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BAHIR DAR UNIVERSITY COLLEGE OF BUSINESS AND ECONOMICS

DEPARTEMENT OF LOGISTICS AND SUPPLY CHAIN MANAGEMENT

**THE ROLE OF SUPPLY CHAIN INTEGRATION ON PORT PERFROMANCE; CASE
OF BERBERA PORT, SOMALILAND**

BY

ABDIWAHAB FARHAN ABDILAH

**JUNE, 2021
BAHIRDAR ETHIPIA**



THE ROLE OF SUPPLY CHAIN INTEGRATION ON PORT PERFORMANCE; CASE OF BERBERA SEAPORT, SOMALILAND

THIS THESIS IS SUBMITTED AT BAHIR DAR UNIVERSITY, IN PARTIAL FULFILLMENT FOR THE REQUIREMENT FOR THE DEGREE OF MASTERS IN LOGISTICS AND SUPPLY CHAIN MANAGEMENT

BY

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BAHIRDAR, ETHIOPIA

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GRADUATE STUDIES

THE ROLE OF SUPPLY CHAIN INTEGRATION ON PORT PERFORMANCE; CASE OF
BERBERA SEAPORT, SOMALILAND

PREPARED BY: ABDIWAHAB FARHAN ABDILAH

Approved by: Board of Examiners and Advisor

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External Examiner	Signature	Date
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Chairman of Graduate Committee	Signature	Date

Declaration

I, Abdiwahab farhan, do hereby declare that this dissertation is my own original work and that it has not and will not be presented to any other institution for the award of the degree or other similar award.

.....
Signature

.....
Date

Confirmation

This is to certify that Abdiwahab Farhan has carried out this thesis on the topic entitled “the role of Supply Chain Integration on port Performance; case of Berbera sea port, Somaliland” under my supervision. Accordingly, I here assure that his work is appropriate and standard enough to be submitted for the partial fulfillment of the requirements for the award of the degree of Masters in Logistics and Supply Chain Management.

Dr. Yeshwond Golla (PhD)

Signature Date

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List of Abbreviations and Acronyms

CI	Customers Integration
EDP	Extended Delivery Point
EI	External Integration
ERBV	Extended Resource Based View
ERP	Enterprise Resource Planning
II	Internal Integration
IOS	Inter Organizational System
IT	Information Technology
JIT	Just In Time
KPI	Key Performance Indicators
LSPs	Logistics Service Providers
MDG	Millennium Development Goal
ND	No Date
P-P	P-P Plot
R ²	R Squared
RBV	Resource Based View
RDT	Resource Dependence Theory
SAM	Shuttle Activation Monitor
SC	Supply Chain
SCI	Supply Chain Integration
SCM	Supply Chain Management
SCOR	Supply Chain Operations Reference

SI	Supplier Integration
TBR	Trust Based Rationalism
TCE	Transaction Cost Economics
UK	United Kingdom
UN	United Nations
UNDAF	United Nation Development Assistant Framework
TEUs	Twenty Equivalent Units
PSCI	port supply change integration

Abstract

Supply chain integration practices are considered a powerful tool to optimize performance of the organization. The objective of this study was to analyze the role of supply chain integration on performance of the Berbera port in Somaliland.

Analysis of the supply chain integration dimensions requires determination of major components: internal integration, supplier integration and customer integration. The need of development of seaport terminals, in order to achieve for a closer integration into supply chains Structures have been the essential factors that initiated this study for investigation. Both descriptive and explanatory research design was employed with the sample of 133 employees, while 100% of respondents were gathered. A questionnaire was used as a research tool for collecting data. Available data on these factors was gathered, formatted, processed and thoroughly checked for continuity and consistency. The supply chain integration and port performance data were filled using the Five Point Likert-Scale moreover; independent variables (supply chain integration) and dependent variables (Port Performance) are also cross-checked from Pearson correlation matrix.

To predict port performance from supply chain integration dimensions, which include internal integration, supplier integration and customer integration, the multiple linear regression models were followed. The analysis indicated that the independent variables supply chain integration with respect supplier, customer and internal integration explained 62.2% of port performance moreover, out of two of those independent variables (i.e. customer integration and internal integration) were statistical significant with P- value less than 0.05; whereas the remaining variable (supplier integration was statistically insignificant p-value of greater than 0.05.The study concluded that one variable is relatively low compare to the others (customer integration and internal integration).This implies that those dimensions of supply chain are not at the optimal level of the port.

It's recommended that all three dimensions of the supply chain, (supplier integration, customer integration and internal integration) needed to be incorporated at the optimal level through system automation, framework agreement and relationship management in order to be achieved efficient and effective port performance.

Keywords: supply, chain, integration, internal, supplier, customer integration, and port performance.

Chapter one

1.1 Introduction

This chapter indicates the general overview of the concept of supply chain integration role on the port performance. The study also explores the dimensions and the role of supply chain integration, and it also reveals the relationship between supply chain integration and port performance.

The chapter deals with the background of the study which covered supply chain integration and port performance. Studies on supply chain integration and performance of seaports have been reviewed; and their dimensions as well as gaps of those studies on the extents of supply chain integration and seaport performance are also reviewed and addressed respectively, in the problem statements of this study.

The questions of the study are related to the dimensions of supply chain integration, relationships between supply chain integration and port performance, roles of supply chain integration on performance of the seaports are raised correspondingly.

Following that topic, objectives of the study, both general and specific objectives are elaborated thoroughly; which is succeeded by significance, and scope. Moreover, definition of terms, conceptual and operational definitions, are listed and defined by the researcher. Finally, the chapter is concluded by briefing the organizations of the study, from chapter one to five.

1.2 background of the study

Integration is the nature of cooperation that exists among organizations to accomplish a persuasive, powerful and joined framework. According to Flynn et al., (2010), supply chain integration is characterized as how much a producer deliberately works together with its supply chain partners and cooperatively administers intra-and between corporation processes. Supply chain integration (SCI) urges organizations to reconfigure their sources and capacities internally and externally to strengthen supply chain network in general with an ultimate goal to enhance long haul performance (Huo, 2012). It is usually perceived that SCI is critical in accomplishing

overall performance and competitive gain (Zhao et al., 2013). The inescapable goal of SCI is to acquire effective and efficient streams of items and services, information, money and selections, to provide extraordinary motivation to the customer. While some of investigators consider SCI as a undimensional to develop (Rosenzweig, E.D., Roth, A.V. And Dean, J.W. Jr., 2003),

The inevitable purpose of SCI is to perform effective and efficient streams of items and service, information, cash and decision, to offer maximum incentive to the client. At the same time as some analysts keep in mind SCI as a undimensional broaden (Rosenzweig, E.D., Roth, A.V. And Dean, J.W. Jr., 2003). Most of the writing takes a gander at SCI as having exclusive measurements, for example, supplier integration (Cousins and Menguc, 2006), supplier and customer integration (Devaraj, S., Krajewski, L. And Wei, J.C., 2007), strategic design integration (Droge, C., Jayaram, J. And Vickery, S. Adequate., 2004), internal integration (Pagell, 2004), and logistics manufacturing- marketing and external integration (Gimenez and Ventura, 2005)

From every other point of view, integration has two noteworthy classifications (a) external strategic design integration this is going past the boundaries of the focal firm to involve suppliers and clients, and (b) internal integration which is more tactically orientated (Droge et al., 2004).

One of the key issues the SCI writing is whether or not the connection among SCI and performance is all inclusive or structured upon conditions or systems. The wide spread view recommends that particular forms of SCI are more powerful than others in enhancing performance (Huo, 2012). For example, internal integration is more powerful diagnosed with execution than external integration (Flynn et al., 2010). Anyhow, the surprising point of view recommends that the adequacy of different types of SCI is dictated through the level of contingent additives (Wong, C. W. Y., Lai, k., & Cheng, T. C. E., 2016). It's is contended that clashing discoveries about the viability of operational practices might be due to the absence of though They showed that: searching out general connections between, say JIT utilization and operational performance, need to be stayed faraway from, in mild of the reality that the incapability to recognize a connection might be because of the way that inside the specimen, there are organizations that have embraced JIT by means of uncritical mimicry of others (Ketokivi and be because of the manner that inside the specimen, there are organizations that have embraced JIT by means of uncritical mimicry of others (Ketokivi and Schroeder, 2004).

Alongside those lines, it is basic to reflect on consideration on company process in considering SCI adequacy (Mckone-candy and Lee, 2009)

Scholars contend that organizational practices ought to be lined up with its strategies to collect unrevealed performance. Inside the supply chain context, it is contended that supply chain management practices have to be lined up with firm's method. Except, it's far encouraged that there have to be a critical fit among environmental, strategic (e.g. aggressive method) and operational (e.g. SCI) factors to make organization achievable. Therefore, on this have a look at, the contingent prospective is adopted to investigate the connection between SCI and performance by considering about the port performance of SCI Stonebraker and Liao (2006).

The larger a part of past examinations has targeting studying the impacts of various types of SCI (e.g. internal and external integration) on seaport performance. Such an arrangement of SCI is just summary to show the essence of the effectiveness of diverse SCI practices. This association might be one of the foremost reasons for contradictory findings in previous SCI and port performance studies. For example, environmental uncertainty had a varying impact on the efficacy of internal and external integration. As a result, it is important to discover the effect of SCI on port performance at a more distinct level. On this study, the researcher will become aware of the quantity and content of SCI and explore its contributions in improving port performance under different stages

According to branch (1986) Maritime transportation plays a primary function in the national and international trade and economic growth. The seaborne trade represents greater than 90 percent of the global trade in the world.

A seaport is defined as a terminal and an area within which ships are loaded and/or unloaded with cargo which having standard locations, wherein ships Waite for their turn or are ordered or obliged to wait for their turn, irrespective of the space from that place. It has interface with other kinds of delivery and in so doing affords connecting services. In general seaports have five major roles: firstly, the seaports handle cargoes and passengers. Secondly, the ports offer provide services for ships which include bunkering and repairing. Thirdly, the ports serve as refuge for ships in case of heavy sea and storm situations. Fourthly, the ports service as a bases for

industrial improvement. Finally, the seaports functions as terminals to form part of a transport chain.

And also ports form an important link in the overall trading chain and, consequently, port efficiency is an essential contributor to a country's global competitiveness (Tongzon, 1989; Chin and Tongzon, 1998). Ports are complex dynamic structures including several interacting elements, influenced by the random elements. For this reason complete utilization of the available resources and efficient management of operations are fundamental desires. Underneath these desires many targets might be accomplished including increasing the port throughput and utilization of assets (berths, cranes, quays and yards), decreasing handling time, minimizing port congestion, minimizing disruptions, demurrage and working costs (Tu-Chang, 1992).

The rate of growth of international trade has been strong and since the mid -1998, it has continually exceeded that of global output. Growing trade is linked to the growing integration of national economies throughout the globe, the deepening of the global department of division of labor, and the concomitant emergence of an increasing number of internationalized production styles. These tendencies have significantly increased the difficulties of tracking a port's overall performance (Park and De, 2004).

The effect of bad port performance on a country's trade has become too obvious. In according with Thomas and Monie (2000), ports and terminals need to measure their performance. The measurement of port or terminal efficiency is very significant especially their SCI, because they're vital to the economic system of the country and to the success and welfare of its industries and citizens.

Berbera seaport: is largest port in Somaliland , and also Berbera port is the Horn of Africa's historical trading ports, have long attracted the interest of world powers because of their strategic location close to the Bab el-Mandeb, Strait connecting the Gulf of Aden and the red Sea. This area makes Somaliland's coastal ports among the region's most valuable real state and an alternative to Djibouti as a key player in terms of exchange, improvement, energy, and water security for the red Sea and Horn of Africa.

