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The Effect of Supply Chain Integration on Operational Performance: An Empirical Evidence from Coca Cola Company, Bahirdar Plant.

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July, 2022

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Declaration

I, the undersigned, declare that this research paper is my original work and that all sources of the materials in the research paper have been duly acknowledged. The matter embodied in this project work has not been submitted earlier for award of any degree or diploma to the best of my knowledge and belief.

Name: **Hana Feleke**

Signature: _____

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List of Acronyms

BD	Bahirdar
CCBA	Coca Cola Beverages Africa
CI	Customer Integration
CO	Cost
EABSC	East Africa Bottling Share Company
ERP	Enterprise Resource Planning
FL	Flexibility
FP	Firm Performance
II	Internal Integration
SCI	Supply Chain Integration
SCM	Supply Chain Management
SI	Supplier Integration
TI	Time
QA	Quality

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Abstract

The main objective of the study was to investigate the supply chain integration and its effect on Operational performance of East African Bottling Share Company Bahirdar Plant. Explanatory research design with quantitative research approach was employed. The study primarily aimed to gather data from 84 managers and supervisors. The selection of the respondents was based on census technique. The quantitative data collected through questionnaire instrument was analyzed using descriptive and inferential statistics. Moreover, descriptive statistics was used to present the result. In addition, the study also used multiple linear regression test was used to evaluate the significant supply chain integration factors affecting firm performance. Based on the questionnaire data, the study concluded that the supply chain integration accounted for 85.6 % of variance in firm performance. In connection, the study also concluded that supplier integration, internal integration and customer integration affected firm performance positively and significantly. Furthermore, the study concludes internal integration was the best predictor of firm performance by contributing 40.2% of the change in the level of performance. Based on the conclusions the study recommends, for the company to focus on customer and internal integration and to create healthy relationship among the company and stakeholders.

Key words: Integration, Customer, Internal, Supplier, Firm, Performance

Chapter One

1. Introduction

1.1. Background of the study

Related to current technological advancements and increase in supply of identical goods and services customers' needs and requirements have been changed and upgraded. Customers has started to look for a suitable product in suitable place, at suitable time with high quality and fair price. For companies to stay in the market and compete it is important to meet the above requirements. To meet these requirements organizations should improve their activities and process. Supply chain management is a system that improves all activities which carried out by organization. Supply chain management is a complex system which covers all supportive activities from suppliers to after sales services. To be able to grow and survive any organization has to identify its strengths and weaknesses, to re-enforce on strengths and overcome weaknesses. Implementing supply chain management can be a source of competitive advantages which lead to better overall organizations' performance. Supply chain management is a fundamentally different philosophy of business organization and is based upon the idea of partnership in the marketing channel and a high degree of linkage between entities in that channel (Sebastian Kot. 2014).

The supply chain as a whole is closely coordinated in order that total channel inventory is minimized, bottlenecks are eliminated, time-frames compressed and quality problems eliminated (Sebastian Kot. 2014). Lambert and cooper, 2000) stated that supply chain management requires integration and coordination for satisfying and responding to changes in consumer demand. A higher level of interaction between supply chain members can be explained in terms of building close and long-term relationships based on mutual understanding. Collaboration among supply chain actors is needed in order to compete in today's business environments. Long-term relationships that are created between supply chain partners based on collaboration need to be underpinned by mutual understanding and willingness to maintain the relationship (Ismail Abushaikha, 2014).

Supply-chain integration has become a prominent issue during the last decade especially the last 16 years. In recent years, there has been a great deal of empirical evidence to show that successful supply-chain integration can improve a firm's performance and competitive

advantage (Weingarten et al. 2010). Supply chain management (SCM) seeks to enhance competitive performance by closely integrating the internal cross-functions within a company and effectively linking them with the external operations of suppliers, customers, and other channel members to be successful (Kim, 2006). This means that a firm that is pursuing SCM practices needs to pay attention to supply chain integration (SCI) and its implementation (Hussein & Nassar, 2010). Supply chain integration (SCI) is the degree to which a manufacturer strategically collaborates with its supply chain partners and collaboratively manages intra- and inter organization processes. The goal is to achieve effective and efficient flow of products and services, information, money and decisions, to provide a maximum value to customer at low cost and high speed (Flynn, Huo and Zhao, 2010). And many researchers like Flynn 2 et.al, 2010 and BaofengHuo, 2012 pointed out that supply chain integration influences performance. Vaidya and Hudnurkar (2012) stated that collaboration in supply chain plays a dominant role for improving organization's performance and gaining competitive advantage.

Cooper, et al. (1997) said that to utilize the supply chain at its maximum performance level, organizations have to integrate its goals and activities together. Vaidya, et. al (2012:294) mentioned that supply-chain partners need to focus on various elements to ensure competitive advantage: price negotiation to increase in margin, and financial collaboration to ensure innovative product design. Lambert and cooper, (2000) announced that supply chain management requires integration and coordination for satisfying and responding to change in consumer demand. Finally, Frohlich and Westbrook, (2001) pointed out that supply chain integration influences performance.

Going through all these it seems critical to study the effect of supply chain integration on operational performance. So, this study investigates the effect of supply chain integration on operational performance at Coca cola beverages Africa Bahirdar Plant.

1.2. Organization overview

Coca cola beverages Africa (CCBA) is a bottling share company highly expanding and investing on Africa market. It is the eighth largest bottling partner worldwide and the biggest on the Africa continent operating in 14 countries, having 39 plants in the continent, serving over 600,000 outlets, employing 20,000 people and holding the number one market position in soft drink in all of the countries the company is operating. The company is known for its

soft drink products with over 300 brands. The company has started working in Ethiopia by opening its first plant at Addis Ababa in 1959 with one production line. Following market expansion and high demand of the product the second plant was opened at Diredawa in 1965. These plants were not even enough in addressing the demand of soft drink products then two additional production lines were added in Addis Plant.

1.3. Statement of the problem

Supply chain integration is one of the key elements in improving firm performance. It is important for the stake holders to understand the level of integration that their supply chain has and its role on firm performance. An empirical study conducted by Frohlich and Westbrook (2001) concluded that integrative practices and a high level of integration have a positive impact on corporate and supply chain performance. And a study by Ram Janm Singh and Nagendra Sohani(2011) has also confirmed that there is a positive and significant relationship between operational performance and supply chain integration. Research by Daniel Atnafu and Shambachew Oumer(2015) has also assessed the case in Ethiopian chemical industries and confirmed that there is a positive and significant relationship between supply chain integration and firms operational performance.

The coca cola company Bahirdar Plant is the latest plant of the coca cola beverages Africa in Ethiopia which has started its operation at its fullest in 2016 serving north market or three regions of the country Amhara, Afar and Tigray. The company is highly investing in order to have an integrated supply chain operation and supporting its overall performance as a firm as well. A lot of studies have been done on supply chain's effect on firm performance but not even a single one on the beverage industry as far as my knowledge. The company is highly investing to integrate supply chain believing it would boost operational performance. And this paper found it very important making sure all this investment would pay back in positively increasing operational performance. So, considering this, this paper assesses the case on beverages industry. Through analyzing the level of supply chain integration, this study discusses what effect does supply chain integration has on operational performance of the company.

1.4. Objectives of the study

1.4.1. The general objective of the study

The aim of the research is to examine the level of supply chain integration and its role on firm performance in East African Bottling Share Company Bahirdar Plant.

1.4.2. Specific objectives of the study

The specific objectives of the study were

- To Investigate the effect of customer integration on the Operational performance of East Africa Bottling Share Company Bahirdar Plant.
- To Investigate the effect of Supplier integration on the Operational performance of East Africa Bottling Share Company Bahirdar Plant.
- To Investigate the effect of internal integration on the Operational performance of East Africa Bottling share company Bahirdar Plant.

1.5. Research Hypothesis

The following three Hypothesis were developed and tested for this study

- H1 = Supplier Integration is Positively related with Firm performance.
- H2 = Customer Integration is Positively related with firm performance.
- H3 = Internal Integration is Positively related with firm performance.

1.6. Significance of the study

This study comes up with a clear stand on the role of supply chain integration on firm performance and gives insights to managers and stakeholders on the supply chain sector on where to focus to improve the performance of a firm and would be a reference for further studies on the topic and the field as well.

1.7. Scope of the Study

This study has conceptual, methodological, and spatial scope. Conceptually, the scope of this study is delimited to the theoretical and empirical explanations of the effects of supply chain integration on operational performance.

Methodologically, this study is delimited to a quantitative research design in which datas are obtained from a distributed questionnaire. Spatially/Geographically, the study is delimited to East Africa Bottling share company bahirdar plant which is located in Bahirdar Ethiopia.

1.9. Definitions of Basic Terms

Supply Chain Integration: the degree to which a manufacturer strategically collaborates with its supply chain partners and collaboratively manages intra- and inter-organizational processes, in order to achieve effective and efficient flows of products and services, information, money and decisions, to provide maximum value to the customer (Flynnet.al, 2010).

Customer Integration: The process of building and maintaining a strong relationship and partnership with the customers. It includes sharing the knowledge, experiences, products, services, and suggestions with customers (Zahra Lotfi et. al.2013).

Supplier Integration: The process of cooperation between supplier and organization that facilitate sharing of information, knowledge, materials and experiences (Stank, et al.2001).

Internal Integration: The process of maintaining cross-functional cooperation and collaboration within the organization that intends to achieve organizational strategic goals (Flynn, et al. 2010). **Firm Performance:** Group of standards and benchmarks that are adopted and used by the organizations to achieve competitive advantage, customer satisfaction, and maximum level of profitability. In this study Firm performance was measured by the following dimensions: Flexibility, Time (Speed), Quality, and Cost.

Flexibility: The ability of organization to adapt to fluctuation in demand in term of product or service specification, volume, and on-time delivery (Rosenzweig, et al. 2002).

Time (Speed): Delivery time that is required by the company to provide the product or and services to the customer according to agreed timetable (Gimenez, et al. 2011).

Quality: In this study quality defined as the degree to which supply chain integration meets customer needs and demands (Juran and Godfery, 1998).

Cost: The total costs and expenses that are incurred by completing all/ and or specific activities and operations within supply chain (Bowersox, et al. 2009).

1.10. Organization of the study

This research paper is organized into five chapters: Chapter one contains the introduction part dealing with background of the study, the research problem, objectives of the study, scope, significance and limitation of the study. On the second chapter both theoretical and empirical Literatures regarding the research topic were reviewed. In chapter three the methodologies expected to be used for the study were presented. The fourth and the fifth chapter consist of results, discussions and conclusion and recommendation sections.

Chapter Two

2. Review of Related Literatures

2.1. Introduction

Supply chain integration, Firm performance and the relationship between two was defined by different authors in different terms. Their definitions were based on the nature of the study they have carried out, the industry under the study and the research objectives. Supply chain integration is about collaboration, cooperation and coordination among different players of supply chain which enhances organization's performance. The following section will be going through the concepts of supply chain integration and firm performance, as well as, the relationship between them.

2.2. Theoretical review

2.2.1. Supply Chain

A supply chain consists of all parties involved, directly or indirectly, in fulfilling a customer request. The supply chain includes not only the manufacturer and suppliers, but also transporters, warehouses, retailers, and even customers themselves. Within each organization, such as a manufacturer, the supply chain includes all functions involved in receiving and filling a customer request. These functions include, but are not limited to, new product development, marketing, operations, distribution, finance, and customer service. (Sunil Chopra & Peter Mendi, Supply chain Management strategy, planning and operation 2007).

