each demographic profile of the respondents which has been included in the survey was presented below based on response from the 58 employees who directly working in supply chain in brewery industry. The respondents rate was 96.6 %.

4.1.1 Age

Age is presented in survey in different (four) groups for choice of respondents. The choices were below 30 years, between 30 and 40 years, between 40 and 50 years, and above 50 years. The result was presented in the table below.

Table 4.1: Respondents‟ Age Category

Age Category	Less than 30 years	Between 30 and 40 years	Between 40 and 50 years	Over 50 years
Number of Respondents	8	28	15	7
Percentage (%)	13.79	48.28	25.86	12.07

Source: its own survey, 2016

It can be seen that only 8 (13.795) of the respondents are below the age of 30 years as Table 4.1 showed. This table also indicated that and as it is explained in research design the target population of this research is people at management position of supply chain management and the related fields. And the table shows that the majority of the respondents (48.28%) are above between 30 and 40 years. This can be taken as a plus towards the finding because age is usually taken as learning experience and together with other factors it can contribute to valid perception or opinion for the major study questions. However, as explained above age and other demographic elements are only additions or instruments for the study and the finding of this research solely depends on questions used to correlate supply chain flexibility dimensions and perceived performance which were clearly separated in the questionnaire.

4.1.2 Education Level of Respondents

Education level was included in the survey to understand the education background of the respondents and the result is shown in the table below:

Table 4.2: Education Level of Respondents

Response category	Education Level				
	High School Complete	Diploma	Degree	Masters	PHD
Number of Respondents	0	4	39	15	0
Percentage (%)	-	6.90	67.24	25.86	-

Source: its own survey, 2016

Education level is among those profiles relatively more important ad a clue for the respondents‟ familiarity for the subject matter including their company‟s know-how. Because education level shows information and knowledge, it is indispensable for a good perception assuming other things (like quality of education and relevance) constant. That is why it is included

in the questionnaire. The result shows that out of the 39 respondents or 67.24 hold first degrees and 15 or 25.86 hold master‟s degree in different areas of fields.

4.1.3 Experience of Respondents in the Company

This is additional reasonably central profile of respondents. If people have long experience it can be taken as they have a good knowledge and understanding about the area they are working (taking other factors constant). The experience of respondents in the companies they are working is summarized in the table below:

Table 4.3: Experience of Respondents

Years of Experience	Less than 3 years	Between 3 and 5 years	Between 5 and 10 years	Between 10 and 15 years	Above 15 years
Number of Respondents	10	15	12	13	8
Percentage (%)	17.24	25.86	20.69	22.41	13.79

Source: its own survey, 2016

From the table it can be seen that all respondents participated have a good experience to perceive about the factors included in the questionnaire to represent supply chain flexibility dimensions and perceived performance. Respondents who were working less than 3 years was 10 or 17.24% and others respondents have more than three years of experience (greater than 80% o respondents) means that they have been in the company for the period the questionnaire requests to take in account while evaluating the perceived performance.

4.1.4 Respondents' working place

This is the most important profile of the respondents among the rest. The research was designed in such a way to get data from the management staff of supply chain management from four breweries found in and around Addis Ababa (120km radius) – procurement, inventory, logistics and transport departments. This study was composed of four different organizations and the respondents composition was summarized Table 4.4 below:

Table 4.4: Positions of Respondents

Respondents‟ Working Place	Number of Respondents
Habesha Brewery	15
Meta – Diego Brewery	15
St George – BGI	14
Waliya - Heineken	14
Total	58

Source: its own survey, 2016

4.2) The Critical Factors that affecting Supply Chain Management in the Brewery Industry

As we understood from the literature review, the overall objective of Supply Chain Management is to contribute to improvement in the company‟s bottom line or profitability. Related objectives include, reducing the costs mainly by reducing the inventory level and increasing the revenues by improving customer service through coordination and integration along the material flow, win-win relationships and end-customer focus.

Supply Chain Management as a management philosophy takes a system approach to viewing the Supply Chain as a single entity. This means that the partnership concept is extended in to a multi-firm effort to manage the flow of goods from suppliers to the ultimate customer. Each firm in a Supply Chain directly

or indirectly affects the performance of other Supply Chain members, as well as the overall performance of the Supply Chain

SCM is an important area that helps maximize competitiveness and profitability for the company as well as other Supply Chain (SC) members which integrate and coordinate across their whole extended network. They underlined that managing the SC has become a way of improving competitiveness by reducing uncertainty and enhancing customer service. In order to understand how a supply chain works, it is important to identify the factors affecting supply chain management. The identification of these factors has been based on previous work. The following data showed the respondents‟ responses on supply chain management factors that affect supply chain management activities.