As early as 1962, The Soviet Union agreed to assist the Somali Republic towards the construction of modern port facilities and a military base, which was completed in 1969.

After that around 1977 The Soviets left Berbera and the nation as a whole due to a disagreement with the Somali government, the Berbera seaport was later expanded by the U.S. for military use, after the Somali authority's strengthened ties with the American government.

After that Somali government collapsed in 1991 due to civil war started in northern part of Somalia, in addition to that the northern part of Somalia declared independency and called by its self Somaliland republic although, internationally not recognized yet.

In May 2016, DP world signed a US\$442 million settlement with the authorities of Somaliland, to operate a regional trade and logistics hub at the Port of Berbera. The project, will also involve setting up of free zone On 1 March 2018, Ethiopia became a prime shareholder following with agreement with Dubai port world (DP world) and the Somaliland Port Authority. DP world holds 51% stake in the project, Somaliland 30% and Ethiopia remaining 19%. As part of the agreement, the government of Ethiopia will invest on infrastructure to develop the Berbera corridor as a trade gateway. Since Ethiopia is in need for getting ports which is adequate its export and import needs. There are also plans to construct an extra berth at the Port of Berbera, in keeping with the Berbera master plan,

Which DP world has already started implementing, while adding new equipment to similarly enhance efficiencies and productiveness of the port.

1.3 Statement problem

The concept of supply chain integration (SCI) in a port sector has received a great deal of attention when the development information and communication technology begun to rise, supply chain integration has been considered a strategic tool for seaports to enhance their competitiveness. The supply chain integration within processes and among ports has improved ports performance as well as the relations with their suppliers and customers.

Lack of relevant literature written about SCI role of port performance in Somaliland as well the shortage worldwide literatures are one of the biggest challenges.

The aim of this study is to discover the level of inter organizational and intra organizational supply chain integration practices. It also analyzes the role supply chain integration in

Berbera seaport Somaliland, for instance and also how it could impact the performance of the seaport especially at the operational side

This is to say, most of previous research on port supply chain integration have only focused on external integration like supplier and clients

However, this paper examines the internal integration as well as customer integration and supplier integration in port supply chain more precisely.

1.4 Research questions

- ❖ In what extent, supplier customer and internal integration influences port performance?
- ❖ What are the relationships between supply chain integration and port performance?
- ❖ What are the roles of supply chain integration on port performance?

1.4.1 Objective of the study

To assess the role of supply chain integration on port performance at Berbera port, Somaliland

1.4.2 General objectives of the study:

The objective of the study is to assess the role of supply chain integration on port performance case of Berbera seaport, Somaliland (BP)

1.5 Specific objectives

- I. To investigate the dimension of supply chain integration with respect to internal supplier and customer integration.
- II. To assess the relationship between supply chain integration and port performance with reverence to supplier ,customer and internal integration and that of non financial performance (Responsiveness, Reliability and Quality) respectively..
- III. To evaluate the roles of supply chain integration on port performance related to the internal ,supplier and customer integration, and that of non financial performance (Responsiveness, Reliability and Quality) respectively..

1.6 Significance of the study

The problem expressed above is that the current performance of supply chain integration is not submitting the planned outcomes as far as quality, time and service level in the desired level. The aim of this study is to recognize for such development and highlight the theoretical framework which could improve port performance, particularly in terms of operational performance of Berbera seaport Somaliland.

The study is important in helping the port to follow appropriate supply chain integration in order improve the chain effectiveness and efficiency, that significant impact on performance.

It also helps students and other scholars to obtain knowledge in terms of information needed during reading the study.

Finally it boosts the academic knowledge of a body for researches; while scholarly will be reference material on the subject, useful for future research

1.7. Scope of the study

The study will cover the role of supply chain integration dimensions, particularly, internal, supplier and customer integration on seaport performance. this study will not cover only customers (shipping companies and inland transportation providers) but also suppliers (customs ,tugs and pilot service providers) and also port operation, planning and documentation departments . It doesn't consider the view of another partner in the supply chain, and other departments that are in the port which are not part of the chain.

1.8. Definition of terms

In the sub-sections right here below, the researcher described conceptual definition of supply chain integration and port performance, and additionally operational definition of key signs of supply chain integration respectively.

1.8.1. Conceptual Definition

- Supply chain integration: the degree to which an organization strategically collaborates with its supply chain companions and collaboratively manages intra-and inter organization processes (Flynn, et al.2010).
- Supply Chain: Network of organizations which are involved, through upstream and downstream linkages, in the different approaches and activities that produce value in the shape of services and products inside the hands of closing purchaser (Ivy wigmore, 2013)
- Supplier partnership: a commitment over an extended time to working together to the mutual benefit of parties, sharing applicable information and the risks and rewards of the relationship (H. Deshpande, 2017).
- Performance: The idea of organizational performance is the comparison of business enterprise's dreams and goals with its actual overall performance in different areas:such as financial performance, and operational performance.

1.8.2. Operational definition

Internal integration: Internal integration is defined because the strategically aligned and coordinated internal procedures and features for the purpose of attaining a better performance of an company (Kumar, V., Nwakama, E., Garza-reyes, J. A., Rocha-lona, L., & Lopez-torres, G. C., 2017).

- Supplier integration: Supplier integration is the back down to the providers with product improvement, flexibility of order of fulfillment, supply of high pleasant merchandise, process and specification change information's, technology exchange and design support (Baharanchi, 2011).

- Customer integration: The integration of clients inside the supply chain is the possibility of getting a top level view of the requirements and consumer's unique needs as the gain of serving them better (Lotfi, Z., Sahran, S., & Mukhtar, 2013).

1.9 Organization of the study

The first chapter provided an introduction to this research. Relevant supply chain, supply chain management, supply chain integration and port performance theories have been discussed; and the problem statement, research questions, and objectives of the research have been presented. This chapter provided a background to the research; the research theoretical and practical significance; scope and organizational also adopted.

The second chapter is the literature review carried out under this research. It provides a detailed discussion of relevant theoretical arguments on SCI (supplier, and customer) and port performance. While illustrates the theoretical framework which captures the research questions under investigation.

The conceptual framework builds on the literature review carried out. Accordingly, the gaps in the literature will be identified and presented.

The third chapter is the methodology part that presents a discussion on the type and design for the proposed research especially adapted from the previous studies, the subject/participant of the study, the sources of the data, the data collection instruments forthcoming employed, the procedures of data collection and the method of data analysis.

The fourth chapter presents the result discussion and interpretation carried out under this research. This includes the data collected, managed and prepared for the initial descriptive analysis.

This chapter also provides a discussion on the reliability and validity of the data. Lastly, the findings of the data descriptive analysis are also presented and discussed.

The fifth and last chapter includes summary, conclusion and recommendations. This chapter underlines the research theoretical and managerial contribution. It also presents a section on the research limitations and recommendations on the direction for future empirical studies (expanding the concepts investigated under this study).

CHAPTER TWO

REVIEW OF RELATED LITRETURE

2.1 introductions

2.2 theoretical frame work

The theories of supply chain management, port performance and perspectives of supply chain integration have been reviewed in the following sub-topics of this section.

2.2.1 Supply chain management

Today many organizations are compelled to increase their global market share so that it will continue to exist and preserve growth objectives. At the same time, these same organizations must defend their domestic market proportion from global competition. The task is the way to increase the global logistics and distribution network, with a purpose to ship merchandise to customers who demand them in a dynamic and rapidly changing set of channels. Strategic positioning of inventories is crucial, so that the products are available when the consumer demands them (Handfield, et al. 2002).

Domenica (2002) additionally claims that supply chain have to sincerely be efficient and effective. In this example, efficient means to minimize resource use to accomplish unique outcomes; and effective, in terms of designing distribution channels. Efficiency is measured by delivery performance, product quality, backorders and stock level, while effectiveness is measured by service quality and the service needs. Long term competitiveness consequently depends on how nicely the company meets consumer preferences in terms of service, cost, quality, and flexibility, by designing the supply chain, in order to be more effective and efficient than the competitors'. Even though industry and academia have investigated the concept of SCM for the last decade, there's no consistent definition of the concept. As a result, there's typically a lack of consistency in meaning and clarity across the various definitions of supply chain management available in the literature. A number of them are listed similarly on. Bolumole

(2000) has concluded that supply chain management gives an integrated philosophy for managing organization's purchasing and distribution procedures primarily based on a advertising and marketing perspective. The finding of, Persson (1997) concluded that supply chain management is a homogenous management idea. The general objective of supply chain management is to make contributions to enhance within the company's bottom line or profitability.

Related objectives include reducing the expenses specifically through decreasing the stock level and growing the revenues by means of enhancing customer service, through coordination and integration along the material flow, win-win relationships and end customer focus. These imply that in order to achieve supply chain management, individual companies should coordinate and integrate their activities with other companies along the material flow in win-win relationships and focus their joint effort on the end purchaser.

The supply chain consists of all stages involved, directly or indirectly, in fulfilling a customer request. The supply chain not only includes the manufacturer and suppliers, but additionally transporters, warehouses, retailers and customers. Within each organization, which includes a manufacturer, the supply chain includes all functions involved in fulfilling purchaser requests. These functions consist of new product development, advertising and marketing, operations, distribution, finance, and customer service. Supply chain management involves the management of flows between and within stages in a supply chain to maximize general profitability (Chopra, 2001).

Supply chain control is the integration and management of supply chain organizations and activities through cooperative organizational relationships, effective business tactics, and a high level of information sharing to create high performing value systems that provide member organizations sustainable competitive advantage (Handfield, 2002). Even though definitions of supply chain control differ across authors, they may be categorized in three categories (Mentzer, 2001): a management philosophy, implementation of a management philosophy, and set of management methods.

2.2.3 Supply chain integration

Globalization and speedy improvement of information technology are converting today's inter-organizational relationships. Firms increasingly rely on a complex community of worldwide companions to deliver merchandise in the right amount, on the right place and time, and under continual price pressures (Datta and Christopher, 2011). But, long and complicated supply chains are normally slow in responding to changes, and for this reason, they're vulnerable to supply chain disruptions. One way to solve this trouble is to successfully manage supply chain integration (SCI), which requires across firms with appropriate level of information sharing, operational coordination, and partnerships (Leuschner, Rogers, and Charvet, 2012). Integration has become a very essential and necessary part of any organization. Integration of technology, humans, business and process has come to be critical for survival of any company and especially if the company desires to find a competitive side in the modern worldwide economic system (Arend and Wisner, 2005).

The importance of supply chain integration among a company and its suppliers and additionally its clients is growing. As is expected with any business relationship, the association should be expected to be long term and the strength of the relationship depends upon the behavior of the members of the supply chain. To succeed with integration, there should be clear information of the material bought and the core of competencies, and experience of the supplier, the customer being served and the enterprise itself. The integration quality always depends on a relationship between the organizations and the supplier (Wood and Brewster, 2005).

developing integration between the company and its suppliers or a firm and its clients, pursuits at improving unique areas of a firm's performance, leading to financial savings in quality inspection costs and better integration of design efforts to fulfill the customer needs (Mudambi and Schründer, 2006).

Integration among partners in a supply chain that makes a specialty of both the customers and suppliers has to be reviewed in its entirety and on a everyday basis a good way to increase cooperative attitudes inside the chain (Goh, Lau, and Neo, 2006). Further, integration is vital in building trust so that the supply chain mechanisms can function efficiently.