Wheelen and Hunger (2012) stated that "Supply chain management is the forming of networks for sourcing raw materials, manufacturing products or creating services, storing and distributing the goods, and delivering them to customers and consumers". Then they added that the concept of supply chain is used first to reduce costs, and then to improve customer service and get new products to market faster than others. And Krajewski, et. al (2013) defined supply chain as it is the interrelated series of processes within a firm and across different firms that produce a products or service to the satisfaction of customers. Having all these we can say that supply chain management is the active management of supply chain activities to maximize customer value and achieve a sustainable competitive advantage. It

represents a conscious effort by the supply chain firms to develop and run supply chains in the most effective & efficient ways possible.

2.2.2. Supply Chain Integration

The same as supply chain different meanings has been given to supply chain integration too. Due to the intense of global competition, the organizations create cooperative and mutually beneficial relationship among supply chain partners (Wisner and Tan, 2000). Bowersox et. al. 1999, Westbrook and Frohlish (2001), pointed out that organizations or companies need to implement supply chain integration to meet the new challenges of the global competitive environment. Many studies propose different supply chain definitions. Committee on Supply Chain Integration, 2000 defined it as "An association of customers and suppliers who are using management techniques, work together to optimize their collective performance in the creation, distribution, and support of an end product. It may be helpful to think of the participants as the divisions of a large, vertically integrated corporation, although the independent companies in the chain are bound together only by trust, shared objectives, and contracts entered into on a voluntary basis" According to Flynn et. al, (2010), Supply chain integration is the degree to which a manufacturer strategically collaborates with its supply chain partners and collaboratively manages intra- and inter-organizational processes, in order to achieve effective and efficient flows of products and services, information, money and decisions, to provide maximum value to the customer). Supply chain integration, if applied effectively, is known to bring about a significant improvement to all companies. The target of seamless supply chain is to enhance material and information flows within a company and also connect it with other supply chain members. With the technology available today, very intimate, beneficial and profitable supply chain integrations can be structured (Zahra et.al. 2013). Summing up all these we can say supply chain integration is a close alignment and coordination within a supply chain.

2.2.3. Supply Chain Integration Elements

According to Meindl and Chopra 2007 to better understand supply chain integration it's better to classify it into three macro process or stages.

1. Customer Integration
2. Supplier Integration
3. Internal Integration

Although the internal and external integration is the key element for SCI, there is much emphasis on customer and supplier integration only, ignoring the important central link of internal integration. They argue that the diverse dimensions of SCI can ultimately be collapsed into three dimensions: customer, supplier and internal integration. Internal integration and external integration play different roles in the context of SCI. while internal integration recognizes that the departments and functions within a manufacturer should function as part of an integrated process, external integration recognizes the importance of establishing close, interactive relationships with customers and suppliers (Flynn et al., 2010). At the start, the organizations were focusing on what they were able to do to manage the business and achieve their goals which were represented by the profitability and customer satisfaction, so the main focus was on managing internal processes between the departments which were effective at that time. Later, the concept of organizational performance was coupled with supply chain performance, so the organizations that plan to continue, compete, survive, and being superior over the other competitors started to adopt this concept and tried to expand the scope of managing the relationship with the other supply chain parties (suppliers and customers). Today, companies use enterprise system packages to integrate their internal functions. By achieving internal integration with enterprise systems, shared database will be used for company's all functions, there will be gains such as improvements in information flow and processes in the company. Transactions between companies will be performed more effectively by information sharing in supply chain with integrating with customers and suppliers. The internal integration and external integration of the companies in the supply chain will ensure that companies to be more competitive (Ozdemir, A.I. and Asla, E. 2011). Basic Enterprise Resource Planning (ERP) is one of various software systems that used to make the integration between the three processes (stages). ERP is a system that effectively integrates all information required by the operating process functions including finance, accounting, human resources, production, material management, quality management, allocation and distribution, and sales by organization or process reengineering and information technology (Stephen, 2000, cited in Adaileh, J.M. and Abu-alganam, M.K. 2010). Adaileh, J.M. and Abu-alganam, M.K. 2010 studied the role of ERP on supply chain integration (internal and external). The results showed that both internal and external integration are positively related with ERP. Many researches and academic papers have been written about supply chain management and its elements. Some investigated supply chain integration. Others were studied supply chain performance, while others discussed mediating

factors that affect supply chain integration or performance and/ or both of them. Finally, some studies have addressed both elements together (supply chain integration and performance).

Flyn, et al. (2010) analyzed the impact of SCI dimensions (customer, supplier and internal) and SCI pattern on business and operational performance. The results showed that internal integration and customer integration are more strongly related to performance than supplier integration. La Hatan et al. (2013) studied the impact of supply chain integration on company performance using competitive advantage as relationship mediation. Zhang and Huo (2012) focused on dependence and trust and its impact on external integration (supplier and customer). Zhao, et al. (2011) emphasized on internal integration, and concluded that internal integration is the source of both customer and supplier integration through relationship commitment to customer and relationship commitment to supplier.

Sohailet al. (2009) studied the relationship between organizational strategy, supply chain integration, environmental uncertainty and organizational performance. Results showed that organization strategy does have a positive impact on the supply chain integration, while environmental uncertainty has negative impact on supply chain integration. Hosseini, et al. (2012) investigated the impact of supply chain integration (customer, internal and supplier) on competitive capabilities. The results showed that Integration with customers directly and positively influences on competitive capabilities. But internal integration is not directly related with competitive capabilities. This variable affects competitive capabilities positively through integration with other partners of supply chain. Huo (2012) examined the impact of supply chain integration (Supplier, Internal and customer integration) on three types of company performance (supplier-related, customer related and financial performance) using supplier related and customer related performance as a mediating variable.

Huo (2012) concluded that internal integration improves external integration, and both integrations directly and indirectly enhance company performance. Xu, et al. (2014) explored intra-organizational resources (Top management support and Information technology) and inter-organizational capabilities (Supplier and Customer integration) and its effect on competitive advantage (Performance). They found that inter organizational resources were vital enablers of supply chain integration. In addition, both supplier and customer integration have significant effect on business performance. Zhao, et al. (2013) investigated the impact of

supply chain risk (supply delivery, and demand delivery risk) on supply chain integration (supplier, internal, and customer integration) and company performance (schedule attainment, competitive performance, and customer satisfaction). Based on previous studies regarding to the importance of all supply chain elements, this study intended to investigate all the supply chain variables/dimensions: Supplier, Internal, and Customer integration variables.

2.2.3.1 Supplier Integration

Supplier integration refers to acquiring operational, technical and financial information with the suppliers. Manufacturers and suppliers may share information including production plans, demand forecasts and levels of inventory. This information sharing results in enhancing the product and production requirements and better utilizing the supplier's and the firm's capability and structure of cost (Zahra Lotfiet al.2013).

Stank, et al. (2001), defined supplier integration as "the degree to which a firm can partner with its key supplier members". Some authors use the term downstream integration to express supplier integration. Scannell, et al. (2000) has focused on upstream integration, analyzing the integration with suppliers. Flynn, et al. (2010), has also comment on supplier integration as it involves core competencies related to coordination with critical suppliers. So accordingly, this study will define supplier integration as the process of cooperation between supplier and organization that facilitate sharing of information, knowledge, materials and experience.

2.2.3.2 Internal Integration

Many researchers and academicians in the field has defined Internal integration in different words. Flynn, et al. (2010) defined internal integration as "the degree to which a manufacturer structures its own strategies, practices and processes into synchronized, collaborative processes to fulfill its customers' requirements and efficiently interact with suppliers". Internal integration is integration within all internal departments from incoming material to distribution. It involves integration across departments and functions under the control of the manufacture in order to fulfill customers' requirements. This suggests that more consideration should be given to interplay in the middle of functional departments, for instance production, procurement, logistics, inventory, marketing, sales and distribution (Zahra Lotfiet al.2013). Internal integration mainly involves data and information system integration through the use of enterprise resources planning (ERP), real-time searching of inventory and operating data,

and integration of activities in different functional areas. Internal integration also involves cross-functional cooperation, or working together across different functions in process improvement or new product development. Internal integration recognizes that different functions within a firm should not act as functional silos, but instead as part of an integrated process (Zhao, et al.2011).

2.2.3.3 Customer Integration

Managing the relationship with customer is considered a vital element in supply chain. Customer integration was discussed and defined by different researchers' perspectives. Flynn, et. al. (2010), discussed that customer integration involves core competencies derived from coordination with critical customers. Kulp, et. al. (2004) have studied the integration with buyers. Van der Vaart and Van Donk (2008:51) analyzed supply chain integration from different perspectives: attitudes, pattern, and practices. While other authors have studied integration with customers and suppliers such as Salvador, et. al. (2001); Frohlich and Westbrook (2001); and Narasimhan and Kim (2002). Rosenzweig, et. al. (2002) examined supply chain integration as a single dimensional construct, while Droge, et. al. (2004); Koufteros, et. al. (2005); Flynn, et. al. (2010) and Zhao, et. al. (2011) considered a broader perspective for supply chain integration as internal integration and external integration. Huo, B. (2012) said that both supplier integration and customer integration can be classified as external integration.

2.2.4. Supply chain integration and firm performance

It is very known that Firm performance can both directly and indirectly be affected by various reasons. Supply chain Integration has also been mentioned by different scholars and researchers as one of the factors having significant role on the performance of a firm. Let’s have a look at some of the ideas pointed out by those researchers and scholars.

Scannell, et. al. (2000) concluded that supply chain practices were positively associated with aggregation measures of cost and flexibility. Salvador, et. al. (2001); Frohlich and Westbrook (2001); and Vickery, et. al. (2003) found a positive and direct relationship between information technology integration and supply chain integration. Chen and Paulraj, (2004) said that: internal integration of different departments within a firm should act as integrated process. Kulp, et. al. (2004); Gimenez and Ventura, (2005); and Fynes, et. al. (2005) showed the importance of downstream integration. Bagchi, et. al. (2005) stated that supply chain

integration affects operational performance, and the degree of integration influences cost and efficiency. Swink, et. al. (2007) and Flynn, et. al. (2010) pointed out that external integration emphasizes the importance of cooperation and collaboration with suppliers and customers.

Frohlich and Westbrook (2001); Swink, et. al. (2007); Van der Vaart and Van Donk, (2008); and Zhao, et. al. (2011) have been suggested that supplier integration and customer integration play different roles in performance improvement and capability development. Xiao, et. al. (2010) found a significant role of both relationship commitment and trust in improving cooperation performance and operational performance. Flynn, et. al. (2010) found that internal integration and customer integration were more strongly related to performance improvement than supplier integration. Gimenez, et. al. (2011) found that a positive effect of integration on performance in terms of profits, delivery speed, and transportation cost.

Alam, et,al. (2014) mentioned that due to integration supplier get closer to their customers and may involve customers in shaping and fabricating the products or service in a way to satisfy customers' demands. This study determines at some point regarding supply chain integration's role on firm performance at coca cola Company Bahirdar plant by considering Supplier integration, Internal Integration and customer integration as independent variables while considering operational or firm performance elements such as cost, quality, time and Flexibility as dependent variables.

I. Flexibility

Building the competitive strategy to be flexible requires the commitment toward certain actions and activities, among these are educating the employee for different tasks, motivate employee for more flexible work schedules, working in teams, and enhancing communication in the organization. Rosen Zweig, et al. (2002) defined flexibility as" the ability of the firm to develop flexible operations in hypercompetitive environment to meet the frequent changes in volume, product mix and schedules occur".

II. Time (Speed)

The traditional dimensions to measures performance are expressed by delivery time and lead time. Different studies defined time, lead time, and cycle time. Cycle time is the time between one completion jobs or tasks to another, i.e. from starting one process or task to start the same process or task again. Lead time is the time that is required from setting the order by customer to deliver the product or service (company and supplier) including manufacture,

transportation, processing, warehousing, and delivering the product or service to the final customer (Gimenez, et al. 2011).

