

**SUPPLY CHAIN INTEGRATION AND SERVICE DELIVERY IN
ELECTRICITY SUPPLY FIRMS IN MOGADISHU, SOMALIA**

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DECLARATION

This research project is my own work and has not been submitted for examination to any other university

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Date: 5th November, 2021

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This research project has been submitted with my authority as the University Supervisor.

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DEDICATION

I dedicate this Project to my Brother Elmi Mohamed for his patience, kindness, and unwavering support during the research time.

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ABBREVIATIONS AND ACRONYMS

| | |
|-------|---|
| BECO | : Banadir Electric Company |
| BE | : Boqoljirow Electric |
| CPFR | : Collaborative Planning, Forecasting and Replenishment |
| ECR | : Efficient Consumer Response |
| ENEE | : Ente Nazionale Energia Electrical |
| GTSI | : Governance Theory of Supply Chain Integration |
| KPI | : Key Performance Indicators |
| ME | : Madina Electric |
| MP | : Mogadishu Power |
| MoEWR | : Ministry of Energy and Water Resources |
| RE | : Ramadan Electric |
| SCI | : Supply Chain Integration |
| SD | : Service Delivery |
| SNT | : Supply Network Theory |
| SE | : Somali Energy |
| SPSS | : Statistical Package for Social Sciences |
| SPW | : Somali Power and Water |
| SCM | : Supply Chain Management |

ABSTRACT

A supply chain is made up of a number of different organizations, all of which have their own unique corporate identities. Current supply chain operations in Somalia have significant flaws, according to research on supply chain integration conducted in retail and other economic sectors of the country. The study's overall goal was to evaluate the impact of SCI on service delivery in Mogadishu, Somalia's electricity supply firms. Specifically, to determine the scope and extent of SCI practices application in the electricity supply firms in Mogadishu, Somalia; to determine the effect of SCI on Service Delivery in electricity supply Firms in Mogadishu, Somalia and to determine the challenges of implementation of SCI practices within the electricity supply chain in Mogadishu, Somalia.

The study was guided by two theories which include the Governance Theory of Supply Chain Integration and the Supply Network Theory.

The investigation utilizes the descriptive configuration depicting the current circumstance of the research. The population of the study included All nine of Mogadishu's power supply companies are involved in the investigation, including Madina Electric, Boqoljirow Electric, Ministry of Energy & Water Resource, Somali Power & Water, Mogadishu Power, Ramadan Electric, Somali Energy, Somali Electric and Banadir Electric Company. This study was based on simple random sampling which was unbiased and simple to use. Approximately 66.6 respondents from all the 9 electricity supply companies in Mogadishu, Somalia were sampled. A questionnaire was used in data collection.

The study found out that the organizations in the study relied on the departmental level integration or applied the Silo approach in ensuring good service delivery; internal integration was most influenced by supply chain data performance, then integrated databases and access mechanisms, and last human connections and all the factors that were investigated had a significant effect on the SCI practices. The study concluded that customer integration and internal integration have the strongest connection between service delivery and supply chain integration. Integration of the supply chain has a significant effect on service delivery for electric utility businesses; internal integration had a positive relationship with electricity service delivery among the electricity firms in Mogadishu and Consumer integration was also found to have a positive relationship with the service delivery by electricity firms in Mogadishu. The study thus recommends that the firms focus more on supply chain integration in enhancing their service delivery. This will involve them integrating their suppliers upstream and their consumers downstream.