Greater collaborative structures in integration are characterized by closer and more mutually supportive relationship among the company's suppliers and customers.

To improve the integration relationship, there is need for flexibility among the partners, broader regulatory and social surroundings this is characterized by way of both formal systems of mediation and informal networks of trust and collaboration (Panayides and Lun, 2009).

2.2.3 Port performance

Port Performance has many definitions. Mentzer and Konrad (1991) have described it as the ratio of real output to traditional output, which requires setting up an intention and approach to satisfy such general output. This definition became primarily based on differentiating among productivity, utilization and performance. They discussed that productivity refers to the ratio of output to input, even as utilization is the ratio of used facilities to available facilities. In order to meet a standard output, a goal tends towards minimizing operating costs and enhancing the service level requiring a balance between efficiency and effectiveness. For both those dimensions, they measured efficiency in terms of the way nicely the resource are utilized, while the effectiveness has-been measured if a goal or a strategy has been accomplished.

Performance is the normal way to deal with internal and external pressures, by way of monitoring and benchmarking a company's production. Productivity and efficiency are the two vital concepts in this regard and are frequently applied to measure performance. Unfortunately, over the last ten years or so, these two similar but different concepts have been used interchangeably by using numerous commentators (Coelli et al, 1998).performance measurement plays a crucial role within the improvement of a ports As a result, all ports, without exception, use variety methods to examine their performance.

It's so clear proven that, ports are basically providers of service activities, especially for vessels, cargo and inland transport. As such, it's possible that the port provide satisfactory service to vessel operators in one hand and unsatisfactory service to shipment or inland transport operators on the other. Therefore, port performance can't generally be assessed on the basis of a single value or measure. The multiple indicators of port performance may be found in the example of

the Australian port industry (Talley, 1994). The indicators are selected on from the attitude of the perspectives, the shipping line and the port authority (or port control). Evaluations are made by comparing indicator values for a given port over the time as well as across ports for a given term period.

2.2.4 Perspectives of supply chain integration

The theoretical writing on SCI efforts is diversified speaking to different factors of view. The differing writing displays the flexible concept of SCI efforts including with an assortment of thought processes and objectives. This investigation at SCI effort from numerous viewpoints: economic perspective, e.g. uncertainty reduction, transaction cost economics, resource based view, relational view, and extended resource based view; trust based logic; and gaining knowledge of information point of view. Those different viewpoints provide us experiences into the nature, forms, contents, and forces of supply chain integration effort. (M. Cao and Q. Zhang, 2013)

1. Uncertainty Reduction Perspective

Uncertainty has for some time been seen as a fundamental possibility and is one of the simple determinants of high exchange of costs (Williamson 1975). Diminishing vulnerability by way of information flow is a key target in SCI effort (M. Cao and Q. Zhang, 2013). In line with M. Cao and Q. Zhang (2013), market and technological vulnerability can viably be controlled through organizations where supply chain companions proportion share data of unexpected activities and advancements. The serious correspondence between supply chain partners additionally diminishes behavioral vulnerability (e.g., advantage) (Wuyts and Geyskens 2005).

On the off chance that data isn't always shared among accomplices, non-honest request examples will motive request amplification and bullwhip effect. This prompts bad service degrees, excessive inventories, and incessant stock-outs (M. Cao and Q. Zhang, 2013)

Consequently, while confronting uncertainty, companies will be predisposed to team up with accomplices in building lengthy haul relationship

2. Transaction Cost Economics

Transaction cost economics (TCE) is a standout amongst the maximum influential hypotheses on IOS utilize and between firm joint efforts. TCE recommends that a company compose its cross-authoritative exercise to restrict generation expenses inside the firm and exchange costs internal business sectors. As indicated through TCE, the selection to utilize both vertical reconciliation and market components is based upon the relative observing prices that emerge from restrained reasonability and vulnerabilities because of accomplices' self-premium and advantage. TCE conceives that IOS utilize can lessen exchange costs (e.g., looking at charges) by way of specific useful resource speculations, which lower sharp practices. Markets and progressive structures are recognized as two methods of checking out. Coordinated attempt rises as third option e. SCI keeps the issues emerging from the two markets and chains of importance. It enables companies diminish the advantage and checking expenses which can be inbuilt in advertise exchanges through process coordination and common trust, in this way lessen the chance that likely hood that accomplices act sharply.

SCI moreover facilitates companies abstain from disguising a movement that they don't exceed expectancies at. Regardless of TCE's handiness, several researchers see its constraint. TCE is confined to the performance basis for SCI attempt. SCI might also shape for exclusive motives, for example, information creation. What's more, hierarchical settings (e.g. culture, strength, reliance, and trust) which can affect cooperative endeavors are regularly occurring away. In all actuality, few SCI efforts are really in view of the thought of economic costs (M. Cao and Q. Zhang, 2013).

3. Extended Resource-Based View

The resource-based totally view (RBV) remains one of the most debated and a success theories in management studies (Nason & Wiklund, 2018). The RBV contains of a comprehensive body of control literature that's principally concerned with the source and nature of an organization's strategic resources and capabilities (Priem & Butler, 2001).

More particularly, the RBV argues most useful use of the organizational resources for accomplishing advanced performance via sustainable competitive gain. according to the early research, those sources must be valuable, rare, inimitable and non-substitutable (VRIN) in order

to provide real advantages (Wernerfelt, 1984). Over the past decades, the RBV has been carried out to distinct studies streams which includes approach, mergers and acquisitions (M&A), innovation, alliances, international commercial enterprise and knowledge management.

After those preliminary research, it has been accelerated and is specializes in varied styles of resources inclusive of assets, capabilities, competency, knowledge, and procedures, that being specific can result in a strategic role in terms of organizational competitiveness (Barney, 2001). In addition, numerous applicable theories and views have evolved from this RBV idea, that includes concepts such as dynamic capabilities (Teece et al., 1997), relational view (Dyer & Singh, 1998), understanding primarily based view (KBV) (Kogut & Zander, 1992) useful resource dependency (Casciaro & Piskorsky, 2005), that have been proposed and subsequently tested.

Of the above, and particularly, the KBV may be seen as an outgrowth or extension of the RBV as it specializes in the knowledge as the maximum strategically vital resource of any organization (Kogut & Zander, 1992), and is an antecedent of company innovativeness and overall performance (Darroch, 2005)

4. Resource Dependence Theory

Asset reliance speculation (RDT) contends that organizations need to exchange with their surroundings to pick up property (M. Cao and Q. Zhang, 2013). It fixates completely on assets that need to be obtaining from outside hotspots for an organization to survive or flourish. The requirement for outer assets makes organization rely on others. To effectively oversee situations, RDT contends that companies must choose up control over essential property to lessen dependence on others and increment others' dependence on them. It implies companies need to try and expand their strength in their surroundings (M. Cao and Q. Zhang, 2013). Supply chain integration effort gives such approach to assisting firms to reap those goals.

Broadening the intent of asset reliance objectives from the firm level to the inventory network level, store network accomplices all in all are less depending on their environment through asset sharing. Organizations work together with their manufacturing network to buy fundamental assets and to expand their power in respect to other supply chains. Anyways, the power might be

uneven among accomplices as a consequence of diverse obligation for. This unbalance of power may make conflicts among accomplices if not very much oversaw. Min et al. (2005) recommend the capable organization inside the manufacturing network need to deal with the less capable partner's problems in commonly useful guides of movement to enhance the competitive energy of the store network in general. In view of RDT, IOS are the units that, by way of successfully attending to accomplices' assets, increment the manufacturing networks manage over distinct corporations or chains. Whilst RDT has its advantages, it has impediments in clarifying manufacturing network coordinated effort. RDT just contends that companies need to exchange with their surroundings to get crucial assets due to the fact no company is independent. Exchange costs, skill advancement, and learning openings are not thought about (M. Cao and Q. Zhang, 2013).

5. The Relational view theory

Turkmen (2013) have effectively inspected between hierarchical rent creating forms. They prominent four sources that create social rents: Investments in connection particular resources, among company studying sharing schedules, the consolidating of correlative assets and viable administrative component. Firms can accomplish supernormal advantages by means of building up a specific association with their unions through those approaches.

The factor is to move far from a safe distance advertise connections, due to the fact contenders can surely copy this trade relationship since there is nothing one of a kind about the associations amongst purchaser and merchant. What takes after from the joint endeavors of the banding together firms in fashioning a relationship a safe distance is that rents are mutually produced and possessed by using taking part firms? Social rents are then piece of the system or dyad. A social rent is characterized by Turkmen (2013) as: "A supernormal advantage together produced in trade relationship that cannot be produced by using either firm in disconnection and has to be made through the joint extraordinary commitments of the unique collusion accomplices".

6. Trust Based Rationalism

Trust based rationalism (TBR) employs a behavioral assumption of trustworthiness, fair play, responsibility, and altruism instead of betrayal, self-interest, and opportunism. It focuses on collaboration and cooperation in rather than politics and conflicts as the primary interaction modes. Trust as true, relationship, and social capital are the key concepts in TBR. Trust is viewed as an important determinant in setting up a relational mode of governance structure (M. Cao and Q. Zhang, 2013). Persevering with supply chain collaboration is based more on trust and equity than on monitoring and control abilities (Kim et al. 2005). Social capitals and relationships between partners stand up from the foundation of trust. Trust reduces transaction costs and even reduces the need for particular contracts and governance mechanisms. At the same time as opportunism may additionally create short-time period blessings, it incurs costs ultimately as it lacks of recognition and trust. Trust with allows supply chain partners create a win–win approach for collaborative benefit (M. Cao and Q. Zhang, 2013).

7. Learning and Knowledge Perspective

Another rationale for explaining supply chain collaboration is that organizations set up partnerships to take advantage of possibilities for knowledge creations and organizational learning. Through knowledge creation and organizational mastering, companies reinforce their competitive positions. In the face of excessive environmental uncertainty, it's far important to get access of entry to a vast and deep information base in order to respond quickly to changing circumstances since that great diversity of knowledge is delivered across the supply chain, collaboration provides an excellent platform for studying and helps partner-enabled market knowledge creation.

Learning that takes place in supply chain collaboration can be divided into kinds of activities: exploration and exploitation. Exploitation is to enhance existing abilities while exploration is to find out new possibilities (e.g., enhance absorptive capability).

How a great deal a company can examine through supply chain collaboration is decided by way of the firm's absorptive potential, "the ability to understand the value of new, external information, assimilate it, and apply it to business ends.". A firm's ability to analyze is based on the employee quality, understanding base, organizational subculture, and the quality of IT systems. Supply chain collaboration also can be an effective approach of transferring knowledge and new technical abilities throughout corporations. A firm may find it tough to shop for a particular talent within the market because of its tacit nature. A firm might also find it hard to buy a specific skill in the market because of its tacit nature. It is able to gather new abilities and talents through participating with firms that excel in that location. But, the extent of privileged facts sharing needed for collaboration, in a fear of unstable risky information leakage, is not appropriately addressed by way of the mastering and knowledge theory (M. Cao and Q. Zhang, 2013).

2.3 Empirical literature review

The empirical studies of supply chain integration and organizational performance were reviewed under the following sub-sections as the background of previous studies.

2.3.1. Supply Chain Integration

An efficient, integrated supply chain performs a main component in the fulfillment of the organizational strategies of its constituent companies. It is now recognized that, in lots of instances, competition is between supply chains rather than individual businesses. Getting the product and service to the end purchaser once they need it is important. Consequently, the partner companies must work carefully together to define and execute a supply chain approach so that they can both satisfy consumer needs and allow them to make an adequate return.