III. Quality

Juran and Godfery (1998) emphasized on two definitions of quality

1). "Quality is those features of products which meets customer needs and thereby provide customer satisfaction".

2) “Quality means freedom from deficiencies-freedom from errors that require doing work over again (rework) or that result in field failures, customer dissatisfaction, customer claims, and soon. In this sense, the meaning of quality is oriented to costs, and higher quality usually costs less”. Supply chain integration requires that quality be more than a set of abstract standards. Quality must be a systemic way of doing business that is instilled in all participants in the chain. Quality has become critical in supply chains using just-in-time manufacturing with low inventory level (Committee on Supply Chain Integration, 2000).

IV. Cost

The most common and important measure in evaluating operational supply chain is cost. Bowersox, et al. (2009) defined the cost as the total cost incurred to accomplish specific operation. Vaidya and Hudnurkar (2012) defined cost as the summation of all costs that includes: inbound and outbound freight, warehouse cost, third party storage cost, order processing cost, direct labor cost, administrative and service costs. Cirtita, H. and Segura, 2012 defined the cost as "the total costs associated with operating the supply chain". Building the strategy based on reducing the overall costs entail to run out the following: reducing inventories, maximum utilization of resources, work- in- process inventory turnover, and eliminating non-value-added activities.

2.3 Empirical review

In the above theoretical literature reviews, it was shown that there is a strong relationship between supply chain integration and performance. Some studies claimed that there is a strong relationship between supplier and customer integration and organizational performance, other studies comment the presence of relationship between upstream and downstream interactions and operational performance, another group of studies assured the

inevitability of relationship between supplier, internal, and customer integration with the overall organizational performance. Almost all studies concluded that the supply chain integration is considered as vital process that affects operational performance, consequently the organizations' overall business performance. Now let's see the result of different studies on this area has find out.

Kim (2006) study title: "The effect of supply chain integration on the alignment between corporate competitive capability and supply chain operational capability", designed to identify the shape of interactive relationship between supply chain operational capability and corporate competitive capability, and identify the role of supply chain integration on these interactive cap/abilities. Data were collected through questionnaire of 623 respondents (from Korea and Japan). Confirmatory factor analyses, and regression analysis were conducted. It found that the effect of interaction between operational capability and corporate competitive capability on performance improvements became insignificant related to the substitute role of supply chain integration.

Devaraj, et. al. (2007) study title: "Impact of e-Business technologies on operational performance: The role of production information integration in the supply chain", designed to identify the impact of information technology on performance. Questionnaire was used as tool of collecting data and distributed on different industries. The total number of the sample was 1464 from different industries such as computer components, printed circuits boards, electronic equipment and supplies, and automotive bodies and parts. Descriptive statistics and correlations tests were applied to analyze the results. It was found that information technology was supporting supplier integration and customer integration as well. In addition, it was found also the supplier integration has a positive impact on performance.

Zelbst, et. al. (2009) study titled: "Impact of supply chain linkages on operational performance" , aimed at examining the impact of supply chain linkages on operational performance. A total of 145 manufacturing and services sector managers were surveyed. The measurement scales were assessed for reliability and validity and further assessed within a measurement model context. Study hypotheses were 36 then tested using a multiple regression approach. It found that power, benefits, and risk reduction linkages were positively and significantly impact operational performance. Power identified as the dominant linkage for manufacturers, and risk reduction as the most important within the services sector.

Jassim (2010) study title: "The Strategies of supply chain and its impact to achieve the competitive advantage: case study in Diwaniyah Textile state factory", aimed at explore the relationship between supply chain strategies and competitive advantage. Total valid questionnaires were 30 questionnaires. It was collected from the managers in the factory.

Mean, standard deviation, correlation, multiple regression was applied. It was found that there was a positive impact of supply chain strategies (outward strategies) on competitive advantage.

Al-Shaar (2010) study titled: "The Impact of Supply Chain Integration through the Supply Chain Response on Operational Performance in Large and Medium Sized Jordanian Industrial 37 Companies: A Field Study", aimed at exploring the impact of supply chain integration on operational performance through mediator (supply chain response). The researcher used the questionnaire, 141 questionnaires were collected. Structural equation modeling was used to test the hypothesis and the study model. It found that supply chain integration (Internal, strategic, and external integration) was affecting the operational performance.

Gimenez, (2011) study titled: " Supply chain integration and performance: the moderating effect of supply complexity", aimed at investigating the effectiveness of supply chain integration in different contexts. A survey-based research design was developed to measure different dimensions or aspects of supply chain integration and supply complexity. Data were collected from manufacturers in The Netherlands and Spain from different industries such as Manufacture of pulp, manufacture of chemicals, manufacture of radio and television, manufacture of medical instruments, manufacture of motor vehicles, and manufactures of machinery and computers.145 completed and valid questionnaires were collected (80 from Netherland and 65 questionnaires from Spain). Factor analysis, regression analysis was performed. It found that supply chain integration increased performance if supply complexity was high, while a very limited or no influence of supply chain integration can be detected in case of low supply complexity. The results also showed that in high supply complexity environments the use of structured communication means to achieve supply chain integration had a negative effect on cost performance.

Huo (2012) study titled: "The impact of supply chain integration on company performance: an organizational capability perspective", purpose to examine the impact of three types of

supply chain integration (internal, supplier, and customer integration) on three types of company's performance from the perspective of organizational capability (supplier-oriented performance, customer-oriented performance, and financial performance). Data were collected from 617 companies in China. Reliability, validity, and structural equation modeling method were performed. It found that internal integration improves external integration and that internal and external integration directly and indirectly enhance company's performance.

Hamad (2013) study titled: "The impact of supply chain integration on organizational performance and the role of environmental turbulence: An empirical study on food industry firms in Jordan", purposed to investigate the impact of supply chain integration on organizational performance on the food industry firms in Jordan. Casual descriptive analytical method was used. Questionnaire was administered and the actual collected and used in analysis were 326 respondents for all food industry firms. Mean, standard deviation, t-test, simple regression and path analysis tests were applied. It was found that there was a significant impact of supply chain integration on organizational performance and environmental turbulence.

Han, et. al. (2013) study titled: "The impact of supply chain integration on firm performance in the pork processing industry in China", aimed at investigating the effects of supply chain integration on firm performance in pork supply chains in China. The study followed by a causal research approach and survey methodology to collect data from 229 pork processors. It suggested that internal integration and buyer supplier relationship coordination are significantly related to firm performance in both relationships. Information technology integration not significantly related to both upstream and downstream relationships. Logistics integration significantly contributes to pork processors' performance in relationships with downstream customers.

2.1.6. Conceptual Framework

Based on overall review of related literature, and the aim that the study wants to address the following conceptual framework is used to govern the study.

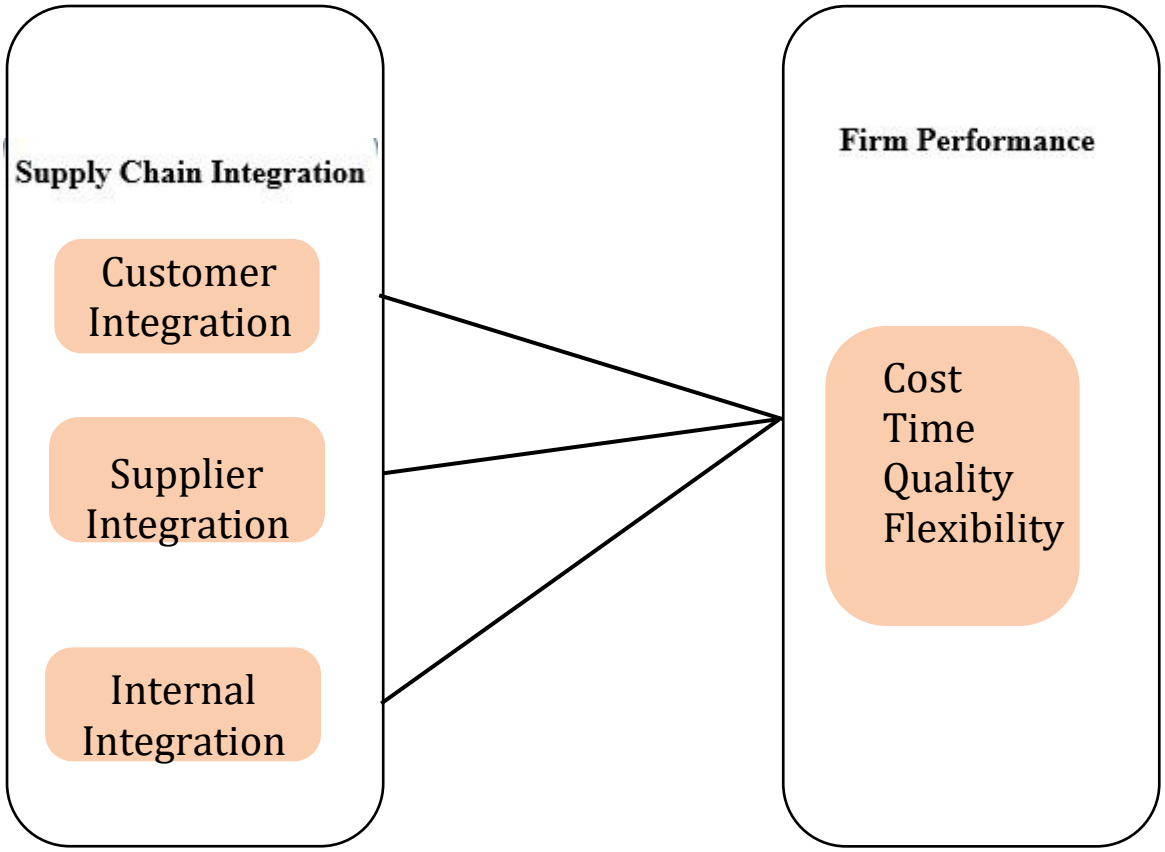


Figure 1: Conceptual Framework

2.4. Research Hypothesis

The following three Hyphothesis were developed and tested for this study

- Hyphotesis 1: Supplier Integration is Positively related with Firm performance.
- Hyphotesis 2: Customer Integration is Positiviely related with firm performance.
- Hyphotesis 3: Internal Integration is Positively related with firm performance.

2.5. Summary of Review

A Number of Books,Research Papers and different articles were reviewd regarding the topic. Even though the areas, intentions, methodologies and scope of all those was very different the relationship between supply chain integration and Firm Performance was Vague but as each study tried to figure out on its way and proved through experiments the vaguness of the topic or the relationship at first has been cleared out each step. So, this study will definetly contribute for the field as it will be done on a bottling company which is different from all my references as they were taking experiences from Pharemaceutical and food sectors widely.

Chapter Three

3. Research Methodology

3.1. Introduction

Research methodology is a way to systematically solve the research problem. It may be understood as a science of studying how research is done scientifically. It studies the various steps that are generally adopted by a researcher in studying his research problem along with the logic behind them. It is necessary for the researcher to know not only the research methods/techniques but also the methodology. So, in this section the Research Paradigm, Research Approach, Research Design, Target Population, Sample Design, Data sources, Data Collection Methods, Analysis Techniques and methods of interpretation were discussed.

3.2. Research Design

The study was conducted by the use of the explanatory research design aimed to examine the level of supply chain integration and its role on firm performance in East African Bottling Share Company Bahirdar Plant. According to Serakan (2003) a descriptive study is taken in order to ascertain and describe the characteristics of the variable of interest.