CHAPTER ONE: INTRODUCTION

1.1 Background to the Study

A supply chain is made up of a number of different organizations, all of which have their own unique corporate identities (Chopra and Meindl, 2004). In other words, it's a network of links via which things are made and delivered to customers. According to the findings, supply chain integration accounted for just a small portion of the variables influencing service performance across Mogadishu's electricity supply firms. To find out what else influences the availability of energy in Mogadishu, Somalia's power providers need to do further research. Consequently, this implies that there exist organizations that enable the simultaneous flow of information upstream and downstream (Ellram and Cooper, 1990; Houlihan, 1988; Robinson and Kalatoka, 2000). With regards to raw material management, the supply chain management (SCM) process includes everything from purchasing raw materials to delivering finished goods to customers (Tyndall, 1998). To date, the concept of SC has gained widespread acceptance among leading business organizations across the globe due to the convergence of data frameworks in corporate operations, pressure from multinational corporations, and new action plans being developed all over the world. After seeing the advantages of community-oriented connections beyond their hierarchical and public limitations in the 1980s, businesses have had a growing interest in implementing SC concepts ever since. A Supply chain today is the wellspring of the upper hand where organizations presently don't contend on items alone yet in addition on the sort of production network the firm applies ((Lummus and Vokurka, 1999).

Service Delivery (SD) which relies significantly, upon the powerful use of SC ideas is characterized as the association's capacity to utilize adaptable work processes, utilization of worldwide sourcing works on, guaranteeing client and provider cooperation works on, taking part in nonstop advancements, empowering the utilization of innovation and working as an arranged association (Dawson & Horenkamp, 2007). Steady improvement of strategies adds to the advancement of SD frameworks, upgrading administration norms and decidedly supporting the impression of clients about the nature of administrations (e.g Hensel, 1990; Kingman-Brundage, 1991).

A "Supply Chain" indicates the coordination and reconciliation of functional cycles within an organization, including all partner associations, in order to measure and analyze products and services that create value for customers and achieve a certain level of customer satisfaction," according to Robinson and Malhotra (2005).

1.1.1 Electricity Supply in the Economy

In line with existing literature on electricity supply in the economy, the world economy including Sub-Saharan Africa has many challenges related to the supply of electricity to the electricity consumers. The industrial customer, however, seems to be much affected when it comes to outages, which may lead to serious challenges such as production stoppages, redundancies, and financial loss. In most cases, the existence of electricity supply challenges means that electricity supply companies cannot meet the level of performance as required by certain Key Performance Indicators (KPIs) including Number of Customers per Kilometer, System Losses, and Cost Recovery Ratio (Appendix(I11)). However, the growth of electricity generation also encourages GDP growth and has a positive correlation. From the operational perspective, electricity Supply chains in the world are slowly adopting new technologies along with the distribution network. According to Salvi.V.Z. (2020), there is increasing use of Smart meters, the Smart grid, use of sensors, and generation of Big data through the use of IoT devices in Brazil.

There is now a flexible supply chain for energy that is responsive to client demands. The electricity supply chain technologies such as big data are used to generate extra business for the electricity supply companies and are used for improving operational conditions to achieve the much-required customer service levels as evidenced by certain Key Performance Indicators along the electricity Supply chain (Appendix I). While supply chain responsiveness research is underway across the world's power supply chains, there is minimal study in Supplier Chain integration among the world's electricity supply companies. A major part of every nation's economy, asserts Voser (2011), is the energy sector since it provides inputs for industrial and production operations throughout the supply chain. Electricity supply that fulfills consumer needs is therefore essential for economic growth (Rojin, 2013). The energy industry can improve service quality and customer happiness by accurately using SC ideas. Customers' complaints about inadequate

power supply during peak demand must be promptly addressed, and the cost of rural electrification must be reduced, loopholes in grid systems must be closed, the limited distribution capacity must be increased, and private investment in the power sector must be encouraged (Ngina, 2014).

1.1.2 Electricity Supply in Mogadishu.

Power supply providers in Mogadishu have many challenges, including widespread damage of energy transmission lines, a lack of a reliable public approach, and a significant use of force (Jimale, 2018). A national goal of 200 MW has been set for Mogadishu, while the country's capacity is only 70 MW. Before the common struggle in 1991, the country's power capacity was 70 MW; today, 85% of Somalis lack electricity, with 60% of them residing in rural areas (Energy World.com, 2020). Questions of this kind clearly point out that the power-producing and supply organizations in Somalia have a storage network gap that has to be addressed. As per the Legal Somalia did not yet have a normal public power administration office, according to the LASER assessment from 2016. Somaliland Energy Regulatory Commission, for example, is still in its infancy despite the creation of provincial power administration commissions, while an African Development Bank (ADB) study indicates that Somalia's total power production capacity was just 103,535 kilowatts in 2015.