The most important challenges facing organizations these days isn't the internet, by itself, or globalization or stakeholder needs. Rather, the greatest challenge is the integration of supply chains from companies through producers and distributes to satisfy end customer and acquire value for those companies. Supply chain management is the planning and flow of substances and merchandise among a number of groups to deliver goods and services to end consumers. The perception tested the insight inspection of this study is that business supply chains are more

likely to survive, grow and profit if they integrate the improvement of new products, with a balanced supply chain in which each link combines to provide the products that clients need. To get complete benefit from a supply chain it is necessary to link all of the partners concerned so that goods and service flow effectively to the purchasers. That is executed by way of operating collaboratively with clients, providers, buying and trading partners and service providers.

The overall aim is to create a flow of products precisely as required by means of clients, responding dynamically to changes in their orders. (Sadler,2007). Supply chain integration (SCI) is taken under consideration to be a complete theory applied to various links among capabilities within a company however additionally amongst organizations (Chen et al., 2009). There is a standard accord amongst researchers that due to the advanced worldwide business setting, it's a strategic importance for organizations to integrate activities each externally and internally (Danese et al., 2013). In previous literature, supply chain integration is associated to three most important factors like scope of integration, regions to integrate, and level of integration (Näslund and Hulthen, 2012).

2.3.2 Scope of integration

Hulthen (2016) said that the twofold scopes of integration which are the most considered are external integration and internal integration. While each of those scopes represent a sizable characteristic of supply chain integration, there's a limitless pact overlays among them. in step line with the meaning of supply chain control, from providers to manufacturers to clients and the supply chain operations reference (SCOR) model interconnected principal methods, from supply to make to a delivery, it's far arguing that the numerous scopes of supply chain integration may be finally summarized to a few main scopes: internal integration, suppliers' integration (SI), and customers' integration (CI). External integration (EI) holds together SI and CI in one. information sharing, communication, demand coordination, coordination building, and so on, have been usually combined into the (II) and (EI) ideas (Kumar et al., 2017).

- **Internal integration**

External integration with the partners goes beyond the organizations, the first degree of supply chain integration need to be beginning at the organizational stage within the diverse capabilities as well as departments of the company. Is the internal integration whereas, Internal integration is defined as the strategically aligned and coordinated internal approaches and capabilities for the cause of attaining most overall performance of an organization;

It advances the organizational performance through decreasing expenses and restricting departmental ability which wouldn't maximize the general goal within the organization (Kumar et al., 2017).

- **Supplier Integration**

According to Kumar et al. (2017), in an order to enhance customer service to better, customer-supplier- integration process is the beneficial cognizance of the company on strengthening the relationships, between customer and supplier for the motive of achieving supply chain surplus. when suppliers are participated concerning information of the demand for forecasts, production and inventory levels decision making of the organizations, the organization and suppliers have a working partnership that maximize the benefit of both suppliers and the focal company through decreasing lead instances, and in advancing innovations and satisfactory.

- **Customers Integration**

The integration of customers within the supply chain gives the possibility for firms to have an overview of the requirements and their particular needs giving them the benefit of serving them better. Integrating customers in a supply chain is centered on drawing information from customers, which include their buying partners, their choice for products and their ability to buy products which would then be used in making higher decisions at some point of the producing process or sales to clients. while organizations collaborate with their customers, they may be capable of respond in a quick and efficient way with their clients improving their order fulfillment as well as enhancing visibility (Lotfi, Z., Sahran, S., & Mukhtar, 2013).

2. Layers of Integration

Layers of integration lined in previous supply chain integration literature refers to, as an example, what to integrate and with whom to integrate. There are four areas of integration in supply chain which may create a chain of partnerships for parties that are collaborated through supply chain control; these areas are: flows (physical, data, financial), techniques and activities, technology and systems, and integration of actors (structures and corporations) (Hulthen, 2016). According to Barber (2008) elaborations, integration of each tangible and intangible parts must to be incorporated (i.e. process, procedure, data, knowledge, innovations, and strategies the first project is to create flow of information among chain companions so that physical flows takes place precisely as required. the second is a serious of physical actions: buying parts, manufacture of the finished product and its delivery to the customer. The third task undertaking is the management of chains, and the fourth task is chain leadership. According to Hulthen (2016), it is very important to identify key procedures to be joined with suppliers and customers. To combine with all supply chain companions isn't always feasible and economically excusable. For this reason, organizations normally section their external relationships members and broaden cooperative relationships with some supply chains companions while they preserve arm's length with others (Lummus et al., 2008).

3. Level of Integration

Constructing on the systematic ideas, replicate the connections among organizations in the supply chain, such interactions among supply chain allies have a main impact on in what way the chain functions, by means of flow of goods or services to clients. The level of internal integration commences with a start point of practical silos with freelance features.

Inside the subsequent degree the freelance silos are unit cross-functionally incorporated through processes. As a result, the internal integration is affected to full integration concerning seamless flow throughout structure functions. Then, the integration holds providers and customers, said as external integration. (Hulthen, 2016).

Concerning the internal integration, now not all business relationships with SC partners must be cooperative, and it is acceptable to be involved in an arm's-length relationship if such behavior is suitable (Gimenez and Ventura, 2005). The volume of external integration could vary from arm's length ones to collaboration and strategic alliances. Spekman et al. (1998) differentiate among four level of external integration: open market negotiations, cooperation, coordination and collaboration.

The open market negotiations, additionally called Arm's length relationships, constitute a natural exchange style of relationship between supply chain partners. There aren't any joint commitments or operations that imply that the link is terminated once the change ends (Shah et al., 2002). In a very cooperation style of relationship, the stress is placed on data sharing or assets sharing between SC companions and distinctive of joint interest (electricity, 2005). It is a primary level regarding demand harmonization and cross functional relations of the family, taking a part of relevant parties, strong sort of responsibilities (Ajmera and Cook, 2009). Coordination, on the opposite hand, wishes SC partners to figure jointly, realize substances and information flows efficiency across the supply chain through aligned better cognitive procedure to realize the general supply chain targets (Sahin and Robinson, 2002).

The very exceptional level of relationship refers to collaboration. It engages reciprocal relationships with in which each partners possess same power to avoid compelled answers by the alternative component (Ho et al., 2002). Normally, it accommodates joint designing and appearing of activities like supplying, development and strategic designing (Ajmera and cook, 2009).

2.3.3. Supply chain integration and port performance

These days the idea of supply chain In a port sector has received a greater attention and is extensively discussed within the literature (Carbone and De Martino, 2003; Notteboom and Rodrigue, 2005;Panayides and track, 2008; Woo et al., 2013). Panayides and music (2008) the integration of seaport/terminals in supply chains as 'terminal supply chain integration (TESCI)' and outline it as 'the extent to which the terminal creates system and process and undertakes functions relevant to becoming into an integral part of the supply chain rather than being an

isolated node that provides fundamental ship-shore operation'. Woo et al (2013) use the term Port supply chain integration (PSCI) is the process in which port can coordinate and interconnect its inter- and intra-organizational processes. PSCI emphasizes the link between the port and customers, suppliers and other channel members. Additionally, PSCI is the center of coordination, which requires all business process be streamlined internally within the firm and externally among other firms. However, PSCI has been gaining importance day by day due to its contribution towards firm competitive advantage which leads to increasing firm's performance

Many conceptual and descriptive works also associate the integration of ports with competitiveness or performance issues. De Martino and Morvillo (2008) assert that the integration of a port is concerned with intermodality and organizational integration and aims at responding to the changing requirements of industrial and commercial enterprises and, at the same time, enhancing its own internal efficiency. Notteboom and Winkelmanns (2001) assert that in order to obtain sustainable competitive benefit, ports ought to offer value added logistics and intermodal transport services and to develop advanced information system. Paixao and Marlow (2003) also show that the internal and external integration of a port primarily based at the agility concept can improve competitive advantage of the port, allowing the port to offer additional value added and intermodal services, to lower the transit and lead-time of cargoes and to reduce the total value derived from port offerings. Morash and Clinton(1997) emphasis that the internal and external integrations focusing in transportation capabilities enhance reliability and just-in-time delivery, which in turn, can lessen total costs and improve value to clients.

Supply chain integration has been historically categorized into dimensions; internal integration and external integration (Daugherty et al. 1996; Stock et al. 2000; Stank et al. 2001). The former refers the integration across functional boundaries within a firm and the latter, the integration of logistics activities across boundaries. (Stock *et al.* 2000). From the complete supply chain's view, the integration of a port into a supply chain appears to be the activities undertaken by ports, as a service provider, to cooperate with different participants within the supply chain beyond their boundary, that's external integration. However, from the ports' view, PSCI involves or need to involve both internal and external integration. Paixao and Marlow (2003) propose that Implementation of an agile port must cover both the external integration which implements vertical integration alongside logistics chains and the internal integration which identifies and

breaks down the whole process of the port, and remodel the procedure in step with a Just-In-Time (JIT) philosophy. Caputo and Mininno (1996) additionally suggest that internal integration is the prerequisite for powerful inter organizational.

Both vertical integration and horizontal integration or either of them may be taken into consideration in regards to organizational integration (De Martino and Morvillo 2008). However, with regards to integration of ports into the supply chain, the combination may be implemented generally through vertical integration, even though this does not necessarily exclude horizontal integration concept In the case of liner shipping, its integration along the supply chain is not directly supported by using horizontal integration which ends up in the creation of larger organizations with extra bargaining power, and therefore allows entry into inland markets (Panayides 2001). Also, within the production enterprise context, horizontal integration is considered as a requirement for vertical integration to supply synergies (Caputo and Mininno 1996). In contrast, it is less in all likelihood that horizontal integration brings about synergy results on vertical integration of ports either directly or indirectly. Developing port operating networks globally might increase bargaining energy towards international shipping liners, mitigating the liners* footloose practices

However it rarely helps ports' entry into extraordinary shipping or logistics markets , Four types of integration are offered through Fawcett and Magnan (2002): internal integration, backward integration with first-tier suppliers, forward integration with first tier customers, and complete forward and backward integration which is expressed as integration from the suppliers* supplier to the customers* customer. The suppliers and customers* can be differently identified according to the focal company of a supply chain. In this study 'supply chain' means the supply chain for goods or cargoes passing through the port, so PSCI can take area in either directions or both directions.

In port studies, empirical work on the interrelationships between the integration of Ports into supply chains and port performance has been very restricted. Song and Panayides (2008) identified seven parameters for evaluating the extent of the integration and decided on variables for port performance. They analyzed the interrelationships among the parameters and the variables using more than one regression evaluation. Their outcomes confirmed that information and communication technology positively affects the service quality of ports, the relationship of

ports with shipping companies has beneficial consequences on the reliability and responsiveness of ports, value added service is definitely associated with each port service customization and port service price. However, they also examined the relationships between internal integration and port performance and found that internal integration has positive and significant relationship with port performance.

However, ports does not concerned with the relationship with suppliers for producing port services, but more concerned with the relationship with customers such as shippers, freight forwarders, shipping companies, and inland transport providers including inland clearance depots/ penetrates into the understanding of SCM, and strategic integration is also expected to have an impact on firm performance. The results of most research indicate that the higher the level integration occurs at, the better firm performance is (Johnson 1999; Lin *et al.* 2005)

A port that integrated supply chain characterized by seamless communication, elimination of wastage, and cost reduction in operations (e.g. through JIT), interconnectivity and interoperability of modal infrastructure, and operations and provision of value-added service (VAS) and customer satisfaction. Bichou and grey (2004) indicate that adopting supply chain integration approach is useful to port performance. Because it directs port approach in the direction of integrated into supply chains. Despite the widely recognized significance of conceptualizing ports as vital components with in a SCM framework empirically limited.