Research design explains and justifies the type and method of data collection, source of information, sampling strategy and time-cost constraints (Saunders, Lewis & Thornhill, 2012). The research designs that was used in this study is explanatory research design. The explanatory design was used to investigate the effect of supply chain integration on the operational integration of East Africa Bottling share company Bahirdar Plant.

3.3. Research Approach

For the purpose of this study, quantitative research approach was utilized. The Quantitative method helps to generate extensive information (breadth) and provides results which can be condensed to statistics and were collected through closed ended questionnaire. For this reason, both quantitative data collection instrument to gather accurate data and information from respondents involved coca cola Company Bahirdar plant were used.

3.4. Target Population of the Study

Since the information that this study is looking for cannot be gained from shop floor employees with limited knowledge and poor analysis of supply chain integration and its role on firm performance the target population of the study were employees at Supervision, Team leading and management positions on different functions of the company.

3.5. Sampling Design

The Sampling Design used in this study is non-probability sampling design as samples of the study are going to be selected purposely.

3.5.1. Sampling Technique

As described earlier on the target population it's very important to make decisions regarding the people involving in this study in order to have the real figure of the case under Study.
Census sampling technique was used.

3.5.2. Sample Size

Samples were grouped based on departments or functions of the aggregate sample in order to make easy analysis. A total number of 84 samples from managers, team leaders and supervisors at different positions on the company were taken.

3.6. Methods of Data Collection

3.6.1 Source of Data

Primary data source was used for the study. Primary Data was collected from employees in different positions of the company using structured questionnaires. Therefore, the researcher has used questionnaire in order to get accurate information with regarding examine the level of supply chain integration and its effect on the operational performance of East African Bottling Share Company Bahirdar Plant.

3.6.2 Data Collection Instruments

Questionnaire was used as a primary data collection instrument so as to collect reliable information for the research. Questions were prepared based on reviewed literatures and basically in order to address the aim of the study. Questions were developed in a way that measures the impact of proposed independent variables on the dependent variables. The

questionnaire had three sections the first section deals with demographic backgrounds of respondents; while the second and third section deals with supply chain integration and firm performance respectively. All of the questionnaire items were measured by using Likert five-point rating scale.

3.7. Method of Data Analysis

After the data was collected then it was analyzed by using quantitative data analyzing techniques. For quantitative analysis. Both descriptive and inferential statistics were used to analyze and interpret the findings.

Demographic variables of the respondents and mean scores of the supply chain integration and the firm performances are interpreted using descriptive statistics whereas inferential statistics was used to find out the relation between the supply chain integration on firm performance.

3.8. Ethical Consideration

In the course of this study, all requirements of the selected organization and the research procedures of the Bahir Dar University were properly adhered. All the scientific evidence and supporting documents were consulted and acknowledged. All the participants in this study are appropriately informed about the purpose of the research and their consents were secured before the beginning of the data gathering process. The researcher also informed the subject that their response is only for the purpose of the study. In addition, the researcher assured the respondents that their identity and that of their organizations confidential issues kept confidential.

Chapter Four

4. Results and Discussions

4.1 Introduction

As mentioned in chapter one, the purpose of this study was to investigate the Supply chain integration on firm performance by taking East Africa bottling Share Company Bahirdar plant as a sample for the study. Accordingly, the findings of the study are presented and discussed in this chapter. Hence, it is the purpose of this chapter to present, analyze, and interpret data collected through a structured questionnaire. Descriptive statistics were used to show the demographic characteristics of respondents and the research questions at the outset of the study.

The study is conducted by distributing questionnaire, which was designed with five Likert scales ranging from five to one, where 5 represents Strongly agree, 4-Agree, 3-Neutral, 2Disagree, and 1-Strongly Disagree. Correlation and regression analysis were performed on a scale typed questionnaire in order to assess the relationship between supply chain integration and Firm Performance. To generate the survey data, a total of 84 questionnaires were distributed to employees of the company at managerial and supervision level. However, 80 questionnaires were correctly filled and returned, while the remaining 4 were not returned. As a result, a response rate of 95.24% was obtained in the study, which was deemed adequate for the analysis. SPSS statistical software was used to present and analyze the collected data.

4.2 Reliability Analysis

The study examined the reliability of the questionnaire items. According to Nunuly, (1977) the reliability coefficients shall be above 0.7 in order to state the instrument is reliable. Therefore, the study used Cronbach alpha to test the reliability of the instruments and the result is presented below.

1 Reliability Analysis

Variables	Cronbach's Alpha	No of Items
Supply integration	.792	10
Internal integration	.739	10
Customer integration	.727	10
Performance	.811	24
Overall reliability	.913	54

Source: Own Survey (2022)

The result of the reliability statistics showed that the alpha values for supply integration, internal integration and customer integration were 0.792, 0.739 and 0.727 respectively. In addition to the above the performance or the dependent variable also showed 0.811 alpha value. Moreover, the overall reliability of the instrument yielded 0.913. Thus, the result showed that none of the Cronbach alpha coefficient were below 0.7.

4.3. Response rate

The study gathered information from sample respondents at the selected office stated above. The sample respondents had participated in the research through filling out the questionnaire. The rese\arch had targeted 84 employees but only 80 questionnaires were completed successfully which leads to a response rate of 95.24 %. This was used to the analysis of the study.

4.4. Demographic profiles of respondents

The basic demographic profile of respondents who participated in the study as respondents is presented below.

4.4.1. Age, Education level and sex composition of respondents

The following table indicates the basic demographic profile of the respondents with respect to their age, educational level and sex compositions.

2. Demographic profile of respondents

		Frequency	Percent
Sex of respondents	Male	53	66.3
	Female	27	33.8
	Total	80	100.0
Age of respondents	25-35	37	46.3
	35-45	35	43.8
	45-55	7	8.8
	>55	1	1.3
	Total	80	100.0
Education level of respondents	Diploma/Less	4	5.0
	Bachelor	43	53.8
	Masters	31	38.8
	Above	2	2.5
	Total	80	100.0

Source: Own Survey (2022)

Of those who completed the survey, 66.3 % were male and 33.8 % female respondents. Furthermore, of those completing the survey 37(46.3%) were aged in between 25-35, 43.8 % between 35 and 45, and the remaining 8.8% and 1.3% of respondents were aged in between 45 – 55 and above 55 years respectively.

As far as the educational status of surveyed respondents is concerned the study result showed us that 53.8 and 38.8% of respondents were had completed first degree/bachelor and master's educational qualifications respectively. In addition, only 2.5 % of respondents had above master's degree educational qualification. The result also indicated 5% of respondents indicated their educational statuses were Diploma/Less.

4.2.2. Position, competency and experience of the respondents

The demographic profile of respondents including position, competency and experiences of the respondents are summarized in the table 4.2.

3. Position, competency and experience of respondents

		Frequency	Percent
Position	Manager	10	12.5
	Team Leader	58	72.5
	Employee	12	15.0
	Total	80	100.0
Competency	Manufacturing	20	25.0
	Logistics	17	21.3
	Sales & Marketing	20	25.0
	Finance	16	20.0
	Procurement	7	7.5
	Total	80	100.0
Experience	Less or Equal 5	31	38.8
	Between 5-10	35	43.8
	Between 10-15	8	10.0
	+15	5	6.3
	5	1	1.3
	Total	80	100.0

Source: Own survey, 2022

From those who completed the survey, 12.5 % were managers and 72.5 % of respondents were team leaders and 15% of the respondents were employee. Furthermore, of those completing the survey 20(25%) were from manufacturing, 17(21.3%) were from logistics, 20(25%) were from sales and marketing and the remaining 16 (20%) and 7(7.5%) of respondents were from finance and procurement respectively.

When the experiences of surveyed respondents is examined the study result showed us that 38.8 and 43.8% of respondents had experience of less than or equal to five years and between 5 to 10 years respectively. In addition, only 1.3% of respondents had experience of 5 years. The result also indicated 10% and 6.3% of respondents' experiences of between 10 to 15 years and above 15 years respectively.

4.3. Descriptive statistics

4.3.1. Description of study supply chain

Supplier integration

The following section briefly describes the results related to supply integration. Accordingly based on respondents answer the following table shows the result for supply integration.

Table 4. 4 Supplier integration

Supplier Integration	N	Mean	Std. Deviation
The company share information with suppliers through the electronic network.	80	3.8375	0.66454
The company is working to build partnership with suppliers	80	4.0250	0.63595
The company is working with suppliers through clear contracts (regarding the quantities, specifications, costs, and delivery)	80	4.1000	0.60796
Suppliers are committed to the required specifications	80	3.8250	0.89690
Suppliers contribute in product design	80	3.3875	1.08492
The company is holding regular meetings with suppliers to review the business issues.	80	3.3375	1.06668
There are joint activities between the company and suppliers (Training program, joint celebrations, exchange of experience)	80	3.4625	1.01811
The company and suppliers are connected with an electronic system to control the inventory	80	3.3375	1.12445
The company and suppliers are discussing the significant changes that affect the continuity of their relationship	80	3.6000	0.96259
There are common awareness programs hold between the company and suppliers to develop the business	80	3.3250	1.07650
Supplier Integration	80	3.6238	0.55100
Valid N (listwise)	80		

Source: Own survey, 2022

The above table shows; the level of company's sharing information with suppliers through the electronic network was reported by the respondents. The result reveals that there was calculated mean value (M=3.8375 and SD = 0.06654) to the level company's sharing information with suppliers through the electronic network in relation to supplier integration. That is, the mean value to the level of company's sharing information with suppliers through the electronic network was rated high.

The level of company's work to build partnership with suppliers was also reported by respondents. The study result revealed that company's work to build partnership with suppliers was rated as high with a mean value (M=4.025 and SD = 0.63595). That is, the level of company's work to build partnership with suppliers is found above the moderate level of the Likert five-point rating scale analysis bench mark. This implies that the level of company's work to build partnership with suppliers was found high in the study area.

Moreover, the level of company's work with suppliers through clear contracts (regarding the quantities, specifications, costs, and delivery) was also reported by respondents. The study result revealed that company's work with suppliers through clear contracts (regarding the quantities, specifications, costs, and delivery) was rated as high level with a mean value (M=4.1 and SD = 0.60796). That is, the level of company's work with suppliers through clear contracts (regarding the quantities, specifications, costs, and delivery) is found above the moderate level of the Likert scale. This implies that the level of company's work with suppliers through clear contracts (regarding the quantities, specifications, costs, and delivery) was found high in the study area.

As far as the level suppliers' commitment to the required specifications was rated as high with a mean value (M=3.825 and SD = 0.8969). That is, the level of suppliers' commitment to the required specifications is found above the moderate scale. This implies that the level of suppliers' commitment to the required specifications was found high in the study area.

In addition, respondents were also asked to indicate the level of suppliers' contribution in product design was rated as moderate level with a mean value (M=3.3875, SD= 1.08492). That is, the level of suppliers' contribution in product design is found inside the moderate scale of the Likert five-point analysis bench marks. This implies that the level of suppliers' contribution in product design was found moderate in the study area.

The above table also shows; respondents were also asked to indicate whether the company is holding regular meetings with suppliers to review the business issues or not. The result reveals that respondents on average rated M= 3.3375 and SD = 1.06668 to the variable of related to the conducting regular meetings with suppliers to review the business issues. This implies that the level of conducting regular meetings with suppliers to review the business issues is found medium in the study area.

Respondents were also asked to indicate whether there are joint activities between the company and suppliers (Training program, joint celebrations, exchange of experience) or not. The result reveals that respondents on average rated M= 3.4625 and SD = 1.01811 to the variable in relation to conducting joint activities between the company and suppliers. This implies that the level of conducting joint activities between the company and suppliers is found medium in the study area.