1.2 Research Problem

Current supply chain operations in Somalia have significant flaws, according to research on supply chain integration conducted in retail and other economic sectors of the country. The World Bank, Somalia Electricity Supply Access Project (SEAP, 2018) for instance, highlights that the energy sector in Somalia is one of the most underdeveloped in the region due to the common customer complaints regarding less power affordability, high technical and power losses, dependency on foreign fuels for electricity generation. Above all, the Somalia energy requirements are to a great extent dependent on Biomass, mostly charcoal. In fact, due to the bad security situation in Somalia since 1991, after the death of Siad Barre, Only 2.85 percent of total energy requirement is generated from hydropower (World Bank, 2015; AFREC, 2015).

The study by SEAP (2018) further states Somalia's "private and commercial energy players are severely capacity constrained, have inadequate legal and regulatory frameworks, and have made only modest investments," says the report. In addition, they lack data for effective decision-making while both the federal and state ministries of energy are deeply incapacitated in directing energy policies.

BECO, which is the biggest power supply organization in Mogadishu neither, does not have an arrangement on client assurance nor has it any vigorous production network for power supply in the nation and dissemination. Thus, the pervasiveness of these issues prompts helpless Service Delivery which is probably going to think twice about fulfillment and Customer Loyalty. Furthermore, there is tension on these force service organizations to be productive to improve client support Delivery levels in general. By bringing together all of the participants in the power sector, such as generators, power suppliers, transmitters, and purchasers, Nagurney and Matsypura (2007) report that the global power supply chain has become decentralized as a result. Additionally, Somalia's power distribution network has been diverted to areas like the Central State (Middle Shabelle and Hiran) and the South West State, further decentralizing the country (Kismayo). Mogadishu, the capital of Somalia's Banaadir province, is home to approximately 900,000 people. The demographics of Somalia are very interesting.

Supply Chain Integration (SCI) subsequently, arises as a response to this issue where SCI is how much the firm can deliberately work together with their stockpile accomplices, cooperatively overseeing both the intra and between authoritative cycles to accomplish the compelling and effective progressions of items, administrations, data, cash and decisions (Silvestro, 2014). This study will be centered around the two perspectives on the combination: Internal mix and outside mix including the two sub-parts of Supplier and client coordination (Bowersox (2000) and Stank. (2001). this study will try to answer the following question: To what extent are Supply Chain Integration Practices used within the Mogadishu, Somalia, and electricity inventory network? Is there any issue implementing Supply chain coordination in Mogadishu's power supply network?

1.3 Research Objectives

The study's overall goal is to evaluate the impact of SCI on service delivery in Mogadishu, Somalia's electricity supply firms.

Specific objectives

- i) To determine the scope and extent of SCI practices application in the electricity supply firms in Mogadishu, Somalia.
- ii) To determine the effect of SCI on Service Delivery in electricity supply Firms in Mogadishu, Somalia.
- iii) To determine the challenges of implementation of SCI practices within the electricity supply chain in Mogadishu, Somalia.

1.4 Value of the study

This research is anticipated to serve as a fundamental point of reference for power supply companies and other supplier organizations as they work to address the challenges and concerns that face their supply chains. The strategy developers will utilize this inquest to direct them on the best way to re-organize their work and assets in further developing their supply chains and tackle functional issues in order to influence their delivery of service. The examination will likewise give data to researchers, understudies, and analysts that would add to speculations and add information identified with SCI and how to mutually further develop Service Delivery inside the production network activity and fill in as a perspective for researchers contemplating SCI rehearses in both public and private areas. To help with future studies and knowledge gathering in the SCI and Service Delivery domain, this will enable future analysts and researchers to expand on ideas provided in the study.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

The supply chain integration is discussed in detail in this chapter, with an emphasis on the research gaps and the conceptual framework. A systematic literature search is used to identify the results of previous studies in this section.