From the literatures review, several studies gaps may be determined. Firstly, past studies had been restrained to inspecting PSI techniques and its relationship with port performance (e.g. song and Panayides, 2008; Tongzon et al., 2009; Woo et al., 2013).Such studies have only provided the effect of PSI on port especially at external integration supplier and customer integration to performance. But few studies have conducted yet SCI on both external and internal integration and its impact on port performance, so this study will not cover only internal integration but also external integration in port of Berbera, Somaliland

2.3.4. Determinants of port performance

UNCTAD (1999) outlines two sorts of port performance indicators: macro performance indicators quantifying aggregate port impacts on economic activity, and micro performance

indicators evaluating input/output ratio measurements of port operations (Bichou and grey, 2004).

Historically, the overall performance of ports has been variously evaluated by of calculating shipment-handling productiveness at berth (Bendall and Stent, 1987; Tabernacle, 1995; Ashar, 1997), by way of measuring a single factor productivity (De Monie, 1987) or by means of comparing real with optimum throughput over a selected time period (Talley, 1998).

Gambrardella et al., 1998). Tongzon (1995) advised that interest ought to be paid to this information while growing a port reform geared toward enhancing port performance strategies as this provides a clean distinction among port performance and effectiveness. Therefore, port performance indicators have been categorized into two major categories, financial and operational.

We will look at in this study the impact of supply chain integration on the performance of the port, particularly the operational side of the port.

2.3.5. Drivers of Supply Chain Integration (SCI Drivers)

The supply chain integration capabilities of planning, coordinating procurement, inventory management and logistics may be considered as a mechanism that has allowed goods and commodities to be dispensed flexibly throughout space, time and institutional framework. Aggressive gain requires making the end to end process throughout the value chain from requisition to payment as rapid and as efficient as feasible.

Accelerating supply chain integration strategies requires automation, even though some procedures will require human intervention at certain points, specially authorizations and exception handling, growing the speed of business requires automating as much as possible; even after automating tactics, organizations want to reveal and manage them in real time to usually enhance and optimize the process (Keller Seru Lianza, 2013).

Supply chain integration has been found to enhance performance of the supply chain. In the study observe of 50 ports in the UK and France, it was found into that SCI and information sharing leads to enhance supply chain performance. A study found that integrating with a company's suppliers and customers alongside the company's competitive strategy will result in improved operational performance.

The relationship between supply chain linkages regarding purchaser, supplier, and internal process of the organization with overall performance has also been studied.

Many firms are searching for to go into new markets to boost their profitability. This has driven them to seek for higher strategic relationships to offer them the platform for such marketing possibility to a larger purchaser community. The satisfactory and protection have pushed companies to integrate and growth the quantity of information they proportion with their providers to ensure that there's visibility throughout the supply chain so that products and sourcing material can be tracked.

Organizations need to create value activities that could lessen their operational costs and boost profitability. This would require internal and external integration in their process (Kumar et al., 2017).

The study made on 122 manufacturing companies operating in the US found out that internal integration is the primary strategy for value reduction within the supply chain while , supplier integration leads to better operational performance.

A few performance measurements including, enhanced customer service, internal efficiency, demand flexibility, and product development are all indicators that companies try to improve and to do so through SCI. (Hugos, M. H., 2011).

Another important driving force for SC integration is the need for SCM agility. SCM agility requires an integrated infrastructure that enables speedy deployment of new solutions even as leveraging current IT investments. An agile SCM inside some ports cannot have the funds for to rip and update the present systems. It requires actual-time connectivity among people, structures, and useful entities. The need for value discount is also a completely essential driver of SCM integration. SC integration reduces wastages and expenses and will increase value addition.

Two other significant advantages that ports gaining from integrating their SCM capabilities are growing successful delivery to the end user and improving average quality and efficiency through optimization of organizational approaches. (Keller Seru Lisanza, 2013).

2.3.6. Benefits of Supply Chain Integration

Integration stage has a better impact on performance results; in step with maximum of SC integration studies, the view that the extent of SC integration improves quality and working

performance holds the same. SC integration affects customer responsiveness and production performance with the aid of the primary affiliation among sourcing and degree of manufacturing objective fulfillment, via empirical evidence of basic causal associations in a supply chain.

According to a survey of commercial equipment vendors, that strategic integration effects in stepped forward financial return for the employer. Empirically identifies that producers with the widest volume of SC integration should to have the highest levels of overall performance upgrades. Especially, they found a strong relationship from the most important level of supplier and customer integration to market proportion and profitability.

It's suggested that integration of numerous functions at different organizational stages attain average financial and performance outcomes. (Kim, 2009).

Both internal and external integration of operations is normally required for improved performance. Simultaneous integration of internal and external operational process infers the attainment of superior logistics performance, neither of which a standalone is benefit. Rodriguez et al. (2004) specify that better logistics performance is interrelated to simultaneous integration of internal and external operational processes. according to Kim (2009), the more the level of included upstream and downstream coordination the better the benefits proved empirically that external integration with suppliers and clients has a direct positive influence on market proportion, at the same time as internal integration has an influence on monetary performance.

Supply chain performance is an important thing in supply chain design and evaluation.

A number of performance measures are important for the evaluation of supply chain effectiveness. Those measures can be both quantitative and qualitative. The goal of an incorporated supply chain strategy is to synchronize the necessities of the final customer with the materials and information along the supply chain in order to discover the balance between customer service and costs. So the researcher argues that supply chain performance has two dimensions: (1) customer service performance and (2) financial performance. Customer service is described as coverage of many service dimensions that are both general as well as Production service objectives. Financial performance is described by the traditional performance measures which include return on investment (ROA), return on asset (ROI) and return on sales (ROS). Costs are a totally essential a part of these monetary performance indicators. Even though dimensions of company performance are defined, the study recognized that at the end, financial performance is the most vital performance. The study goes in addition in defining the

performance of a supply chain and identifies four dimensions (1) cost (2) quality, (3) flexibility and (4) time performance.

Both identify financial measurement of supply chain performance. But, the researcher specified certain the monetary measurement into one of different performance indicators. While classified the service performance as qualitative and the monetary performance as quantitative. (Bas Leenders, 2010).

According to Keller Seru Lisanza (2013), businesses additionally combine their SCM functions due to the fact they need to collaborate with other organizations and better their relationships with key suppliers. Collaboration allows a SCM to focus on joint planning, coordination, and process integration between the firm and its providers, customers, and different partners consisting of the logistics providers.

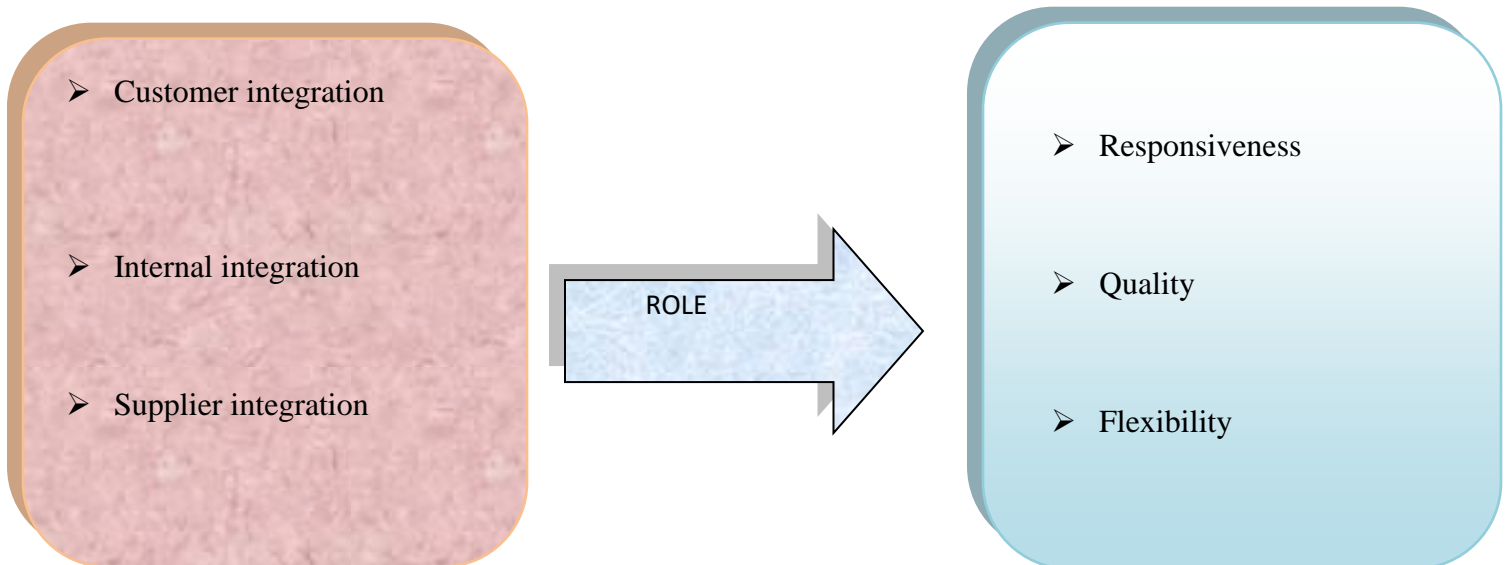
In addition to cost reduction, collaboration offers the advantages of decreased lead times, increased reliability and responsiveness.

2.4 Conceptual Framework

(IV) Supply Chain Integration

(DV) port competitiveness Performance

Figure 2.1 Conceptual Framework of Supply Chain Integration



Source: Scheinbaum, A. C., 2011; Hussein et al., 2014.

CHAPTER THREE

3. RESEARCH DESIGN AND METHODOLOGY

This section presents an overview of the methods that will be used in the study. Areas covered including the research approach and design, population and sample, data sources and types, ethical consideration, and data analysis as well as data collecting instrument

3.1. Research Design

Research design is the framework of research methods and techniques chosen by a researcher. The design allows researchers to hone in on research methods that are suitable for the subject matter and set their studies up for success.

The study is designed in an explanatory cross-sectional research design (descriptive and inferential statistics). The descriptive study allows the researcher to describe the data and helps to know the event that has been taken place whereas explanatory study examined the relationships and associations between variables (Independent and Dependent Variables).

3.2 .Research approach

Research Approach is plan and the procedure for research. That spans the steps from broad assumptions to detailed methods of data collection, analysis, and interpretation.

The study followed an inferential research approach, which is part of quantitative research approach, in order to achieve its purpose. Therefore, this study focused on formulating research questions and objectives of the study that have been achieved throughout the processes of the study

3.3. Method of Data Analysis

The data obtained through questionnaires and primary checked for completeness. When, the questionnaire found correctly filled and fitted for analysis and then coded.

All of the data entered into statistical package deal for social sciences, and then analyzed based on descriptive and inferential facts. The descriptive statistics used included the frequencies, mean scores, standard deviation, percentages and ratios. Then will presented using of tables for simpler interpretation.

The Reliability analysis will be made the use of Cranach's alpha (α) for the measure of internal and scale consistency (reliability).

A multiple linear regression model has done to establish the role of the three independently supply chain integration variables on the performance of the port. To set up the relationship, a regression analysis was set up. For each supply chain integration variables, over all mean suggest computed and matched with the mean of performance of the port.