The level of connection between the company and suppliers with electronic system to control inventory was also reported by respondents. The study result revealed that connection between the company and suppliers with electronic system to control inventory was rated as medium with a mean value (M=3.3375 and SD = 1.12445). That is, the level of connection between the company and suppliers with electronic system to control inventory is found inside the moderate level of the Likert scale. This implies that the level of connection between the company and suppliers with electronic system to control inventory was found moderate in the study area.

Moreover, the level of agreement whether or not the company and suppliers are discussing the significant changes that affect the continuity of their relationship was also reported by respondents. This item on average rated or M = 3.6 and SD = 0.96259 that discussion between the company and suppliers in changes that can affect the continuity of their relationship was rated as medium level.

As far as the level conducting common awareness programs hold between the company and suppliers to develop the business was rated as moderate level with a mean value (M=3.6238 and SD = 1.0765). That is, the level of conducting common awareness programs hold between the company and suppliers to develop the business is found inside the moderate scale. This implies that the level of conducting common awareness programs hold between the company and suppliers to develop the business was found moderate in the study area.

Finally, the Group mean values for supplier integration was rated as high level with a mean value (M=3.6238 and SD = 0.551). That is, the level of supplier integration is found above the moderate scale of the Likert five-point analysis bench mark scale. This implies that the level of coca cola Company's supplier integration was found high in the study area.

Internal Integration

Internal integration was also reported by the study. The result of the respondents' agreement is presented with item by item with the following table.

Table 4. 5 Internal Integration

Internal Integration	N	Mean	Std. Deviation
The company is constantly striving to unify their culture with stakeholders (mission and vision)	80	4.1625	0.70160
The company involves different department during the preparation of strategic plan	80	3.9125	0.64029
The company uses MRP system (to harmonize forecasting, procurement, production, and sales)	80	4.1250	0.64386
There is an internal network for the exchange of information between the employees	80	4.0750	0.67082
The company holds training program to increase the employee's competencies	80	3.9875	0.70250
The company is keen to hold regular meetings with departments managers to coordinate the work	80	4.0125	0.70250
The company holds extensive meetings to increase the homogeneity among employees	80	3.9500	0.76141
The company allow the employees to participate in solving the problems and internal conflicts and settlement	80	3.9625	0.70160
Departments share ideas in the development of production processes	80	3.9625	0.70160
There are multiple teams working with each other interactively	80	4.1375	0.63133
Internal Integration	80	4.0287	0.35192
Valid N (listwise)	80		

Source: Own survey, 2022

The above table shows; the level of company's effort in constantly striving to unify their culture with stakeholders was reported by the respondents. The result reveals that there was calculated mean value (M=4.1625 and SD = 0.7016) to the level company's effort in constantly striving to unify their culture with stakeholders in relation to internal integration

dimension. That is, the mean value to the level of company's effort in constantly striving to unify their culture with stakeholders was rated high.

The level of company's effort to involve different departments during preparation of strategic plan was also reported by respondents. The study result revealed that company's effort to involve different departments during preparation of strategic plan was rated as high with a mean value (M=3.9125 and SD = 0.64029). That is, the level of company's effort to involve different departments during preparation of strategic plan is found above the moderate level of the Likert five-point rating scale analysis bench mark. This implies that the level of company's effort to involve different departments during preparation of strategic plan was found high in the study area.

Moreover, the level of company's practice of MRP system was also reported by respondents. The study result revealed that practice of MRP system was rated as high level with a mean value (M=4.125 and SD = 0.64386). That is, the level of company's practice of MRP system is found above the moderate level of the Likert scale. This implies that the level of practice of MRP system was found high in the study area.

As far as the level internal network for the exchange of information between the employees was rated as high with a mean value (M=4.075 and SD = 0.67082). That is, the level of internal network for the exchange of information between the employees is found above the moderate scale. This implies that the level of internal network for the exchange of information between the employees was found high in the study area.

In addition, respondents were also asked to indicate the level of providing training program to increase the employee's competencies were rated as moderate level with a mean value (M=3.9875, SD= 0.7025). That is, the level of providing training program to increase the employees' competencies is found above the moderate scale of the Likert five-point analysis bench marks. This implies that the level of providing training program to increase the employees' competencies was found moderate in the study area.

Respondents were also asked to indicate whether the company is keen to hold regular meetings with departments' managers to coordinate the work or not. The result reveals that respondents on average rated M= 4.0125 and SD = 0.7025 to the variable of related to the conducting regular meetings with departments managers to coordinate the work. This implies

that the level of conducting regular meetings with departments' managers to coordinate the work is found high in the study area.

In addition, respondents were also asked to indicate whether or not the company holds extensive meetings to increase the homogeneity among employees or not. The result reveals that respondents on average rated M= 3.95 and SD = 0.76141 to the variable in relation to holding extensive meetings to increase the homogeneity among employees. This implies that the level of conducting extensive meetings to increase the homogeneity among employees is found high in the study area.

The level of company effort to allow the employees to participate in solving the problems and internal conflicts and settlement was also reported by respondents. The study result revealed that company effort to allow the employees to participate in solving the problems and internal conflicts and settlement was rated as medium with a mean value (M=3.9625 and SD = 0.7016). That is, the level of company effort to allow the employees to participate in solving the problems and internal conflicts and settlement is found above the moderate level of the Likert scale. This implies that the level of company effort to allow the employees to participate in solving the problems and internal conflicts and settlement was found high in the study area.

Moreover, the level of agreement whether or not the departments share ideas in the development of production processes was also reported by respondents. This item on average rated or M = 3.9625 and SD = 0.7016 that the level of departments share ideas in the development of production processes was rated as high level.

As far as the level relation existence of multiple teams working with each other interactively was rated as moderate level with a mean value (M=4.1375 and SD = 0.63133). That is, the level of existence of multiple teams working with each other interactively is found above the moderate scale. This implies that the level of existence of multiple teams working with each other interactively was found high in the study area.

Finally, the group mean values for internal integration was rated as high level with a mean value (M=4.0287 and SD = 0.3512). That is, the level of internal integration is found above the moderate scale of the Likert five-point analysis bench mark scale. This implies that the level of coca cola Company's internal integration was found high in the study area.

Customer integration

Customer integration was also reported by the respondents. The result is presented with the table below.

Table 4. 6 Customer integration

Customer Integration	**N**	**Mean**	**Std. Deviation**
Customer's satisfaction is central goal that the company pursued to achieve	80	4.2250	0.65555
The company seeks to build partnership with customers	80	4.0250	0.67458
There is specialized customer service department in the company	80	3.2625	1.39387
The company has a fast system to receive orders from the customers	80	3.9875	0.99992
The company reserves the full databases about their customers	80	3.7625	0.90349
The company set up scientific seminar for its customers	80	2.7000	1.04821
Company customers are encouraged to provide feedback	80	3.6250	0.90533
The company deals with the complaints and observations of the customers properly	80	3.7750	0.65555
The company engages its customers in the preparation of marketing programs	80	3.8000	0.81753
The company engages its customers in the design of the company's products	80	3.1000	1.05062
Customer Integration	**80**	**3.6263**	**0.44714**
Valid N (listwise)	80		

Source: Own survey, 2022

Respondents were asked to indicate their agreement whether or not customer's satisfaction is central goal that the company pursued to achieve by the company. The result reveals that there was calculated mean value (M=4.225 and SD = 0.65555) to the level of customer's satisfaction is central goal that the company pursued to achieve. That is, the mean value to the level of customer's satisfaction is central goal that the company pursued to achieve was rated high.

The level of building partnership with customers was also reported by respondents. The study result revealed that company's effort to build partnership with customers was rated as high with a mean value (M=4.025 and SD = 0.67458). That is, the level of building partnership is found above the moderate level of the Likert five-point rating scale analysis bench mark. This implies that the level of company's effort to build partnership with customers was found high in the study area.

Moreover, the level of availability of specialized customer service department in the company' was also reported by respondents. The study result revealed that the availability of specialized service was rated as high level with a mean value (M= 3.2625 and SD = 1.39387). That is, the level of availability of the specialized customer service department in the company is found inside the moderate level of the Likert scale. This implies that the level of practice of availability of specialized service was found medium.

As far as the level availability of whether the company has a fast system to receive orders from the customers was rated as high with a mean value (M=3.9875 and SD = 0.99992). That is, the level of existence of the fast system to receive orders from the customers is found above the moderate scale. This implies that the level of availability of fast system to receive orders from the customers was found high in the study area.

In addition, respondents were also asked to indicate the level of the existence of company's reserves the full databases about their customers was rated as moderate level with a mean value (M=3.7625, SD= 0.90349). That is, the level of availability of full data base about their customers is found above the moderate scale of the Likert five-point analysis bench marks. This implies that the level of availability of the full data bases of the company was found high in the study area.

Respondents were also asked to indicate whether the company set up scientific seminar for its customers or not. The result reveals that respondents on average rated M= 2.700 and SD =

1.04821 to the variable of related to the conducting scientific seminars for its customers. This implies that the level of conducting scientific seminars for is found moderate in the study area.

In addition, respondents were also asked to indicate whether or not the company customers are encouraged to provide feedback. The result reveals that respondents on average rated M=

3.6250 and SD = 0.90533 to the variable in relation to encouraging customers to provide feedback. This implies that the level of customers to provide feedback is found high in the study area.

The level of agreement on whether the company deals with the complaints and observations of the customers properly or not was also reported by respondents. The study result revealed that company deals with the complaints and observations of the customers properly was rated as medium with a mean value (M= 3.775 and SD = 0.6555). That is, the level of company effort to company deals with the complaints and observations of the customers properly is found above the moderate level of the Likert scale. This implies that the level of company effort to deal with the complaints and observations of the customers properly was found high in the study area.

Moreover, the level of agreement whether or not the company engages its customers in the preparation of marketing programs was also reported by respondents. This item on average rated or M = 3.8 and SD = 0.81753 that the level of departments share ideas in the development of production processes was rated as high level.

As far as the level company engages its customers in the design of the company's products was rated as moderate level with a mean value (M=3.1 and SD = 1.05062). That is, the level of company's engagement of its customers in the design of the company's products is found above the moderate scale. This implies that the level of company's engagement of its customers in the design of the company's products was found high in the study area.

Finally, the group mean values for customers integration was rated as high level with a mean value (M=3.6263 and SD = 0.44714). That is, the level of customers' integration is found above the moderate scale of the Likert five-point analysis bench mark scale. This implies that the level of coca cola Company's customer integration was found high in the study area.

4.3.2. Description of the firm performance

The study analyzed the company's firm performance from flexibility, time, quality and cost dimensions. Accordingly, the result is presented below.

Over all firm performance

The study analyzed the overall firm performance. Accordingly, the following table displays the average performance scores of each respondent.

Table 4. 7 Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Firm performance	80	2.88	4.54	3.8190	.37162
Flexibility	80	2.17	4.67	3.4959	.71803
Time	80	2.33	5.00	3.6607	.47475
Quality	80	3.50	5.00	4.0583	.41970
Cost	80	2.33	5.00	4.0571	.43947
Valid N (listwise)	80				

Source: Own survey, 2022

As can be seen from the above table, the group mean values for flexibility was rated as high level with a mean value (M = 3.4958 and SD = 0.3512). That is, the level of flexibility is found inside the moderate scale of the Likert five-point analysis bench mark scale. This implies that the level of coca cola Company's flexibility was found medium in the study area.

In addition, the group mean values for time was rated as high level with a mean value (M = 3.6604 and SD = 0.2734). That is, the level of time is found above the moderate scale of the Likert five-point analysis bench mark scale. This implies that the level of coca cola Company's time performance was found high in the study area.