2.2 Theoretical Literature Review

An important foundation for our findings comes from academic publications that examine governance theory and supply network integration in supply chains (SNT). In order to guide the research and to explain the theories and concepts, a theoretical framework is needed, according to Fulton & Krainovich (2010), Brondizio (2014), and Grant & Osanloo (2014).

2.2.1 The Governance Theory of Supply Chain Integration

According to the Governance Theory of Supply Chain Integration (GTSCI), supply chain integration is a strategic objective that may be accomplished via collaborative governance (Way & Ran, 2015). The governance theory process on the firms to adopt an integrated supply chain that is holistic, dynamic, elastic, which can handle uncertainties, and above all, which is future-oriented. As a future-oriented integrated supply network, it must function as a win-win cooperation system amongst supply chain partners, where the supply chain is shown as an evolution from the present state to the ideal future state in a sustainable life cycle. To get to the contractual integration phase, the supply chain must first go through a stage of chaotic development when there is no connection to the supply chain at all. This happens mostly involving internal integration to bilateral integration between neighboring partners and finally, holistic integration concerned with establishing a close, long-term and strategic partnership which is firmly established and formalized in the whole Supply Chain network.

This theory gives a qualitative explanation of how Supply chain integration should be measured as explained above. Additionally, it promotes, among other things: Formation of the supply chain integration governance structure or the decision-making committee, knowledge and information-sharing agreements amongst supply chain participants,

including the usage of cross-functional teams. It also encourages the use of Benefit and Risk sharing mechanisms involving the use of contracts, price concessions, and profit-sharing schemes among other arrangements. Finally, it advocates for use of collaborative research and development involving technology transfer among supply chain partners.

The investigation is concerned with the extent of supply chain integration in electricity supply firms in Mogadishu, Somalia, and how it affects Service Delivery which will be partly explained by several issues highlighted by the Governance Theory of Supply Chain Integration.

2.2.2 The Supply Network Theory

The Supply Network Theory (SNT) is the hypothetical premise of Supply Chain Management, with its beginnings during the 1970s. It clarifies the connections between organizations situated in a similar inventory network... Like the Growth Theory of SCI, it depicts the connections where the store network accomplices are locked in. Thorelli (1986) characterizes an organization as at least two associations that are engaged with long-haul connections.

As indicated by Hakansson and Ford (2002), "inventory network networks are gainful to each organization installed through the speculations and activities of different partners associated with the interaction".

There are various presumptions with the SNT including the supposition that the organization at the focal point of the organization appreciates more upper hand than the stockpile accomplices from the middle, that organizations share data and information with their accomplices, which is like what the Governance Theory advocates. The relationship among organizations is thought to be dependable and adds to esteem options on the two sides.

As per Narguney (Supply Chain Network Economics, 2006), "Supply Chains are the framework for the creation, conveyance, and utilization of products just as administrations in our globalized Network Economy". "The idea of inventory network networks is as appropriate to administrations for what it's worth to products" that can apply to multimodal

transportation or electric force age and circulation, to monetary organizations, or informal communities.

Nargurney (2006), has additionally given a definite elaboration of the Supply network hypothesis as it applies to the power supply organization. In such specific organizations, chiefs select their expense limiting courses where streams are directed to limit the absolute expense for society. As needs are, a "network financial matters formalism enjoys various benefits. Initially, one can without much of a stretch envision the inventory network structure as an organization with the fitting geography comprising of hubs and connections. The recognizable proof of the organization design of the inventory network permits us to examine the financial effects of the expansion/cancellation of different chiefs (as hubs in the organization);

The expansion/cancellation of various methods of exchange/transportation (as connections in the organization), and surprisingly various methods of creation. What's more, the similitudes/contrasts between the organization designs of supply chains in unmistakable applications are graphically uncovered and made more straightforward since one can see the number"(Nargurney,2006).