Table 4.5: Respondents‟ response of factors that affect supply chain

Factors that affect supply chain in brewery	No		yes	
	Count	Row N %	Count	Row N %
Information technology	6	10.3%	52	89.7%
Communication tools	15	25.9%	43	74.1%
Planning tools	22	37.9%	36	62.1%
Supply chain relationships	25	43.1%	33	56.9%
Relationships with suppliers	30	51.7%	28	48.3%
Relationships with customers	29	50.0%	29	50.0%
Value-added process (manufacturing)	33	56.9%	25	43.1%
Flexibility	28	48.3%	30	51.7%
Quality	28	48.3%	30	51.7%
Production system	22	37.9%	36	62.1%
Supplier Markets	18	31.0%	40	69.0%
Material Sourcing	13	22.4%	45	77.6%

Source: its own survey, 2016

Table 4.5 indicated the respondents‟ response of factors that affect supply chain. Accordingly, 52 respondents (89.7%) agreed that information technology allows suppliers, manufacturers, distributors, retailers, and customers to reduce lead time, paperwork, and other unnecessary activities for your company supply chain as a critical factor of supply chain management in brewery industry in Ethiopia. Forty three respondents (74.1%) considered communication tools as critical factor of supply chain management in brewery industry in Ethiopia that are used to facilitate data transfer and communication between the trading parts and include Electronic Data Interchange EDI, electronic fund transfer (EFT), intranet, internet, and extranet. The highest score were also registered on two factors supplier markets and material sourcing.

Specially, material sourcing was selected by 45 respondents (77.6%) next to information technology as they believed that changes in the market your company be a sensible company that regarding firm-supplier relationship on the critical factor of supply chain management in brewery industry in Ethiopia. The forty five respondents (69.0%) They also selected and assure that their company always looking for low-cost raw material, domestic or imported and considered it as critical factor of supply chain management in brewery industry in Ethiopia. These four were the main factors that were selected in the category of yes by most respondents.

In contrasting way, there factors namely relationships with suppliers relationships with customers and value-added process (manufacturing) were selected in the category of no by more than 50% of the respondents. A supply chain relationship was not mostly selected (43%) as critical factor of supply chain management in brewery industry in Ethiopia that play an important role in achieving the firm‟s goals. More than 50 % of respondents did not consider working with different suppliers in different ways as critical factor of supply chain management in brewery industry in Ethiopia. Exactly 50% of respondents did not believe that customers to look for more choices, better service, higher quality, and faster delivery, does your company turn the relationship with customers on a strategic issue for today‟s companies consider as critical factor. The highest score for category of no (56.9%) was laid on using smart modifications and apply them as critical factor for value-added products that can be commodity processes or products that already exist can be considered.

4.2.1 Testing the factors that affecting Supply Chain in Brewery

In this study, the four steps were involved to analyze the data using a chi-square goodness-of-fit test in SPSS Statistics. Also, it is important to note that these procedures were assumed to give the correct results as there were a set up your data correctly in SPSS Statistics. No data were entered as the summated frequencies for each group of the categorical variable. Thus, there were no weighted cases at all and Table 4.6 indicated as below the test of the respondents‟ response of factors that affect supply chain.

- the Chi-Square test statistic sort of summarizes the residuals and hence indicates the overall difference between the data and the hypothesis. The larger the chi-square value, the less the data "fit" the null hypothesis;
- degrees of freedom (df) specifies which chi-square distribution applies;
- Asymp. Sig. refers to the p value

Table 4.6: The test of the Respondents‟ response of factors that affect supply chain

	Information technology	Communication tools	Planning tools	Supply chain relationships	Relationships with suppliers	Relationships with customers
Chi-Square	36.483[a]	13.517[a]	3.379[a]	1.103[a]	.069[a]	.000[a]
df	1	1	1	1	1	1
Asymp. Sig.	.000	.000	.066	.294	.793	1.000

	Value-added process (manufacturing)	Flexibility	Quality	Production system	Supplier Markets	Material Sourcing
Chi-Square	1.103[a]	.069[a]	.069[a]	3.379[a]	8.345[a]	17.655[a]
df	1	1	1	1	1	1
Asymp. Sig.	.294	.793	.793	.066	.004	.000

Source: its own survey, 2016

The Chi-Square test statistic sort of summarizes the residuals and hence indicates the overall difference between the data and the hypothesis. The larger the chi-square value, the less the data "fit" the null hypothesis. In this case, information technology, communication tools, supplier markets and material sourcing have the larger the chi-square value. The result indicates that the chi-square for information technology is 36.483, for communication tools is 13.517, for supplier markets is 8.345 which is the lowest among the highest chi-square factors results and finally for material sourcing is 17.655. The significance for these factors namely information technology, communication tools and material sourcing have 0.0. But the factor called supplier markets has a little bit higher among the significant group (0.04). Other factors have more than 0.05 significant level and indicate that they insignificant and no effect on the supply chain practices in brewery industry.