From this relationship, the model generated to determine the connection, using of the multiple linear regression analysis assumptions, along with the relationship among the Y and each of Xi's is linear, those of nonexistence of multi-co linearity (the independent variables are not associated among themselves), and also assumptions consist of normality distribution. The regression equation assumed the following form:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \epsilon$$

Where:

Y is organizational performance

β_i ($i = 0 - 3$) is the regression coefficient;

X1 – customer integration

X2 – supplier integration

X3- internal integration

ϵ – Error Term or Unexplained variables not explained by the model

The F- test was conducted to determine the significance of the regression while the coefficient of determination, R², used to determine how much variation in Y is explained by X. This will do at 95% confidence level, and correlation analysis will carry out to find the degree and direction of the relationship between dependent variables and the independent variables.

3.4. Sampling technique and sample size

3.3.1 Sampling technique

The study used purposive and simple random sampling method to select the study Sample. This is because purposive sampling method is used when elements are selected due to a specific purpose, usually because of their unique position (Schutt, 2011). According to this study only managers, executive or any individual within the port of the best knowledge of SCI will be selected. On the other hand, random sampling will be used because of the nature of study is homogeneous (only concerned with port of Berbera located at Somaliland) Hence each individual firm has an equal chance of being included in the sample.

3.3.2 Population and Sampling size

Population is the entire group that you want to draw conclusions about. A sample is the specific group that you will collect data from. The size of the sample is always less than the total size of the population. In research, a population doesn't always refer to people. It can mean a group containing elements of anything you want to study, such as objects, events, organizations, countries, species, organisms, etc. According to Mugenda (2003), a population is a well-defined or set of people, services, elements, and events, group of things or households that are being investigated.

The researcher used **Slovene's formula** to determining the sample size out of the target population. **Slovene's formula** is specified as follows:

$$n = \frac{N}{1 + N(e^2)}$$

Where:

n=sample size

N=population of area of study

e=Estimated margin of error

I=theoretical constant

e=5% or 0.05

$$n = \frac{200}{1+200(0.05^2)} = \frac{200}{1+200(0.0025)} = \frac{200}{1+0.5} = n = 133$$

3.4 Data Sources and Types

The study used secondary data sources from the books, articles, journal, websites and Previous studies concerning SCI and how it impacts on port performance. These sources provided the study with facts and concepts which later then were used to derive study variables. All the secondary data sources used in this study were listed in the reference section. The study also collected primary data.

Primary data are first-hand information; data collected directly from an organizational employees. Primary data can be collected through observation, interviews, or the use of questionnaires (Saunders *et al.*, 2009). But this study used questionnaire method to collect data.

3.5 Data Analysis

The researcher was used computer with statistical package “IBM –SPSS, in processing and analyzing of data. The data collected through various methods were processed and analyzed by using several descriptive statistical methods such as frequency tabulations, graphs, charts, averages and percentages

3.6. Hypothesis

H₀₁: supplier integration has not significant impact on port performance

H_{A1}: customer integration has a significant impact on port performance

H_{A2}: internal integration has a significant impact on port performance

3.7. Ethical Consideration

According to Leedy and Ormrod (2010), most of ethical issue fall into one of the following four classes; informed consent, confidentiality, protection and honesty. Therefore, the researcher considered all these issues in the questionnaire hints in the subsequent manner:

Informed consent: all participants were briefly told approximately the reason of conducting such study therefore enable them to join for with full consent.

Right to privacy (confidentiality): the researcher has kept the nature and the quality of participants overall performance strictly confidential. No information recorded to link Respondents with their responses.

Security: the researcher did not expose the participants to unusual stress, embarrassment or lack of self-confident.

Honesty: the researcher stated the findings in complete honesty.

CHAPTER FOUR

4. RESULTS AND DISCUSSIONS

4.1. Introduction

The objective of the study is to establish relationship between supply chain integration and port performance of Berbera Seaport in Somaliland. The aim of this chapter is to present and interpret the result and also discussions on the finding of the study.

4.2. Response Rate

A total 133 questionnaires that were distributed moreover, 100% of respondents were returned.

4.3. Data Reliability and Validity

Selecting scales to include in the study is important to find that are reliable one. There are a number of different aspects to reliability. One of the main issues concerns the scale's internal consistency. This refers to the degree to which the items that make up the scale 'hang together'. One of the most commonly used indicators of internal consistency is Cranach's alpha coefficient. Ideally, the Cronbach alpha coefficient of a scale should be above .7

Table 4.1 Reliability Statistics

RELIABILITY STATISTICS	
Cronbach's Alpha	Number of items
.776	4

Source (Spss Output, 2021)

Each 4 items are included in the above reliability statistics. The list of items included in the reliability statistics test are listed down in the below item total statistics table 4.2.

Table 4.2 Reliability Item-Total Statistics

Item-Total Statistics				
Items List	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
customer integration	35.9855	52.984	.735	.668
supplier integration	39.2381	94.345	.426	.797
internal integration	37.5103	89.604	.661	.695
Performance	43.1639	98.596	.719	.706

Source (Spss Output, 2021)

The reliability test result (.776) proved that there were internal consistencies in those data constructed in questionnaire. There are four different columns of output. The first two columns display the change to the overall mean and variance if that specific item is omitted from the scale. However, the last columns offer useful information and should be inspected. The Corrected Item-Total Correlation column suggests the degree to which every item correlates with the overall scale for the scale. Low correlations suggest the item is measuring something different to the scale as whole. All the correlations are high and positive in this study.

The right hand column (Alpha if Item Deleted) indicates the alpha value of the scale with that item omitted. While the reason is if that item removed, might increase alpha (increase the internal consistency of the scale). The reliability of the scale used this study the study (.776), will be increased if one variable is deleted and that variable is supplier integration are: $\alpha \Rightarrow .797$

If any other variable is deleted, the reliability of the questionnaire could go down without a doubt. In this particular case it isn't well worth deleting the questions. The distinction is so

moderate that it could be just due to chance. Note that if omitted this item then all values would change because the overall scores obtained would change due to this omission.

Validity of research tool has three Components, such as construct validity, content validity and internal validity. Of all three types of validity, this study tests construct validity which deals with the consistency of the questions with the responses intended. This validity is assured by using structuring the questionnaire in keeping with specific objectives. The critical requirement to achieve validity is to measure the constructed data to ensure free from measurement error (*Mat Roni, 2014*). Therefore, the constructed data in the questionnaire were valid that proved by the above reliability test result with insignificant (less than .3) measurement error.

Table.4.4. Demographic Information of the Respondents

Gender	Frequency	Percent
Male	105	79%
Female	28	21%
Total	133	100%
Education	Frequency	Percent
Diploma	40	30
Bachelors degree	46	35
Masters	36	27
PHD	11	8
TOTAL	133	100
Working Experience	Frequency	Percentage
1-3 Years	18	13
4-6 years	20	15
7-10 years	45	34
Above 11 years	50	38

Total	133	100%
Title	Frequency	Percentage
Others	24	18
Assistant	44	33
Associate	62	47
Manger	3	2
Total	133	100%

Source (Spss Output, 2021)

4.4.1 Gender

The Gender disaggregation of out of the 133 respondents of the study, 79% percent of the participants are male while female respondents are account for 21% percent of the study. Thus there is male domination in the study while, this domination related to the Somali culture.

4.4.2 Educational Background

The respondents that are participated in this study have diverse educational background as it can be seen in the Table above. Almost 62% were a graduate of first degree and second degree. Those who have first degree are accounted for 35% of the total. PhD holders are only account about 8% of the respondents under study whereas diploma is the remained 30 percent of the responses

4.4.3 Experience

The study also sought to establish the duration that the respondents have been working during the study. The outcomes illustrated in the table 4.2 verify that 38% of them had been in operation for more than 11 years, while 34% is from 7-10 years. This is an indication that most of the employees have sufficient knowledge and experience about the subject and the extent of integration exists in their organization.

4.4.4 Position in the Organization

The respondents were asked to indicate the positions they held, and there are also different compositions of the titles. They were provided with options to choose from; the findings in the

table above indicated that associate, senior Associate and manager account for a total 82% of the respondents. This confirms that the respondents of this study were knowledgeable professionals who are well familiar with supply chain integration and port performance issues

4.5. Descriptive Analysis of Extent of Supply Chain Integration

The first objective of this study is to examine the extent of supply chain integration in the port. The individuals have been asked to reply on the extent of supply chain integration of their organization, and rated their responses on a 5 point Likert- scale where: the extent they agreed represent how their organization or port could integrate supply chain.

The findings were provided into subsequent sub themes. In the process of inspecting of the facts, standard deviation was used. Small standard deviations (relative to the value of the mean itself) indicated that the data are close to the mean. While a larger standard deviation (relative to the mean) suggests that the data points are distant from the mean. The mean is a poor fit of the data. Standard deviation is measures of how well the mean represents the data (Field, 2009).

Table 4.4 Supply chain integration extent, and port performance

Independent Variables	N	Mean	Std. Deviation
Customer integration	133	15.9805	5.34591
Supplier integration	133	12.7278	3.70612
Internal integration	133	14.4556	3.14000

Source (Spss Output, 2021)

According to the study result, the mean of all the independent variables (Internal Integration, Suppliers Integration, Customers Integration, are fall in the high extent from 15.9805 to 12.7278 for customer integration and internal integration respectively; hence these accounts around 79% of measurement scale.

The standard deviation of these variables has variance from 5.34591 to 3.1400 while, supplier integration is the lowest deviation, (3.70612), whereas, customer integration is the highest (5.34591).

This finding implies that there are high integrations of supply chain in the port with these three independent variables (Internal Integration, Suppliers Integration and Customers Integration)

The findings of this study result of extent of supply chain integration within the port are substantially with the results of the (Uwamahoro, 2018) that all independent variables are with high mean values. This implied that there is indirect proportionality between mean values and significance level, since the independent variables with high mean are produce in significant level.

- **4.6. Supply Chain Integration and port Performance**

The second objectives of this study are to investigate the relationship between supply chain integration and port performance.

Correlation analysis used to describe the strength and direction of the linear relationship between two variables. The correlation is used for the purpose of permits predictions of one behavior from another; to demonstrate test scale validity with the support of showing a significant relationship between it and other accepted scale for relating construct a; to show reliability consistency of measurement on two occasions, to show internal consistency of scale items, and for theory verification use to support hypotheses that predict the relationships between variables. Pearson's Product-Moment Correlation is the best known correlation and the most used for most used for interval data (Beech, 2006).

Table.4.5. Interpretations and characteristics of correlations

Interpretation	Correlation	Directions	Form	Degree
Small	0.10 – 0.29	+ ve	Linear	Strength
Medium	0.30 – 0.49	Vs.	VS	
Large	0.50 – 1.00	–ve	Non-linear	

Source: *Beech, 2006*

The findings of the correlation matrix analysis between each indicators of supply chain integration (i.e. Internal Integration, Supplier Integration, and Customer Integration) and port performance are shown in the table 4.6 below.

Table 4.6 Correlation Matrix

		Customer integration	Supplier integration	Internal integrations	Performance
Customer integration	Pearson correlation	1	.447**	.524**	.621**
	Sig.(2-tailed)		.000	.000	.000
	N	133	133	133	133
Supplier integration	Pearson correlation	.447**	1	.335**	.292*
	Sig.(2-tailed)	.000		.000	.001
	N	133	133	133	133
Internal integration	Pearson correlation	.524**	.335**	1	.600**
	Sig.(2-tailed)	.000	.000		.000
	N	133	133	133	133
Performance	Pearson correlation	.621**	.292**	.600**	1
	Sig.(2-tailed)	.000	.001	.000	
	N	133	133	133	133
**. Correlation is significant at the 0.01 level (2-tailed).					
* . Correlation is significant at the 0.05 level (2-tailed).					