Moreover, the result of the study also depicted that, the respondents on average scores the values for quality was rated as high level with a mean value (M = 4.0583 and SD = 0.41970). That is, the level of quality performance is found above the moderate scale of the Likert five point analysis bench mark scale. This implies that the level of coca cola Company's quality performance was found high in the study area.

Finally, the group mean values for cost was also rated as high level with a mean value (M = 4.0571 and SD = 0.4397). That is, the level of cost is found above the moderate scale of the Likert five-point analysis bench mark scale. This implies that the level of coca cola Company's flexibility was found high in the study area.

In general, with regard to the overall firm performance revealed that higher rating was achieved for firm performance with a mean value (M = 3.819 and SD = 0.37162). That is, the level of firm performance is found above the moderate scale of the Likert five-point analysis

bench mark scale. This implies that the level of coca cola Company's firm performance was found high in the study area.

The relationship between supply chain integration and performance

To determine the relationship between firm performance and supply chain integration Pearson product moment correlation analysis technique was employed. The researcher recoded the group mean values for each of the variables, such as supplier integration, internal integration and customer integration and performance scores. Accordingly, the result is presented below.

Table 4. 8 Supply chain integration and firm performance relationship

		SI	**II**	**CI**	**FP**	**FL**	**TI**	**QA**	**CO**
Supplier Integration (SI)	Correlation								
	Sig. (2-tailed)								
Internal Integration (II)	Correlation	.446**							
	Sig. (2-tailed)	0.000							
Customer Integration (CI)	Correlation	.560**	0.095						
	Sig. (2-tailed)	0.000	0.402						
Firm performance (FP)	Correlation	.840**	.629**	.636**					
	Sig. (2-tailed)	0.000	0.000	0.000					
Flexibility (FL)	Correlation	.812**	.434**	.532**	.859**				
	Sig. (2-tailed)	0.000	0.000	0.000	0.000				
Time (TI)	Correlation	.607**	.221*	.856**	.702**	.539**			
	Sig. (2-tailed)	0.000	0.049	0.000	0.000	0.000			
Quality (QA)	Correlation	0.217	.347**	0.213	.540**	0.206	0.181		
	Sig. (2-tailed)	0.053	0.002	0.058	0.000	0.067	0.108		
Cost (CO)	Correlation	.487**	.848**	0.158	.708**	.494**	.241*	.344**	
	Sig. (2-tailed)	0.000	0.000	0.162	0.000	0.000	0.031	0.002	
**. Correlation is significant at the 0.01 level (2-tailed).									
*. Correlation is significant at the 0.05 level (2-tailed).									

Source: Own survey, 2022

Table above shows that the correlations among supply chain integration and performance. The correlation test revealed that there was statistically significant and positive relationship between supplier integration and firm performance (r= 0.840 < 0.01). This implies that when

supplier integrity increases firm performance also increases significantly in the study area and vice versa. From the result it can be seen that strong and positive magnitude of relationship was observed.

There was also statistically positive significant relationship observed between the level of firm performance and internal integration ($r= 0.629$, $p < 0.01$). This implies that when the internal integration increases, the level of firm performance also increases and vice versa. The result also revealed that, a moderate and positive relationship was exhibited between these two variables.

Moreover, there was also statistically significant positive relationship between firm performance and customer integration ($r= 0.636$, $p<0.01$). This implies that when the level of customer integration increases, the level of firm performance also increases and vice versa. The result revealed that, a moderate and positive relationship was exhibited between customer integration and performance.

With regard to the association of supply integration correlated positively and strongly with flexibility performance, while a moderate correlation was observed between supplier integration with time and cost dimensions of firm performance. In addition, weak but significant correlation was observed between supplier integration and quality dimension of firm performance.

The correlation between internal integration and dimensions of firm performance revealed that a strong positive and significant association was found between internal integration and cost dimension of firm performance. On the other hand, internal integration correlated with flexibility, and quality dimensions of firm performance significantly and moderately. Whereas firm weak association was observed between time and internal integration.

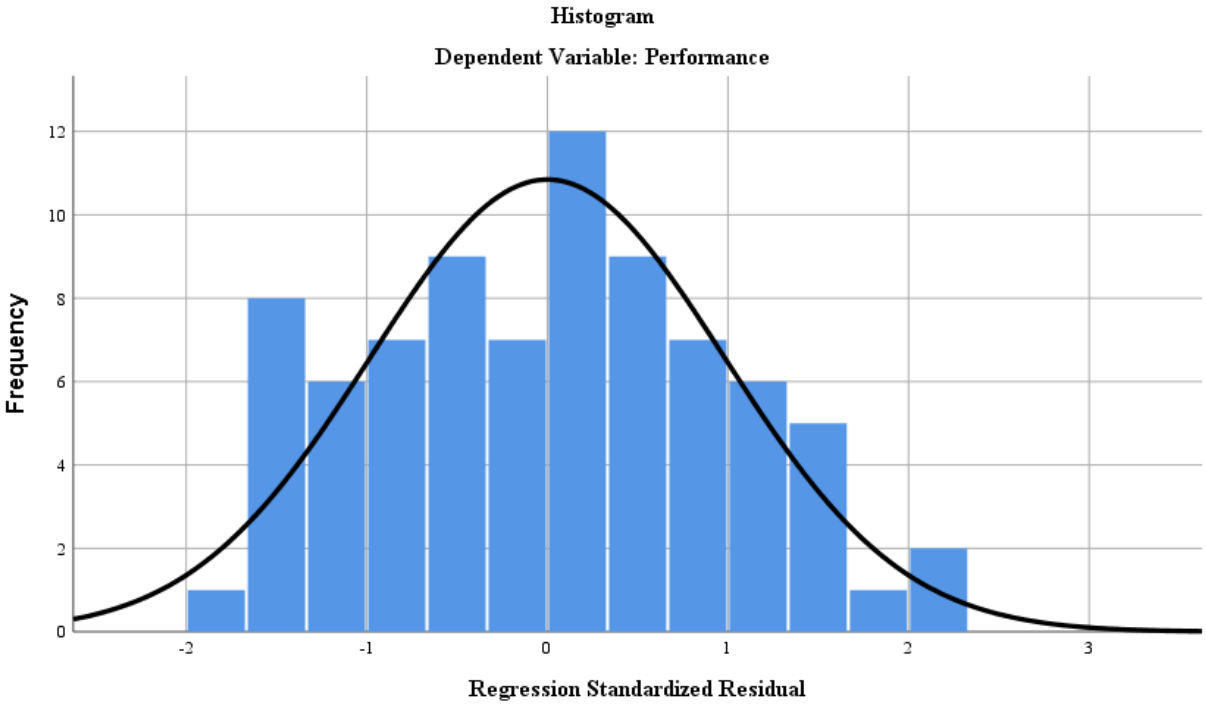
Finally, the correlation between customer integration and dimensions of firm performance revealed that a strong positive and significant association was found between customer integration and time dimension of firm performance. On the other hand, customer integration correlated with flexibility, significantly and moderately. Whereas insignificant and weak association was observed between quality and cost dimensions of firm performance with customer integration.

The effect of Supply chain integration on performance

4.5.1 Regression assumptions

4.5.1.1. Normality of the data

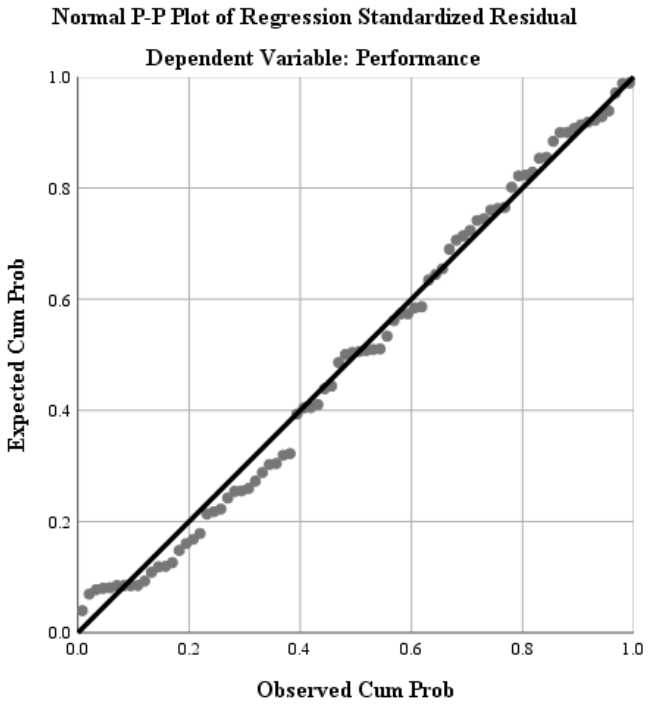
The assumption of normal distribution of the data was examined. The overall distribution is presented below compares the distribution of the residuals to normal distribution curve.



Source: Own survey, 2022

Figure 2 Normality test

From the figure it can be seen that, the frequencies of the residuals are close to the normal curve. This indicated that, the distribution of the residuals is to the normal and thus the assumption of normality was not violated extremely. Moreover, this can be also verified via the p-plot presented in figure below.



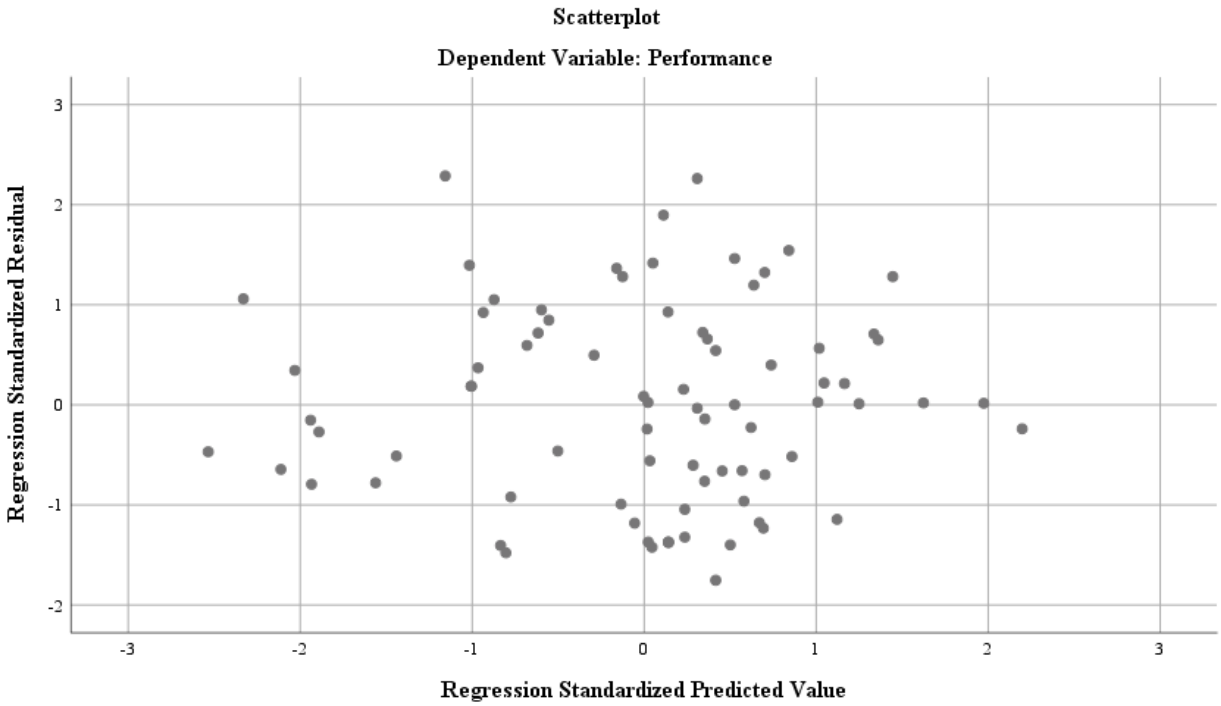
Source: Own survey, 2022

Figure 3 *P-Plot*

From the p plot result from the chart above, it can be seen that the observed cumulative probabilities of the residuals are close to the line. This indicated that the distribution of the residuals is close to the normal distribution. From this it can be inferred that that the data has not violated the assumption of normality extremely.