The degrees of freedom (df) specifies which chi-square distribution applies and it has one value for all factors. Asymp. Sig. refers to the p value and information technology, communication tools, supplier markets and material sourcing have less than 0.05 value. It indicates that information technology allows suppliers, manufacturers, distributors, retailers, and customers to reduce lead time, paperwork, and other unnecessary activities for your company supply chain as a critical factor of supply chain management in brewery industry in Ethiopia. It can be considered communication tools as critical factor of supply chain management in brewery industry in Ethiopia that are used to facilitate data transfer and communication between the trading parts and include Electronic Data Interchange EDI, electronic fund transfer (EFT), intranet, internet, and extranet. In addition, there is a change in the market on their company be a sensible company that regarding firm-supplier relationship as critical factor of supply chain management in brewery industry in Ethiopia. Further, the breweries are always looking for low-cost raw material, domestic or imported as critical factor of supply chain management in brewery industry in Ethiopia.

Jack et al. (2007) indicated that fierce competition in today"s global markets and the heightened expectations of consumers have forced business enterprises to invest in and focus attention on, the relationships with their customers and suppliers. While the need for increased efficiency in enterprise operations persists, modern management thinking advocates the collaboration among business partners and the responsiveness to client needs as additional thrusts towards a successful competitive strategy. It is within this context that Supply Chain Management (SCM) has become part of the senior management agenda in western countries since the 1990s,

particularly in the manufacturing and retailing industries. More recently, interest in SCM has also been growing in the agri food industry, both in developed and developing countries. Just as their counterparts in manufacturing and retailing, executives of agri food enterprises are becoming aware that successful coordination, integration and management of key business processes across members of their supply chains will ultimately determine their competitive success. Moreover, agri food businesses increasingly realize that they no longer compete as solely autonomous entities. Instead, competition occurs more and more among entire supply chains.

This study result shows that the fierce competition in today‟s brewery markets in the country and the heightened expectations of consumers have not forced business enterprises to invest in and focus attention on, the relationships with their customers and suppliers. This is because the brewery competition is in infancy stage in the country and the perceptions on consumers have not forced business enterprises to invest in and focus attention on the relationships with their customers and suppliers. There is also no need for increased efficiency in enterprise operations persists and the breweries did not have a modern management thinking advocates the collaboration among business partners and the responsiveness to client needs as additional thrusts towards a successful competitive strategy. It is within this context that Supply Chain Management (SCM) has not become part of the senior management agenda like western countries.

Jack also added as the increased interest in SCM has also been spurred by developments in Information and Communication Technology (ICT) that enable frequent exchange of huge amounts of information among chain participants, for purposes of coordination. Consequently, there is a need and an opportunity for a joint approach of business partners towards the establishment of more effective and efficient supply chains. This is especially true in agrifood supply chains, because of shelf-life constraints of food and agricultural products and increased consumer attention to safe and environment/animal-friendly production methods. In this regard, our breweries have developed and invested in Information and Communication Technology (ICT) that enable frequent exchange of huge amounts of information among chain participants, for purposes of coordination.

4.4 The relationship of the factors that affect supply chain management in brewery industry

Paul Lord, 2014, on his article on Gartner about supply chain lessons and innovations from the history of U.S. brewing industry indicated that beer market demonstrates some fundamental supply chain truths and has been transformed by a few innovations. These are four basic factors that were elected in this study. Production scale and product quality are basics determined the early entrants who came to dominate the industry. Supply chain integration can integrate vertically to maximize cost competitiveness. Customer focus and innovation as for the German brewers produced Bavarian ale which has a heavy taste and is very filling. This suited German drinkers who preferred to savor one or two beers as part of a „liquid meal" beer re-defined and came to dominate the industry as it perfectly suited American tastes. Marketing and distribution can be expressed by Busch that was once again the leading innovator.

Table 4.7: Respondents" response about the relationship of factors

Correlations

		Production scale and product quality	Supply chain integration	Customer focus and innovation	Marketing and distribution
Production scale and product quality	Pearson Correlation	1	.341**	.479**	.724**
	Sig. (2-tailed)		.009	.000	.000
	N	58	58	58	58
Supply chain integration	Pearson Correlation	.341**	1	.405**	.367**
	Sig. (2-tailed)	.009		.002	.005
	N	58	58	58	58
Customer focus and innovation	Pearson Correlation	.479**	.405**	1	.586**
	Sig. (2-tailed)	.000	.002		.000
	N	58	58	58	58
Marketing and distribution	Pearson Correlation	.724**	.367**	.586**	1
	Sig. (2-tailed)	.000	.005	.000	
	N	58	58	58	58

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

Source: its own survey, 2016

According to Table 4.6 that indicates the respondents‟ response about the relationship of factors, production scale and product quality has a less correlation with supply chain integration (r=0.341) and a moderate correlation with customer focus and innovation (r= 0.479) and a strong correlation with marketing and distribution (r = 0.724).