Source (Spss Output, 2021)

As it can be seen from the findings of this study, the Pearson correlation conducted for customer integration, supplier and internal integration indicates that there is positive and moderate correlation between customer integration, internal integration and port performance with correlation coefficient ($r=.621$), ($r=.524$), ($r=.600$) with significant value 0.00 adversely there is weak and positive relationship between supplier integration and port performance with correlation coefficient of ($r= .292$) and significant value $P-(0.01)$

It can be concluded that the Supply chain integration has a positive small and moderate relationship with port performance based on Pearson correlation coefficient.

4.7. Regression Analysis

4.7.1 Multiple Linear Regression Assumptions

1. Linearity Assumption

Linearity assumption states that the residuals should be linear relationship with the predicted dependent variables scores, linear relationship between independent variables and dependent variables.

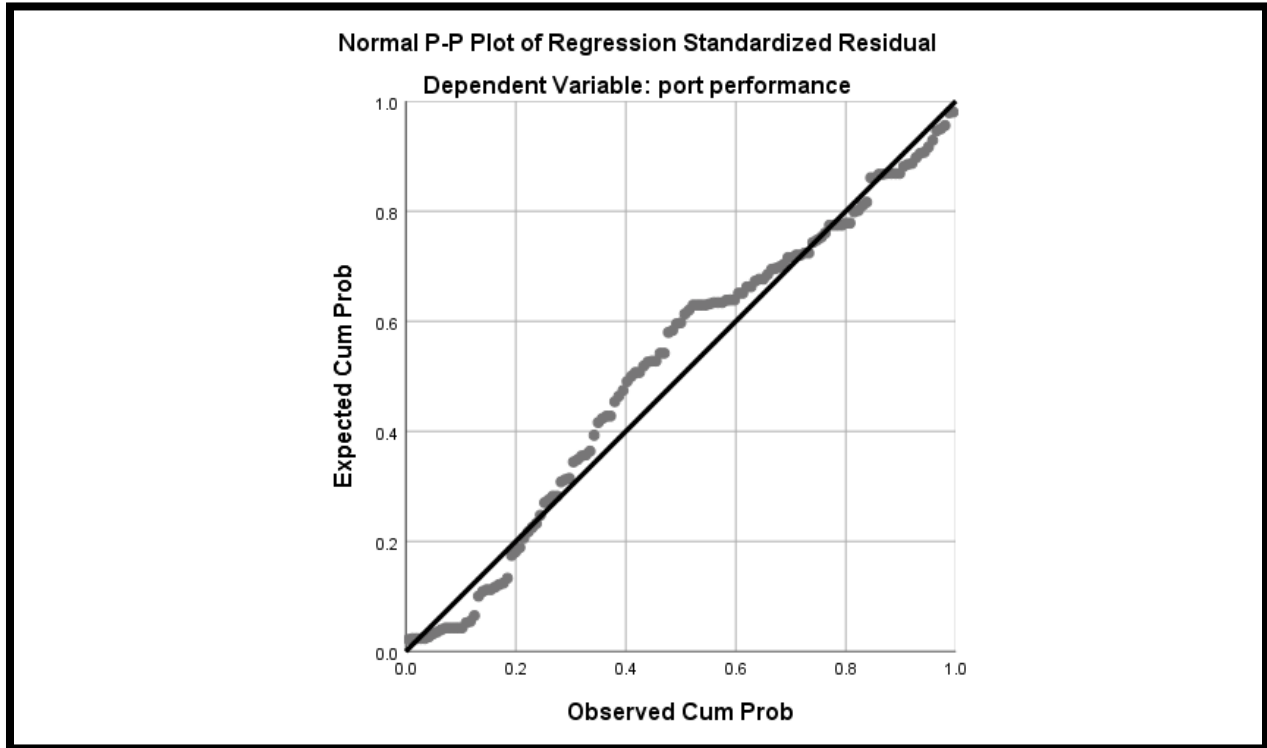
This set of assumption can be tested to a fairly satisfactory extent by way of plotting scatter plots of the relationship between every explanatory variable and the outcome variable. It is critical to check that each scatter plot is exhibiting a linear relationship among variables (possibly adding a regression line that will help you with this).

Alternatively, you could just take a look at the scatter plot of the actual outcome variable against the predicted final results. The term residual taken into consideration is the difference among outliers and influential cases a bit further (J, 2010).

The sample outlier influences to a far lesser degree, but can have a completely massive residual (distance to the regression line). The influential case outlier dramatically alters the regression line but might be harder to spot because the residual is small - smaller than most of the representative points in fact. To have a look at the scatter plot, you can also use influence statistics (such as the Cook's distance statistic) to identify points that may unduly have an impact on the model (Wang, Rosner and Goodman, 2016).

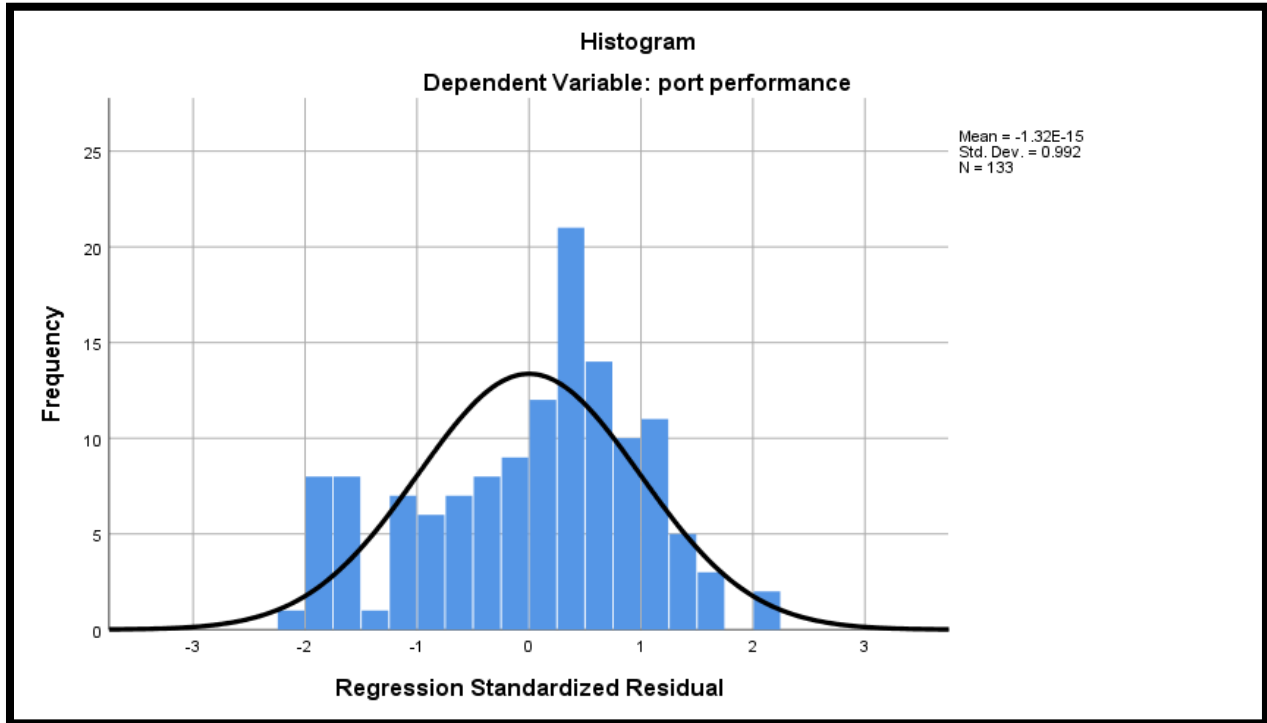
If it's far looked at the scatter plots below, the plot of the under graph suggests that the residuals are normally distributed. Non-normal if it's drastically deviate from the diagonal line.

Figure 4.1 Linear Multiple Regression Assumption



Source Spss output, 2021

Figure 4.2 Normality Distribution Histogram



Source Spss output, 2021

2. Multicollinearity

Multicollinearity assumption states that independent variables should no longer be related to each other. If they are highly correlated, then multicollinearity exists High predictor-predictor correlation ($r > .85$) results in unstable regression model (J, 2010).

The table 4.9 below shows that the relationships between explanatory variables, Internal Integration, Supplier Integration and Customer Integration, are under the correlation boundary (i.e., .85) for all of the independent variables.

Table 4.7.multicollinearity correlation matrix

		customer integration	supplier integration	internal integration
customer integration	Pearson Correlation	1	.447**	.524**
	Sig. (2-tailed)		.000	.000
	N	133	133	133
supplier integration	Pearson Correlation	.447**	1	.335**
	Sig. (2-tailed)	.000		.000
	N	133	133	133
internal integration	Pearson Correlation	.524**	.335**	1
	Sig. (2-tailed)	.000	.000	
	N	133	133	133
**. Correlation is significant at the 0.01 level (2-tailed).				
*. Correlation is significant at the 0.05 level (2				

Source (Spss Output, 2021)

A greater particular technique to check whether or not a given explanatory variable has a strong relationship with the explanatory variables (an issue of multicollinearity exist in the model), Tolerance and VIF (variance inflation factor) is the good indicator.

For instance, Tolerance greater than .1 (10%) hint at multicollinearity, and VIF (variance inflation factor) > 10 additionally implies multicollinearity.

So that VIF need to be between (1-10), in other hand VIF <1 >10 indicates multicollinearity exists (Ge, 2013).

The is below correlation coefficient describes that both the tolerance and variance inflation issue (VIF) are greater than 10%, and below 10 respectively.

Table 4.8 Multicollinearity Test of Independent Variables

Coefficients ^a													
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.	95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-Order	Partial	Part	Tolerance	VIF
1	(Constant)	1.207	.668		1.808	.073	-.114	2.528					
	Customers Integration	.222	.033	.492	6.766	.000	.157	.287	.621	.412	.264	.547	1.827
	Suppliers Integration	-.043	.039	-.067	-1.107	.270	-.121	.034	.292	-.097	-.060	.795	1.257
	Internal integration	.318	.053	.415	6.004	.000	.213	.423	.600	.367	.223	.607	1.647

Source (Spss Output, 2021)

A. Dependent Variable: port Performance

4.7.2 The Role of Supply Chain Integration for the Organizational Performance

The third objective of this study is to have a look at the effect of supply chain integration on the performance of seaport, since correlation cannot determine existence of cause and effect due to there may be a number of different other unmeasured variables, which could be interrelated and responsible for the relationship observed. Multiple regressions is not always just one technique, but a family of techniques that can be used to explore the effect between one continuous variable and a number of independent variables or predictor (usually continuous) (Beech, 2006).

A multiple of regression analysis was performed to predict the connection between the supply chain integration (internal integration, supplier integration and customer integration) and port performance using of regression analysis. The Model Summary shows how much variance is explained by each model. Whether the independent variables are a significant predictor of dependent variable will be indicated by the value in the Sig. F Change for this model. Note that the value for the next model reflects all independent variables entered.