The investigation on the SCI on Service Delivery among the organizations providing power in Mogadishu will be incompletely moored on the Supply Network Theory comparable to group coordinated effort among the production network accomplices. This hypothesis clarifies the idea of better usage of the accessible assets for the upper hand.

2.3 Supply Chain Integration

Supply network Integration (SCI) is the measure of cooperation between one association and its production network accomplices including inside reconciliation, client coordination, and provider combination. As per Huo & Wang (2017), SCI includes the community-oriented plans and exercises between providers, stockrooms, merchants, and retailers. A broad survey of the inventory network coordination writing zeroed in on the elements of client incorporation, provider combination, and inside mix. However, the majority of inventory network joining studies have focused more on product trade and data flow than financial methods or money flow (Silvestro 2014).

According to a financial point of view, the money flow starting with one association then onto the next incorporates costs, speculation, receipts, and moreover, the cycles with accomplices that exhibit that the financial store network works in corresponding with the actual inventory network. Notwithstanding the sort of items, administrations, or data flow, installment is considered natural for the upgrading of creation and exchange. Along these lines, the financial production network is generally remembered for all inventory chains.

To join an inventory network, a company must consider "how much an association works together with its store network partners, overseeing intra- and inter-association measures to achieve viable and effective progresses of items, administrations, data, cash, and options, in order to offer the greatest benefit to its clients" (Zhao, Huo, Flynn, and Yeung, 2008).

2.3.1 Supplier Integration.

Integrated supplier systems are created when a company collaborates with its suppliers to create a framework that spans authoritative systems, promotes synchronized cycles, and provides data and information (Flynn, Huo, and Zhao 2010). A significant source of advantage is growing in importance between major commercial activities (Stank, Daugherty, and Ellinger 1999; Wang, Yeung, and Zhang 2011). For the purpose of gathering product requirements from customers and responding to changes in business sectors, provider reconciliation provides cooperation (Zhao. 2013). Knowledge about provider cycles, capabilities, and limits may help firms make better plans and estimates, create better products, and engage with customers at reduced exchange costs (Yeung, 2009; Huo, 2012). (Zhang and Huo 2013). Large-scale coordination and interoperability allow businesses to join forces with service providers (Panetto and Moline 2008). Coordination of projects emphasizes long-term cooperation, uniformity, intelligence, interdependence, and standardization of business models and tactics across ventures. A firm and its suppliers are therefore closely linked as a result (Chen, Doumeingts & Vernadat 2008).

Data separating between the organization's creation plans, quality, and plan, as well as direct quality improvement initiatives are all part of the important regions of provider reconciliation, according to Danese (2013). Provider reconciliation is performed to provide a smooth, efficient material flow across the provider organization and to prevent any possible deterrents throughout the time spent purchasing and producing. The sharing of

data with providers makes more prominent confidence while diminishing useless conflicts among purchasers and providers and taking into account compelling correspondence. As indicated by Heavey, P.F &Fazlollahtabar (2015), the Collaborative Planning, Forecasting, and Replenishment model permits data partaking in an incorporated Supply chain. The proposal is for CPFR to be utilized in different areas of business, other than the retail area.

2.3.2 Customer integration

When it comes to downstream store networks, this is known as customer coordination or downstream store network reconciliation. Where manufacturers may make use of the acquired information on customer requirements to provide goods that satisfy customers' preferences.

(Lau, 2010) expressed that the only person who can settle on a choice and can assess an item is the client because the client has the potential buying power, and as such is a chief according to a showcasing perspective. Also, data sharing based on cooperation between the clients and the association upgrades client reconciliation. Also, the connections among clients and an association empower the association to raise its degree of skill (Flynn 2010). According to Harris; Swatman and Paula (1997), the Efficient Consumer Response model utilized in the retail area supports the utilization of nonstop recharging, PC helped requesting, move through conveyance (cross-docking), Activity Based Costing, Category Management and coordinated Electronic Data Interchange in lessening costs through appropriate stock methodology. The ECR model is the premise of SCI.