However, the previously studies indicated that supply chain integration can integrate vertically to maximize cost competitiveness. Thus, there is a less vertically integrate with production scale and product quality in brewery industry in Ethiopia. Customer focus and innovation is also a less interaction with production scale and product quality like the German brewers that produced Bavarian ale which has a heavy taste and is very filling. This is not fully suitable for Ethiopian drinkers who preferred to savor one or two beers as part of a „liquid meal‟ beer re-defined and came to dominate the industry. Marketing and distribution can be expressed like the Busch that was once again the leading innovator. It has aligned with the production scale and product quality. In most cases, the breweries invested a lot in marketing and sales in Ethiopia.

Table 4.8: Testing the relationship of factors

Test Statistics

	Production scale and product quality	Supply chain integration	Customer focus and innovation	Marketing and distribution
Chi-Square	3.379[a]	3.379[a]	5.586[a]	.621[a]
df	1	1	1	1
Asymp. Sig.	.066	.066	.018	.431

a. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 29.0.

Source: its own survey, 2016

Table 4.8 indicates chi-square for the factor called production scale and product quality is 3.379 and the significant level is 0.066 which is insignificant. It can be said that the production scale and product quality are insignificant determined factor that have a relationship in the supply chain management to be dominate in brewery industry in Ethiopia. The factor called supply chain integration has a chi-square test of 3.379 (sig: 0.066) and indicates insignificant value.

The respondents slightly believed that supply chain integration that is the brewers integrated vertically to maximize cost competitiveness that determine as critical factor that have a relationship in the supply chain management in brewery industry Ethiopia. The chai-square result of customer focus and innovation shows 5.586 with sig blow 0.05 (0.018) indicate that respondents agreed that customer focus and innovation is a determinant factor that has a relationship in the supply chain management important in Ethiopia brewery industry.

A very low chi-square result is registered on marketing and distribution and it can be expressed as respondents disagreed on marketing and distribution which is a determinant factor that has a relationship in the supply chain management is the leading innovator in Ethiopia brewery industry.

4.5 Constraints in brewery industry in relation to supply chain management in Ethiopia

In this part the respondents‟ responses on assessing the constraints of brewery industry in Ethiopia in relation to supply chain management are collected as follows:

- It is indicated that breweries opt to manage their supply chain internally
- There is also more challenging situation in this regard and one of this problem is delivering the right brew for markets across the country on time and in quality condition requires extensive logistics expertise
- The problem will be vast when brewers‟ operations expand
- brewers simply do not have an adequate keg inventory to expand to multi-state distribution and meet a new market demand

- No proper sufficient on-hand inventory due to foreign currency shortage, contacting limited suppliers, the raw materials needed to a huge investment, raw materials‟ life are short
- Lack the time, resources and/or expertise to handle supply chain efficiently
- There are totally a shortage of effective application of the principles of SCM practice
- supply chain is unable to provide the needed service required for satisfying its teeming customers who are the backbone of the company
- No proper strategic supplier partnership relationship and investment in suppliers, the supply of raw materials considered as critical to continuous operations is not secured
- Not foresee disruptions in materials flow in the future

In fact, the findings indicates that suppliers and the company have not adopted a concept to continuously explore areas of product and cost improvement, thereby selling product at competitive prices as compared to their competitors. Some suppliers have even been given warehouses within the company to stock and manage materials on behalf of the breweries. These according to respondents, they have insignificantly reduced cost of operation and reduces lead time.

The study revealed that the breweries need to recognize the need to ensure effective communications between members of their supply chain network. The free flow of suitable information through established channels within the brewery to make information available when is needed by any member of the supply chain has been instrumental to their progress. In addition, it was recognized in this study that delivery dependency to customers and customer relationships through regular interactions aim providing the necessary feedback for service improvements has been instrumental towards an effective business performance. This has been the bases for product improvement and new product development to satisfaction of customers.

In regard to procurement network, as of manufacturing operations, respondents explained their company procurement network that can support and react to the supply chain needs and in selecting a strategic supplier that provides manufacturing locations with consistent global quality and a reliable local service, is a challenge. According to the, there is a less procurement network that can support and react to the supply chain needs and in selecting a strategic supplier that provides manufacturing locations with consistent global quality and a reliable local service, is a challenge. There are also a pressure to produce high-quality products that are safe is an increasing challenge. There is no a supply strategies in a lean environment that support the operations strategy

in breweries in Ethiopia. But there is an access to the latest technology in various fields by having the right experts that has proven to be a great support.