R is the population correlation coefficient, and it takes on values between -1 and +1; while zero indicates no linear affiliation; 1 shows a really perfect high quality linear relationship; -1 shows a perfect negative linear relationship (Ge, 2013)

Table 4.9 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.791a	.626	.617	1.49019

Source (Spss Output, 2021)

A. Predictors: (Constant), Customers Integration, Suppliers Integration and Internal Integration,.

B. Dependent Variable: Port Performance

R is the square root of R-Squared and is the correlation between the observed and predicted values of dependent variable

The finding of the analysis implies that there is association of 62.6% between examined observed and predicted seaport performance. Therefore; from this result, it may be interpreted as

there may be a strong correlation between observed performance and predicted values of dependent variable.

R² is called the coefficient of determination, it the proportion of the variance in the independent variable (seaport performance) defined through variation within the independent variables, and it suggests the extent of variance explained by the model; which suggests how the port performance varies with variation in supply chain integration practices

Table 4.10 ANOVA^a

MODEL		Sum Of Squares	Df	Mean Square	F	F Sig.
1	Regression	479.541	3	159.847	71.981	.000 ^b
	Residual	286.467	129	2.221		
	Total	766.008	132			

Source (Spss Output,2021)

A. Dependent Variable: performance

b. Predictors: (Constant), internal integration, supplier integration, customer integration

The findings of the above table 4.10 indicated that the significance value of the model is $p < .0005$; which is less than the significance degree 0.005 at a significance level of 95%, thus the model is statistically significant in predicting how Customers Integration, Suppliers Integration and Internal Integration affect the performance of the port.

A value is greater than 1 for F-ratio yield efficient model. In the above table, the value is 71.981, which is good.

Table 4.11 Regression Coefficient1

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.	95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	1.207	.668		1.808	.073	-.114	2.528					
	Customers Integration	.222	.033	.492	6.766	.000	.157	.287	.621	.412	.264	.547	1.827
	Suppliers Integration	-.043	.039	-.067	-1.107	.270	-.121	.034	.292	-.097	-.060	.795	1.257
	Internal integration	.318	.053	.415	6.004	.000	.213	.423	.600	.367	.223	.607	1.647

Source (Spss Outpt, 2021)

a. Dependent Variable: port Performance

The regression coefficient is the independent variable related to with its contributing importance to the variance accounted for in the dependent variable. From the findings within the above table 4.11, the regression equation is: -

$$Y = 1.207 + 0.222X_1 - 0.043X_2 + 0.318X_3 + \epsilon$$

Where Y is Organizational Performance

X1= Customer Integration

X2= Supplier Integration

X3= Internal Integration

€= Error term

From the above regression model, the significance value of two independent variables (internal integration, and customer integration) is much less than 0.05 which exhibits that the models is statistically significant the analysis of supply chain integration role on port performances, whereas the significance value of one independent variable is greater than 0.05 shows that the model is in statistically insignificant to predict its role on port performance.

On the other hand supplier integration has not significant impact on port performance. From the above regression model, the multiple linear regressions established that all independent variables taking to be zero (when customer integration, supplier integration and internal integration are held at zero). It was found that port performance would be increase by 1.207constant.

Increase in customer integration, leads to an increase in port performance by a factor of 0.222, while increase in internal integration will lead to an increase of port performance by a factor .318

A unit increase of supplier integration will decrease performance of the port by a .043.

This clearly indicates the existence of a positive relationship between supply chain integration practices and port performance.

These findings supports other literature that argues the supply chain management integration have a role on the performances of the port. When the findings of this study compared with those of previous research on supply chain integration, the customer integration and internal integration findings that imply as there are is significant effect in enhancing a port performance is consistent with the findings Song and Panayides (2008) and Panayides and Song (2006) respectively.

On the other the findings indicate as the supplier integration has no significant impact with the performance is consistent with pervious of study by Han,C.hwan. (2018). And (Porter 1985).

Table 4.12 Coefficients table

Independent variable	Sig value	Hypothesis Testing Result at 95% confidence interval	Interpretations
Customer integration	0.00	Alternative hypothesis accepted (0.00<0.05)	There is significant relationship between customer integration and port performance, since sig level is lower than rejection level 0.05
Supplier integration	0.270	Null hypothesis not rejected (0.27>.0.05)	No significant relationship between supplier integration and port performance, this is because sig value is .270 which is greater than acceptable limit. With the 1% increase in the supplier integration port performance will decrease by .43% (B value)
Internal integration	0.000	Alternative hypothesis not rejected(0.00<0.05)	The internal integration has significant impact on port performance this is because sig value less than rejection level 0.05

Source (spss output, 2021)

CHAPTER FIVE

5. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1. Summary of Major Findings

This chapter will summarize the findings of the analysis as informed by the study objectives. In addition to the summary, the chapter also concludes the finding with recommendation as supported by the findings. The areas of further research are also well pointed out.

The investigation made on the extent of dimensions supply chain integration practice were revealed, that the result of customer integration, (15.98), supplier integration, (12.72), and internal integration, (14.45).

The result of the analysis revealed the high extent of supply chain integration practice by the port, since all the dimensions have been fall great extent as per the survey scale instrument.

The second objectives of the study are to investigate the correlation between supply chain integration and port performance in addition, to that the study has found the relationship of dependent variable (port performance) is small with supplier integration (.292), and moderate correlation with internal integration (.600) and customer integration (.621). Accordingly, the findings of the result implying that customer integration and internal integration are slightly varied together with port performance, whereas supplier integration adversely changes with change in port performance.

The significant level of customer integration and internal integration are less than significant statistical level (ie.0.05) so these variables are statistically significant. The result implies that the degree of internal integration and customer integration changing together with port performance had relevant effects; adversely the degree of supplier integration, varying together with the performance of port was not relevant.

The findings from regression analysis indicate that there is a very strong relationship between the dependent and independent variables.

The regression equation adopted is able to explain 62.6% role of supply chain integration on port performance. This makes it a suitable model in explaining the supply chain integration role of port performance.

The regression coefficients (β) of the model were also .222, -.043, .318 for customer integration, supplier integration and internal integration respectively. Given that the statistical values of internal integration (.000) and customer integration (.000) are significant, thus they have the power to affect the performance of the port.

Generally the model is statistically fit in predicting port performance since its statistical value ($P < .0005$) less than statistical level ($\alpha .05$).

5.2. Conclusions

There is high extent of practices of supply chain integration in the port since all of dimensions have been fall within the great rate as per the survey scale instrument.

The internal integration, customer integration and port performance are substantially changed together, but supplier integration is adversely changed with the change of port performance.

In other hand Customer integration and internal integration are statistically significant, but supplier integration is statistically insignificant. Hence the degree of customer and internal integration changing together with port performance are relevant effects; adversely the degree of supplier integration varying together with performance of the port is not relevant.

The Supply chain integration explained 62.6% of the port performance; while 37.4% of the port performance could be explained by other factors which are not considered by this study.

Customer integration and internal integration have direct and positively influenced the performance of the port, provided that developed internal integration in the port makes the port well organized and also gives the port operators to monitor the movement of every cargo in the port and its location since all activities are synchronized and all necessary information exchanged on time through higher technology, leads higher port performance.

The Customer integration maintains the importance of balancing coordination and information sharing with key customers and accurate understanding of their needs. This means if the port performed well integration with its customers would enhance port performance.

But supplier integration which is synchronizing of port activities with key suppliers does not have significant impact on the service quality offered by the port as well reliability of port service and responsiveness of the customer orders, thus means it has not significant impact on port performance.

The overall evaluation results of the structural model discovered that the model had satisfactory statistical power in predicting the research model. Generally, the observation confirmed that the superior port performance can be attained through supply chain integration impact.

5.3. Recommendations

Grounded the study's summary of major finding and conclusion, these under listed recommendations are projected a way forward from the findings of the study.

- Continuous improvement of supply chain integration practices should be undertaken in the port, so that optimal performance would be achieved with all partners in the chain.
- The degree of variance among supply chain integration dimensions and port performance must be expanded through systems automation, framework settlement, and relationship management and performance assessment.
- Another element of supply chain integration that have no seen on this study, but might have explained port performance have to be considered and retreated with the intention to minimize the impacts of unpracticed supply chain integration.
- All the dimensions of supply chain integration need to be created as well as practiced by the port to obtain superior overall performance.

5.4. Suggestion for Further Study

Since the integration consists of information exchange, joint decision -making, and emphasis on teamwork; the interactions often takes place among various human actors of the port, while the integration is carefully related with knowledge based process. Therefore, the level of skills and capabilities in the form of human resources may have an impact on the strength of the relationships, between internal and external integration with port performance.

This remains as an opportunity for future studies in the Supply chain management area.

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APPENDEX

Appendix: I Introduction Letter

Dear Sir / Madam

I'm a candidate of Master in Logistics and Supply Chain Management at Bahir Dar University and I currently pursuing a Thesis entitled "**The role of supply chain integration on port Performance at Berbera, Somaliland**". In view of this empirical investigation, would you mind to request you to be part of this study by answering the questions in this questionnaire? Rest assured that the information that you provide shall be kept with the utmost confidentiality and will be used for academic purposes only.

Thank you very much in advance!

Yours faithfully!

.....

Questionnaire Appendix II: Research Questionnaire

Introduction

This questionnaire has been designed for academic use only, with the sole purpose of collecting data to determine the relationship between Supply Chain integration (SCI) and the port performance in Somaliland

Please note that the data you provide will be treated with extreme confidentiality. Your response is highly prized

Part I – Respondents Profile

1- Gender (Please kindly fill-in and tick(✓) where appropriate):

Male

Female

2- Educational Qualification

Diploma / Certificate

Bachelor Degree

Masters Degree

PHD

3. Work Experience

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1-3 years

4-6 years

7-10 year

Above 11 years

4. Title

Others

Assistant

Associate

Manger

Part II: Extent of SC Integration

With regard to supply chain integration of your organization, please tick (√) the appropriate number to indicate the extent to which you agree or disagree with each statement.

The items scales are five-point Likert type scales have the following meaning

1. Strongly Disagree (You disagree with no doubt at all)
2. Disagree (You disagree with some doubt)
3. Neutral (You are not sure)
4. Agree (You agree with some doubt)
5. Strongly Agree (You agree with no doubt at all)

Customer integration	1	2	3	4	5
1. Supply chain Integration has assisted in improving the quality of					

services offered to the beneficiary.					
2. The speed of service delivery has been enhanced due to the supply chain integration process					
3. Customer integration has enabled to deliver services easily and quickly.					
4. The speedy customer collaboration has been maintained as a result of Supply chain integration.					
5. Due to supply chain integration customers relationship has been improved					

Internal integration	1	2	3	4	5
1. there is information flow between different departments in the port					
2. internal integration makes easy to access databases for extracting key operational information in the port					
3. internal integration helps departments in the port to work as one entity					
4. internal integration helps the functions in the port to clearly understand the needs of their customers in a better way					
5. there is high alignment of the internal processes with departments in the port					

Supplier integration	1	2	3	4	5
1. Supply Chain Integration has provided the port the ability to quickly and easily relate with suppliers					
2. Supply chain integration is led to a better supplier relationship management.					
3. Orders are easily processed as a result of supplier integration					

4. Supply chain Integration enabled smooth exchange of operational information with suppliers.					
5. Due to supply chain integration port activities synchronized with those of key suppliers					

Part III: port competitiveness performance.

Please indicate the extent to which the following statement concerning the relationship that exists between your SCI and the performance of your organization occurs.

Use the scale of: 1 = Strongly Disagree, 2 = Disagree, 3 =Neutral, 4 = Agree, 5 = Strongly Agree.

port performance	1	2	3	4	5
1. We provide highly reliable of services					
2. We ensures that the customers are fulfilled in a timely manner					
3. We provide high quality of services					