4.5.1.2. Linearity of the data

If the effects of firm performance and supply chain integration are linear then there should be no relationship between the predicted values of supply chain integration and their corresponding residuals. Thus, a useful diagnostic is to plot the standardized residuals against the standardized predicted values. The results of the standardized residual and predicted value are presented with the figure below.



Source: Own Survey (2022)

Figure 4 Scatterplot

Therefore, the figure above, indicated that there was no evident pattern that, standardized residuals and predicted values were fluctuating around zero for all values. This shows that, the assumption of linearity was not violated. Thus, the dependent variable of performance had a linear relation with supply chain integration.

4.5.1.3. Multicollinearity issues to the data

Statistically, a research model may be invalid if there is a high correlation between the independent variables. Hence, the variable must be adapted or sometimes deleted. The first primary method used to test multicollinearity among the independent variables was calculations of both the tolerance and the variance inflation factor (VIF); when the value of the tolerance test is found to be not less than 0.4 and that of the VIF not greater than 2.5, then it can be said that there is not a multicollinearity problem (Kleinbaum et al., 1988).

Accordingly, the tolerance and the VIF values are presented below.

Table 4. 9 Multi collinearity test

Multi collinearity statistics

Model		Collinearity Statistics	
		Tolerance	VIF
1	(Constant)		
	Supplier Integration	0.530	1.885
	Internal Integration	0.766	1.306
	Customer Integration	0.656	1.524

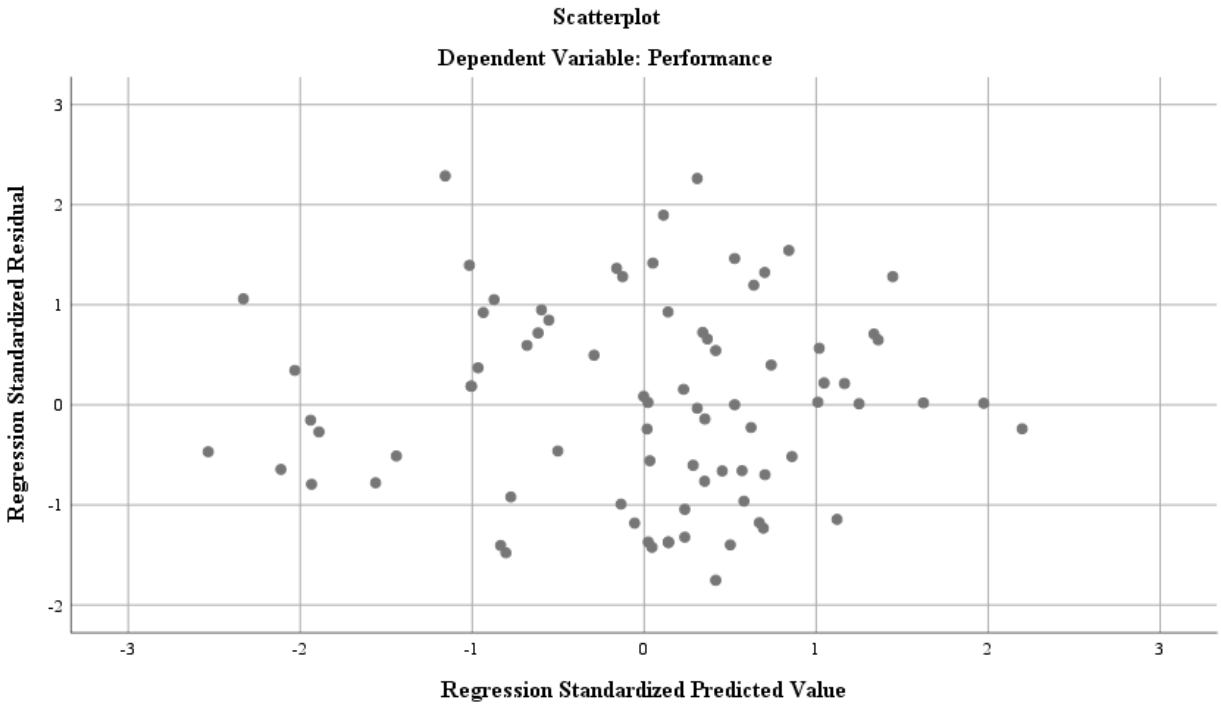
a. Dependent Variable: Performance

Source: Own Survey (2022)

Looking at the Coefficients table above, it can be seen that multi-collinearity is not also a problem to the data. The result indicated that all tolerance values are above 0.40; all VIF values are below 2.5. Thus, from the result it can be seen that none of the tolerance and VIF values are below the lower 0.4 and above 2.5. Thus, from the output, multi-collinearity does not appear to be an extreme concern here.

Homoscedasticity

The assumption of equal variances between pairs of variables. Violation of this assumption can be detected by either residual plots or simple statistical tests. SPSS provides the Levene Test for Homogeneity of Variance, which measures the equality of variances for a single pair of variables. However, for multiple predictors simply interpreting the results of the scatter plot in the figure below can be a useful tool.



Source: Own Survey (2022)

Figure 5 Linearity test

Thus, the scatterplot in the figure above shows the graph for the predicted and observed residuals of the data. The output image shows that how the points are randomly and evenly dispersed throughout the plot. Thus, the pattern above is indicative of a situation in which the assumption of homoscedasticity has been met.

4.5.1.5. Independence of error terms

In regression, it is assumed that the predicted value is not related to any other prediction; i.e., each predicted value is independent. Violation of this assumption can be detected by plotting the residuals against sequence of cases. If the residuals are independent, the pattern should appear random. Violations will be indicated by a consistent pattern in the residuals. For any two observations the residual terms should be uncorrelated (or independent). This eventuality is sometimes described as a lack of autocorrelation. This assumption can be tested with the Durbin–Watson test, which tests for serial correlations between errors. SPSS provides the **Durbin-Watson** statistic as a test for serial correlation of adjacent error terms, and, if significant, indicates non-independence of errors. The result is presented below.

Table 4. 10 Durbin-watson test

Residuals Statistics auto correlation test

Residuals Statistics[a]					
	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2.9475	4.5745	3.8190	.34384	80
Residual	-.25202	.32877	.00000	.14098	80
Std. Predicted Value	-2.535	2.197	.000	1.000	80
Std. Residual	-1.753	2.287	.000	.981	80
a. Dependent Variable: Performance					

Source: Own Survey (2022)

Specifically, it tests whether adjacent residuals are correlated. The test statistic can vary between 0 and 4 with a value of 2 meaning that the residuals are uncorrelated. A value greater than 2 indicates a negative correlation between the variables. Thus, from the result it can be seen that the minimum and maximum values for standard residuals are near the 2. This implies that the assumption of the independence of error terms are fulfilled.

4.5.2. Model Summary

Multiple regression analysis was conducted to identify the independent predictors of supply chain integration and its effect on firm performance. Multiple regression for the independent variables, such as supplier integration and its effect on firm performance was evaluated. The model summery result is presented with the table below.

Table 4. 11 Model Summary

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.925[a]	.856	.850	.14373
a. Predictors: (Constant), Customer Integration, Internal integration, Supplier Integration				

Source: Own Survey (2022)

From the result above it can be seen that the r-square value and the adjusted R square values were 0.856 and 0.85 respectively. Based on the result it can be seen that, supply chain integration or the independent variables such as supplier integration, internal integration and customer integration together accounted for 85.6 % of variance in the dependent variable of firm performance when predicted based on the prediction from sample mean.

4.5.3. The model fit

In order to evaluate the overall model, fit indices the study used the ANOVA table results presented with the following table below.

Table 4. 12 ANOVA test

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	9.340	3	3.113	150.69 9	.000[b]
	Residual	1.570	76	.021		
	Total	10.910	79			
a. Dependent Variable: Firm performance						
b. Predictors: (Constant), Customer Integrity, Internal Integrity, Supplier Integration						

Source: Own Survey (2022)

From the result, the overall model fit for regression equation was determined by F-statistics. The model summery result reveals statistically significant effect ($F = 150.699$, $P < 0.001$). The result revealed that the independent variables such as supplier integration, internal integration and customer integration together accounted for the variance in the dependent variable of firm performance. The result implies that the interaction of the independent variables together significantly explained the variances in the dependent variable firm performance. In addition, the result revealed that the model adequately fits the data.

4.5.4. Significant explanatory variables

After the model exhibited fit, the study examined the effects of supply chain integration such as supplier integration, internal integration and customer integration on firm performance.

The overall model result indicated that, the interaction of factors such as supplier integration, internal integration and customer integration with the dependent variable of firm performance was also expressed with its corresponding beta coefficients and the result is presented as follows.

Table 4. 13 Multiple linear Regression Coefficients

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.023	.223		.105	.917
	Supplier Integration	.328	.040	.486	8.138	.000
	Internal Integration	.402	.053	.381	7.657	.000
	Customer Integration	.272	.045	.328	6.101	.000
a. Dependent Variable: Firm performance						

Source: Own survey, 2022

In examining the Beta weights presented in the table above, it can also be seen that all of the supply chain integration dimensions such as supplier integration, internal integration and customer integration were significant predictors of firm performance with the ($p < .05$). In addition, all of the supply chain integration affected performance positively and significantly in Coca cola Company Bahirdar branch. Moreover, from the coefficients table above the study modeled the overall prediction equation and the equation is presented below.

Regression prediction equation

Firm Performance *=0.023+ (0.328 x Supplier integration) + (0.402 x internal integration) + (0.272 x Customer integration)*

4.6 Hypothesis Testing

H1: Supplier Integration is Significantly and Positively Related with Operational Performance

Hypothesis	Regression Weights	Beta Coefficient	Adjusted R^2	F	t-value	Hypothesis Supported
H1	Supplier Integration →	0.328	0.701	186.379	8.138	Yes

Source: Own survey, 2022

The model result revealed that the supplier integration affected operational performance significantly and positively. The finding of this study revealed that the supplier integration significantly ($p < 0.05$) affected the level of operational performance in East African Bottling Share Company Bahirdar Plant.

The beta coefficient result has shown that, from the supplier integration has a positive and significant effect on Operational performance (B= 0.328, t= 8.138). The result implies that the one level increase in supplier integration of supply chain integration dimension affected or increased Operational performance by 32.8%.

Thus, from the result it can be seen that, the more the existence of the supplier integration, the higher the level of operational performance in East African Bottling Share Company Bahirdar Plant. This implies that, Operational performance would increase with one level increase in supplier integration in the study area.

Thus, the hypothesis that, supplier integration has a positive significant effect on Operational performance is accepted. This implies that, supplier integration affected operational performance positively and significantly in East African Bottling Share Company Bahirdar Plant.

Though the results of the study are consistent with the findings of Rafiei, Mohammad, Amini and Foroozandeh (2014), these studies argued that supplier integration are strongly associated with firm performance and affected performance significantly and positively.

Again, the findings of this study are also consistent with Gill, Meyer, Lee, Shin and Yoon (2011) who contends that as much as supplier integration has been proven to positively affect operational performance, the strength of the relationship differs depending on the level of the supplier integration.