It was also indicated that supply chain management was applied by companies across the brewery industry in the country due to its demonstrated results such as delivery time reduction, improved financial performance, greater customer satisfaction, building trust among suppliers, and others. Ethiopian breweries started refurbishing supply chain practices to improve their performance. Thus, it is important to first understand how their supply chains work in brewery. In order to understand how a supply chain works, it is important to identify the factors affecting supply chain management. The identification of these factors in this study showed that there are not fully applied the supply chain factors by all breweries in the country.

There is also no benchmarking in the manufacturing sector of beer industry in the country and it complicated the supply chain process in the country. Thus, it is always a difficult task to achieve for reasons such as confidentiality, time concerns, and targeted processes (what to benchmark). Most of the time the decision on what to benchmark comes directly from the top manager‟s point of view and that decision is arbitrarily made. There are no planning/research tools to help managers in making this decision by considering vision, mission and key internal business processes.

Chapter 5
Summary, Conclusion and Recommendation

5.1 Summary

In this study, it was conducted based on breweries industry employees and the profile of the respondents showed that only 8 (13.795%) of the respondents are below the age of 30 years and the majority of the respondents (48.28%) are above between 30 and 40 years. This can be taken as a plus towards the finding because age is usually taken as learning experience and together with other factors it can contribute to valid perception or opinion for the major study questions. Education level is among those profiles relatively more important ad a clue for the respondents‟ familiarity for the subject matter including their company‟s know-how. The result showed that out of the 39 respondents or 67.24 hold first degrees and 15 or 25.86 hold master‟s degree in different areas of fields. Respondents who were working less than 3 years was 10 or 17.24% and others respondents have more than three years of experience (greater than 80% o respondents) means that they have been in the company for the period the questionnaire requests to take in account while evaluating the perceived performance. The research was designed in such a way to get data from the management staff of supply chain management from four breweries found in and around Addis Ababa (120km radius) – procurement, inventory, logistics and transport departments.

As understood from the literature review, the overall objective of Supply Chain Management is to contribute to improvement in the company‟s bottom line or profitability. Related objectives include, reducing the costs mainly by reducing the inventory level and increasing the revenues by improving customer service through coordination and integration along the material flow, win-win relationships and end-customer focus.

Thus, this study indicated that information technology allows suppliers, manufacturers, distributors, retailers, and customers to reduce lead time, paperwork, and other unnecessary activities for your company supply chain as a critical factor of supply chain management in brewery industry in Ethiopia. It is also confirmed that communication tools as critical factor for supply chain management in brewery industry in Ethiopia that are used to facilitate data transfer and communication between the trading parts and include Electronic Data Interchange EDI, electronic fund transfer (EFT), intranet, internet, and extranet. The highest score were also registered on two

factors supplier markets and material sourcing. Similarly, material sourcing is essential for changes in the market your company be a sensible company that regarding firm-supplier relationship on the critical factor of supply chain management in brewery industry in Ethiopia and finally breweries companies in Ethiopia are looking for low-cost raw material, domestic or imported and considered it as critical factor of supply chain management in brewery industry in Ethiopia. These four were the main factors that were selected in the category of yes by most respondents.

In contrasting way, there factors namely relationships with suppliers relationships with customers and value-added process (manufacturing) were selected in the category of no by more than 50% of the respondents. A supply chain relationship was not mostly selected as critical factor of supply chain management in brewery industry in Ethiopia that plays an important role in achieving the firm‟s goals. Respondents did not consider working with different suppliers in different ways as critical factor of supply chain management in brewery industry in Ethiopia. Similarly, respondents did not believe that customers to look for more choices, better service, higher quality, and faster delivery, does your company turn the relationship with customers on a strategic issue for today‟s companies consider as critical factor. No smart modifications used and applied for value-added products that can be commodity processes or products that already exist can be considered.

In this study, the some steps were involved to analyze the data using a chi-square goodness-of-fit test in SPSS Statistics. The larger the chi-square value, the less the data “fit” the null hypothesis. In this case, information technology, communication tools, supplier markets and material sourcing have the larger the chi-square value. The result indicates that the chi-square for information technology is 36.483, for communication tools is 13.517, for supplier markets is 8.345 which is the lowest among the highest chi-square factors results and finally for material sourcing is 17.655. The significance for these factors namely information technology, communication tools and material sourcing have 0.0. But the factor called supplier markets has a little bit higher among the significant group (0.04). Other factors have more tan 0.05 significant level and indicate that they insignificant and no effect on the supply chin practices in brewery industry.

The degrees of freedom (df) specifies which chi-square distribution applies and it has one value for all factors. Asymp. Sig. refers to the p value and information technology, communication tools, supplier markets and material sourcing have less than 0.05 value. It indicates that information technology allows suppliers, manufacturers, distributors, retailers, and customers to reduce lead time, paperwork, and other unnecessary activities for your company supply chain as a critical factor

of supply chain management in brewery industry in Ethiopia. It can be considered communication tools as critical factor of supply chain management in brewery industry in Ethiopia that are used to facilitate data transfer and communication between the trading parts and include Electronic Data Interchange EDI, electronic fund transfer (EFT), intranet, internet, and extranet. In addition, there is a change in the market on their company be a sensible company that regarding firm-supplier relationship as critical factor of supply chain management in brewery industry in Ethiopia. Further, the breweries are always looking for low-cost raw material, domestic or imported as critical factor of supply chain management in brewery industry in Ethiopia.

This study result showed that the fierce competition in today‟s brewery markets in the country and the heightened expectations of consumers have not forced business enterprises to invest in and focus attention on, the relationships with their customers and suppliers. This is because the brewery competition is in infancy stage in the country and the perceptions on consumers have not forced business enterprises to invest in and focus attention on the relationships with their customers and suppliers. There is also no need for increased efficiency in enterprise operations persists and the breweries did not have a modern management thinking advocates the collaboration among business partners and the responsiveness to client needs as additional thrusts towards a successful competitive strategy. It is within this context that Supply Chain Management (SCM) has not become part of the senior management agenda like western countries.

Partnering with a supply chain provider for strategic solutions can help brewers manage their business more efficiently and cost-effectively while expanding their geographic reach. But this study assured that our breweries are focused on four main factors and did not give any stress and highlight for other factors.

These were four basic factors that were elected in this study. Production scale and product quality are basics determined the early entrants who came to dominate the industry. Respondents‟ response indicted that the relationship of factors. Accordingly, production scale and product quality has a less correlation with supply chain integration (r=0.341) and a moderate correlation with customer focus and innovation (r= 0.479) and a strong correlation with marketing and distribution (r = 0.724).

However, the previously studies indicated that supply chain integration can integrate vertically to maximize cost competitiveness. Thus, there is a less vertically integrate with production scale and product quality in brewery industry in Ethiopia. Customer focus and innovation is also a less interaction with production scale and product quality like the German

brewers that produced Bavarian ale which has a heavy taste and is very filling. This is not fully suitable for Ethiopian drinkers who preferred to savor one or two beers as part of a „liquid meal" beer re-defined and came to dominate the industry. Marketing and distribution can be expressed like the Busch that was once again the leading innovator. It has aligned with the production scale and product quality. In most cases, the breweries invested a lot in marketing and sales in Ethiopia.

This study also showed that chi-square for the factor called production scale and product quality is 3.379 and the significant level is 0.066 which is insignificant. It can be said that the production scale and product quality are insignificant determined factor that have a relationship in the supply chain management to be dominate in brewery industry in Ethiopia. The factor called supply chain integration has a chi-square test of 3.379 (sig: 0.066) and indicates insignificant value. The respondents slightly believe that supply chain integration that is the brewers integrated vertically to maximize cost competitiveness that determine as critical factor that have a relationship in the supply chain management in brewery industry Ethiopia. The chai-square result of customer focus and innovation shows 5.586 with sig blow 0.05 (0.018) indicate that respondents agreed that customer focus and innovation is a determinant factor that has a relationship in the supply chain management important in Ethiopia brewery industry. A very low chi-square result is registered on marketing and distribution and it can be expressed as respondents disagreed on marketing and distribution which is a determinant factor that has a relationship in the supply chain management is the leading innovator in Ethiopia brewery industry.

In this part the respondents" responses on assessing the constraints of brewery industry in Ethiopia in relation to supply chain management are collected as follows:

- It is indicated that breweries opt to manage their supply chain internally
- There is also more challenging situation in this regard and one of this problem is delivering the right brew for markets across the country on time and in quality condition requires extensive logistics expertise
- The problem will be vast when brewers" operations expand
- brewers simply do not have an adequate keg inventory to expand to multi-state distribution and meet a new market demand
- No proper sufficient on-hand inventory due to foreign currency shortage, contacting limited suppliers, the raw materials needed to a huge investment, raw materials" life are short
- Lack the time, resources and/or expertise to handle supply chain efficiently

- There are totally a shortage of effective application of the principles of SCM practice
- supply chain is unable to provide the needed service required for satisfying its teeming customers who are the backbone of the company
- No proper strategic supplier partnership relationship and investment in suppliers, the supply of raw materials considered as critical to continuous operations is not secured
- Not foresee disruptions in materials flow in the future

The study revealed that the breweries need to recognize the need to ensure effective communications between members of their supply chain network. The free flow of suitable information through established channels within the brewery to make information available when is needed by any member of the supply chain has been instrumental to their progress. In addition, it was recognized in this study that delivery dependency to customers and customer relationships through regular interactions aim providing the necessary feedback for service improvements has been instrumental towards an effective business performance. This has been the bases for product improvement and new product development to satisfaction of customers.