H2: Internal Integration is Significantly and Positively Related with Operational Performance

Hypothesis	Regression Weights	Beta Coefficient	Adjusted R^2	F	t-value	Hypothesis Supported
H1	Internal → Integration	0.402	0.547	151.005	7.657	Yes

Source: Own survey, 2022

From the coefficients table, internal integration was also a significant predictor of operational performance ($p < 0.05$) in the study area. This implies that, the higher the level of the, internal integration, the more the level of firm performance would be developed. This implies that, that entry of the higher level of internal integration dimension of supply chain integration also increased the explained variance in operational performance.

The beta coefficient also indicated that, ($B = 0.402$, $t = 7.657$), a positive and significant effect was observed between, internal integration and operational performance. The beta coefficient implies that internal integration contributes 40.2% of the variance in the dependent variable of operational performance in the East African Bottling Share Company Bahirdar Plant. This implies when one level increase in internal integration dimension of supply chain integration achieved, the level of operational performance also increased by 40.2% in East African Bottling Share Company Bahirdar Plant.

Thus, the hypothesis stated internal integration has a positive significant effect on operational performance in East African Bottling Share Company Bahirdar Plant is accepted.

The result of the study was also consistent with the findings of Yiing (2009) and Moorthy (2014) who confirmed that internal integration exhibited a significant effect on operational performance. Moorthy (2014) also found that internal integration particularly on job training and awareness creation prevalently exists within people and organization has the capability of affecting operational performance significantly.

H3: Customer Integration is Significantly and Positively Related with Operational Performance

Hypothesis	Regression Weights	Beta Coefficient	Adjusted R^2	F	t-value	Hypothesis Supported
H1	Customer Integration →	0.272	0.636	153.010	6.101	Yes

Source: Own survey, 2022

The model result also revealed that the customer integration as a supply chain integration has significant effect on the dependent variable of operational performance in the study area. Finding of this study revealed that, salary has B= 0.272, t = 6.101 and $p < 0.05$ implying that customer integration as supply chain integration has statistically significant effect on the dependent variable operational performance. This dimension of supply chain integration or customer integration explained 27.2% of variance in the dependent variable operational performance. Moreover, from the selected independent variables customer integration was the second strong predictor of operational performance in East African Bottling Share Company Bahirdar Plant. Thus, the hypothesis that customer integration has a positive significant effect on operational performance in East African Bottling Share Company Bahirdar Plant is accepted.

The result of the study was also in line with the findings of Ortiz, Lau and Qin (2013) who argued that employee customer integration increases the operational performance. Consequently, low levels of customer integration have a positive effect on operational performance.

Again, Siddhanta et al. (2010) confirmed a consistent result with this study; indicating that a well-performing firm comes from its ability to ensure customer integration. Moreover, some other studies also reported that customer integration has a significant positive effect on operational performance (Agyemang & Ofei, 2013; Khalid & Khalid, 2015).

Chapter Five

Conclusions and Recommendations

Conclusions

The study primarily aimed to gather 84 respondents however 80 respondents completed the questionnaire successfully with the response rate of 95.2%. The analysis was based 80 employees who are working in East African Bottling Share Company Bahirdar Plant.

The finding of the study revealed that there was statistically significant and positive relationship between operational performance and supply chain integration in the study area. Based on the finding the study concluded that Supplier integration and customer integration dimensions of supply chain integration had moderate magnitude of relationship with Operational performance. In addition, strong magnitude of relationship was exhibited between internal integration and firm performance in East African Bottling Share Company Bahirdar Plant.

In connection to the above, multiple linear regression analysis was also conducted to identify the independent predictors of supply chain integration and its effect on operational performance. The finding of the study revealed that the independent variables, such as supplier integration, internal integration and customer integration affected firm performance significantly and positively.

Based on the finding of the study, supply chain integration or the independent variables such as supplier integration, internal integration and customer integration together accounted for 85.6 % to the variance in the dependent variable of operational performance. Moreover, the study also concluded that the interaction of the independent variables together significantly explained the variances in the dependent variable operational performance.

In connection to the above the finding of the study also revealed that all of the supply chain integration dimensions or supplier integration, internal integration and customer integration were significant predictors of operational performance at .05 error level. In addition, the finding also revealed that all of the supply chain integration dimensions affected operational

performance positively and significantly in East African Bottling Share Company Bahirdar Plant.

Based on the above finding the study concluded that from the supply chain integration dimensions supplier integration, internal integration and customer integration affected operational performance by 32.8%, 40.2% and 27.2% respectively. Moreover, the study also concluded that internal integration was the strongest predictor variable than supplier and customer integration dimensions of supply chain integration.

Moreover, the study also concluded that the hypothesis that supplier integration, internal integration and customer integration have positive significant effect on operational performance is accepted.

Recommendations

There must be revision of company's policy which compile different benefit packages considering the dynamic nature of the work and for keeping the good image of the company internationally.

- The management should create conducive environment in exercising activities to strengthen the internal integration of supply chain integration.
- Establish feedback system periodically to assess the customer and internal integration and to create healthy competition among them company and stakeholders.
- The organization should set regular training with the employees consent as a way of keeping the workforce motivated and by checking the effectiveness of the program.
- The company should conduct regular follow up and management process of cooperation between supplier and organization that facilitate sharing of information, knowledge, materials and experience.
- The company need to consider the suppliers comments and feedbacks on some decisions.

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Annexes

Questionnaire

Bahir Dar University College of Business and Economics Department of Logistics and Supply Chain Management

Graduate Program

Questionnaire to be filled by employees of East Africa Bottling S.C Bahirdar Plant

Dear Respondent

First I want to say thank you in advance for taking your time to respond the questions provided below. I'm a post graduate student at Bahir Dar University College of Business and Economics department of Logistics and Supply Chain Management. This questionnaire is designed for intended purpose of collecting data to know the effect of Supply chain integration on operational performance in the case of East Africa bottling share company Bahirdar Plant. The response you provide me will be a critical input for my research. As per your role on this company's operation you are selected as one of the respondents for this study and you are kindly requested to fill the questionnaire honestly and with all due attention. The data will be treated with a high degree of confidentiality and it is meant for academic and research purpose only.

Instruction: Please give the requested information by circling your best response.

Demographic information

Gender: □ Male □Female

Age : □ 25 – 35 □ Between 35 – 45 □ Between 45 - 55 □ above 55

Education: □ Diploma or less □ Bachelor □ Master □ Above

Position: □ Manager □ Team Leader □ Employee

Competency: □ Manufacturing □ Logistics □ Sales &Marketing □ Finance □ Procurement

Years of experience: □ Less or equal 5 □ between 5 – 10 □ between 10 – 15 □ above 15

The following 54 items tap into supply chain and its effect on operational performance. You are kindly requested to answer these questions based on actual and current situation.

[1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree] based on how you feel about the statement.

Supply Chain Integration Supplier Integration:

1	The company share information with suppliers through the electronic network.	1	2	3	4	5
2	The company is working to build partnership with suppliers	1	2	3	4	5
3	The company is working with suppliers through clear contracts (regarding the quantities, specifications, costs, and delivery)	1	2	3	4	5
4	Suppliers are committed to the required specifications	1	2	3	4	5
5	Suppliers contribute in product design	1	2	3	4	5
6	The company is holding regular meetings with suppliers to review the business issues.	1	2	3	4	5
7	There are joint activities between the company and suppliers (Training program, joint celebrations, exchange of experience)	1	2	3	4	5
8	The company and suppliers are connected with an electronic system to control the inventory	1	2	3	4	5
9	The company and suppliers are discussing the significant changes that affect the continuity of their relationship	1	2	3	4	5
10	There are common awareness programs hold between the company and suppliers to develop the business	1	2	3	4	5

Internal Integration:

11	The company is constantly striving to unify their culture with stakeholders (mission and vision)	1	2	3	4	5
12	The company involves different department during the preparation of strategic plan	1	2	3	4	5
13	The company uses MRP system (to harmonize forecasting, procurement, production, and sales)	1	2	3	4	5
14	There is an internal network for the exchange of information between the employees	1	2	3	4	5
15	The company holds training program to increase the employees competencies	1	2	3	4	5
16	The company is keen to hold regular meetings with departments managers to coordinate the work	1	2	3	4	5
17	The company holds extensive meetings to increase the homogeneity among employees	1	2	3	4	5
18	The company allow the employees to participate in solving the problems and internal conflicts and settlement	1	2	3	4	5
19	Departments share ideas in the development of production processes	1	2	3	4	5
20	There are multiple teams working with each other interactively	1	2	3	4	5

Customer Integration:

21	Customer's satisfaction is central goal that the company pursued to achieve	1	2	3	4	5
22	The company seeks to build partnership with customers	1	2	3	4	5
23	There is specialized customer service department in the company	1	2	3	4	5
24	The company has a fast system to receive orders from the customers	1	2	3	4	5
25	The company reserves the full databases about their customers	1	2	3	4	5
26	The company set up scientific seminar for its customers	1	2	3	4	5
27	Company customers are encouraged to provide feedback	1	2	3	4	5
28	The company deals with the complaints and observations of the customers properly	1	2	3	4	5
29	The company engages its customers in the preparation of marketing programs	1	2	3	4	5
30	The company engages its customers in the design of the company's products	1	2	3	4	5

Operational Performance

Flexibility:

31	The company is eager to amend the characteristics of the products according to customer's needs (without conflicting with the regulations and instructions)	1	2	3	4	5
32	The company has the ability to respond to changes in production volumes	1	2	3	4	5
33	The company possesses the ability to respond rapidly to changes in the work Environment (internal and external changes)	1	2	3	4	5

34	The company choses suppliers who are flexible in responding to requests of the company when needed	1	2	3	4	5
35	The company is characterized by openness to new ideas at work	1	2	3	4	5
36	The company gives its customers pay facilities after checking their financial status	1	2	3	4	5

Time (Speed):

37	The company is committed to provide fast service to its customers	1	2	3	4	5
38	The company is committed to deliver orders to customers within the agreed delivery times	1	2	3	4	5
39	Suppliers are committed to supply orders by the agreed timetables	1	2	3	4	5
40	The company reserves the minimum limit of stock incase dalliances arise on raw material delivery	1	2	3	4	5
41	The company bears the differences in transportation costs in order to meet the deadlines of supplying orders to customers	1	2	3	4	5
42	The company is characterized by quick exchange of information with stakeholders.	1	2	3	4	5

Quality:

43	The company is committed to provide the production according to local and international standard	1	2	3	4	5
44	The company produces various forms of the products to suit customers' needs (provide different flavors and packaging)	1	2	3	4	5
45	The company uses transportation means that maintain the products quality (such as refrigerant cars to keep the temperature)	1	2	3	4	5

46	The company is committed to proper storage conditions according to the specifications	1	2	3	4	5
47	The company has control tracking system to keep the inventory valid (Expiry date)	1	2	3	4	5
48	The company choses their suppliers on the basis of high-quality	1	2	3	4	5

Cost:

49	The company is seeking to reduce the wasteful use or resources (electricity, water, raw materials)	1	2	3	4	5
50	The company is working to reduce defective in output (the proportion of damaged products)	1	2	3	4	5
51	The company arrange its internal processes in a manner to shorten performing activities (layout)	1	2	3	4	5
52	The company is working to reduce the inventory to minimum level to the extent that does not hinder the continuation of work	1	2	3	4	5
53	The company uses the cheapest transportation means without compromising the quality of the products	1	2	3	4	5
54	The company is working on economy of scale (large-scale production to reduce the cost per unit)	1	2	3	4	5

Thank You