In regard to procurement network, as of manufacturing operations, respondents explained their company procurement network that can support and react to the supply chain needs and in selecting a strategic supplier that provides manufacturing locations with consistent global quality and a reliable local service, is a challenge. According to the, there is a less procurement network that can support and react to the supply chain needs and in selecting a strategic supplier that provides manufacturing locations with consistent global quality and a reliable local service, is a challenge. There are also a pressure to produce high-quality products that are safe is an increasing challenge. There is no a supply strategies in a lean environment that support the operations strategy in breweries in Ethiopia. But there is an access to the latest technology in various fields by having the right experts that has proven to be a great support.

It was also indicated that supply chain management was applied by companies across the brewery industry in the country due to its demonstrated results such as delivery time reduction, improved financial performance, greater customer satisfaction, building trust among suppliers, and others. Ethiopian breweries started refurbishing supply chain practices to improve their performance. Thus, it is important to first understand how their supply chains work in brewery. In order to understand how a supply chain works, it is important to identify the factors affecting

supply chain management. The identification of these factors in this study showed that there are not fully applied the supply chain factors by all breweries in the country.

There is also no benchmarking in the manufacturing sector of beer industry in the country and it complicated the supply chain process in the country. Thus, it is always a difficult task to achieve for reasons such as confidentiality, time concerns, and targeted processes (what to benchmark). Most of the time the decision on what to benchmark comes directly from the top manager‟s point of view and that decision is arbitrarily made. There are no planning/research tools to help managers in making this decision by considering vision, mission and key internal business processes

5.2 **Conclusion**

The brewery industry in Ethiopia has great potential to enhance manufacturing and export production, and thereby to increase employment opportunities and reduce poverty. It has several competitive advantages in different areas like labor, raw material, market and others. Thus, managing the Supply Chain in this business environment has a major impact on performance of all parties involved in the chain. Different SCM perspective including Supply chain performance in selected brewery industries should be investigated timelly.

We know that Supply Chain Management practice in our country is still in the infancy stages, there are small numbers of manufacturing companies integrating it to their organizational system. Furthermore, the Brewery industry in particular is weak in its SCM practice and most of the employees did not know the factors that help to enhance the supply chain management. . In addition, there are more challenges in the industry which resulted in reducing the quality and demand of products manufactured domestically. It is assured in this study that there are more problems as counted as poor SCM practice of organizations in the industry.

In addition, the findings from other research were tempered by the limitations of the study, which was recommended future research. Those researches conducted previously were in other countries and in different sector of manufacturing industries which possesses completely different culture and development stage respectively. Thus, one could assume that the finding will be different in developed countries where SCM practice are more advanced and under developed countries like Ethiopia.

There is also a pertinent gap in the brewery sector in Ethiopia about the factors that affecting Supply Chain Management in the Brewery Industry. Therefore, precisely, the problem that initiated the

researcher to conduct this study is the information gap about the factors affecting Supply Chain Management in the Brewery Industry which makes this study researchable. In fact, the findings indicates that suppliers and the company have not adopted a concept to continuously explore areas of product and cost improvement, thereby selling product at competitive prices as compared to their competitors. Some suppliers have even been given warehouses within the company to stock and manage materials on behalf of the breweries. These according to respondents, they have insignificantly reduced cost of operation and reduces lead time.

5.3 **Recommendation**

- The breweries companies in Ethiopia may identify the portfolio of key initiatives that will help transform their traditional supply chain into a demand-driven value network
- They may recognize that becoming demand driven is a change management journey, not a project. It requires clarity of vision and goals as well as a definition of what represents "good": transitioning from constrained, short time horizon demand signals to unconstrained, longer time horizon demand signals conveyed to all supply network stakeholders.
- The companies may build capabilities for nimble translation of demand into a profitable supply response based on customer commitments, supply constraints and conscious best-value trade-offs.
- They should invest in collaboration with key partners to create joint value
- Our brewery industries need to improve in the provision of information to customers on time.
- This study can clearly indicates that businesses are also advised to view supply chain management as a strategic activity, rather than just mere operational activity
- Also, future research could be conducted on “the contribution of supply chain management practice to attaining business goals and operational performance based on the factors affecting supply chain management.”

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Appendix

ADDIS ABABA UNIVERSITY SCHOOL OF COMMERCE

DEPARTMENT OF LOGISTICS AND SUPPLYCHAIN MANAGEMENT

Dear Respondent,

My name is Daniel Demessie, MA candidate at Addis Ababa University School of Commerce conducting a research entitled '*The Critical Factors that affecting Supply Chain Management in the Brewery Industry'*s a partial fulfillment of the requirement of my second degree.Thisquestionnaireisdesignedandgiventoyoutocollectdataaboutyourknowledge,attitudeand beliefs about your brewery supply chain management practices. Here, I promise you that your response will be kept absolutely confidential and used only for the consumptions of this paper. I really appreciate your genuine response for this questionnaire.

Directions

- ✪ No need to write your name,
- ✪ After carefully reading each Question, indicate your response by ticking the box which is relevant for you. And write in the blank spaces for the last question. Thank You!
- ✪ If you have any query, please do not hesitate to contact me and I am available at (**M:** ----------) and via email: yesiamendani@yahoo.com)

1. General information Questionnaires

A) Gender Male☐ Female☐

B) Age

18-30 years ☐ 31 –40years ☐

40-50 years ☐above 50 years ☐

C) Highest Level of education

Attained Primary School ☐Secondary School☐College diploma ☐

University level ☐Masters Degree ☐PhD ☐

Please indicate your agreement or disagreement on the following questions listed below by ticking (√) on each listed factors of supply chain management in brewery industry in Ethiopia.

	Items	Yes	No
1.	Do you agree information technology allows suppliers, manufacturers, distributors, retailers, and customers to reduce lead time, paperwork, and other unnecessary activities for your company supply chain as a critical factor of supply chain management in brewery industry in Ethiopia?	Yes	No
2.	Do you consider communication tools as critical factor of supply chain management in brewery industry in Ethiopia that are used to facilitate data transfer and communication between the trading parts and include Electronic Data Interchange EDI, electronic fund transfer (EFT), intranet, internet, and extranet?	Yes	No
3.	Do you apply supply chain management planning tools as a critical factor of supply chain management in brewery industry in Ethiopia that are intended to integrate the resource planning activities in a firm or organization?	Yes	No
4.	Do you believe Supply chain relationships as critical factor of supply chain management in brewery industry in Ethiopia that play an important role in achieving the firm‟s goals?	Yes	No
5.	Does your company consider working with different suppliers in different ways as critical factor of supply chain management in brewery industry in Ethiopia?	Yes	No
6.	For customers to look for more choices, better service, higher quality, and faster delivery, does your company turn the relationship with	Yes	No

	customers on a strategic issue for today‟s companies consider as critical factor?		
7.	Do you use smart modifications and apply them as critical factor for value-added products that can be commodity processes or products that already exist can be considered?	Yes	No
8.	Does your company customers‟ requirements as critical factor of supply chain management in brewery industry in Ethiopia to, accelerating or decelerating the manufacturing processes when it is requested.	Yes	No
9.	Do you believe that your company meets or exceeds the expectations of your customer by achieving the use of quality metrics, which improves the production system and by achieving better efficiency, quality and productivity, and acquiring the highest value of a product at lower cost will improve the business performance as critical factor?	Yes	No
10.	Does your company change the industrial structure of the production system that adds value to processes, which will help to expand their business future that could be achieved by reducing activity time, cost processes, and identifying bottlenecks that will improve the production processes as critical factor of supply chain management in brewery industry in Ethiopia?	Yes	No
11.	Do you believe that changes in the market your company be a sensible company that regarding firm-supplier relationship as critical factor of supply chain management in brewery industry in Ethiopia?	Yes	No
12.	Does your company always looking for low-cost raw material, domestic or imported as critical factor of supply chain management in brewery industry in Ethiopia?	Yes	No

1) What is the relationship of the factors that is the perception of employees about the supply chain management in brewery industry?

- To understand the relationship of the factors that is the perception of employees about the supply chain management in brewery industry

Please indicate your agreement or disagreement on the following questions listed below by ticking (√) on each listed as the relationship of the factors of supply chain management in brewery industry in Ethiopia.

	Items	Yes	No
1)	Do you believe that Production scale and product quality are determined factor that have a relationship in the supply chain management to be dominate in brewery industry in Ethiopia?	Yes	No
2)	Do you believe that supply chain integration that is the brewers integrated vertically to maximize cost competitiveness that determine as critical factor that have a relationship in the supply chain management in brewery industry Ethiopia?	Yes	No
3)	Do you agree customer focus and innovation is a determinant factor that has a relationship in the supply chain management important in Ethiopia brewery industry?	Yes	No
4)	Do you agree that marketing and distribution is a determinant factor that has a relationship in the supply chain management is the leading innovator in Ethiopia brewery industry?	Yes	No

2. Main Questionnaire Part Two

1. **Please indicate what Supply Chain Management challenges face in your industry?**

_____

_____

_____

2. **As manufacturing operations, Please explain your company procurement network that can support and react to your supply chain needs and in selecting a strategic supplier that provides manufacturing locations with consistent global quality and a reliable local service, is a challenge?**

_____

_____

_____

3. **Does your brewery have a pressure to produce high-quality products that are safe is an increasing challenge?**

4. **Does you brewery have a supply strategies in a lean environment that support the operations strategy?**

_____

_____

_____

5. **Does your brewery have an access to the latest technology in various fields by having the right experts that has proven to be a great support?**

_____

_____

_____