2.3.3 Internal integration

Inside incorporation is reconciliation inside all inward offices from approaching material to dispersion. It includes coordination across offices and capacities heavily influenced by the assembling to satisfy clients' prerequisites, for example, creation, acquisition, coordination, stock, advertising, deals, and dispersion. Inside incorporation depicts the extent to which an organization can integrate all of its capabilities and procedures into a communitarian and coordinated approach to solve customers' concerns.

As a result, a maker's abilities and divisions function as one integrated and composed framework, collaborating to satisfy customers' needs and improve execution. Joint

arranging, utilitarian coordinated effort, data sharing, and cooperation support the presentation of associations and their inside combination to guarantee clients' assumptions. Inward joining implies framing a drawn-out arrangement connecting cycles and practices into coordinated and synchronized cycles to address client issues and inclinations and execute effectively with providers (Kotcharin, 2012). The point of inner incorporation is to smooth the development of assets, cash, items, and data to fulfill clients rapidly and for a minimal price (Flynn, 2000). For (Lotfi, 2013), an inner mix is when offices and cycles inside an organization work together to meet and resolve customer needs. As with lift execution, internal integration involves synchronizing departments and capabilities to provide a cohesive framework for fulfilling customer expectations and requirements.

Internal integration, according to Abdallah (2014), is the most important element influencing an inventory network, while internal integration, according to Ayoub (2017), is a mix of various offices that begins with basic materials and evolves through cycles before achieving appropriation. To go much farther, internal reconciliation is dependent on cooperation between the offices and components of an organization, which develops collegial respect via this kind of affiliation.

2.4 Service Delivery Measurement

Service Delivery measurement is done in a type of Service Delivery pointers or Key execution Indicators which can be both subjective and quantitative and alludes to the genuine conveyance of administrations and items to clients or customers (Lovelock and Wright, 1999). Both Gronroos and Ravald (2011) and (Zeithaml and Bitner, 2000) state that the delivery of excellent help is important in the delivery of client worth and prompts increased consumer loyalty and reliability, long-term benefit requiring great planning, compelling execution, and very carefully created conveyance plans.

As indicated by Lovelock (1984) and Armistead (1990), the point of administration conveyance framework is to overcome any issues between client assumptions and experience, administration conveyance framework is the medium through which representatives endeavor to satisfy quality guidelines set by the board and close the hole between administration quality particulars and the genuine help conveyance. Helpless

responsiveness achieved by bad quality prompts conveying lonely administrations to individuals who are needing quality administrations (Gruenais, 2009).

As indicated by Dawson. And Horenkamp (2007), associations that prevail in Service Delivery Innovation show six particular qualities including working as arranged associations, utilizing adaptable work processes, rehearsing worldwide sourcing, client and provider joint effort, guaranteeing persistent development and utilization of innovation. Dawson (2007) agrees with the concept of an inventory network, which promotes coordination between organizations as well as global sourcing across various professions. Dawson Despite this, not all of Dawson's (2007) findings pertain to power supply companies that have a position in the design categorization of companies.

Further, the World Bank report (2009) features various urgent execution pointers to be utilized in benchmarking inside the inventory network incorporation climate. These pointers are significantly quantitative and include Off-Grid/On-Grid interest, number of clients per Kilometer provided and System misfortunes among different elements (Appendix I, segment C).

2.4.1 Customer satisfaction

Consumer satisfaction can be defined of how satisfied customers are with their purchases and how they use the labor and products over a period of time (Fornell, Johnson and Anderson, 1996). It manifests itself in Information Technology understanding the client's assumptions about how the company works with labor and goods. A key essential outcome is substantial data on the most effective way to make clients happy (Oliver 1999.). Consumer loyalty is a percentage of a person's attitude toward products, services, and brands (Defranzo, 2012). Whereas item includes, capacities, unwavering quality, deals action and client service are significant factors in gathering consumer loyalty, making them steadfast clients require an undeniable degree of fulfillment where the client chooses to arrive at the other expected clients by sharing encounters (Hague and Hague 2016.). Subsequently, for the association to win a client, it should develop a decent relationship by giving quality labor and products according to the client's necessities (Rebekah and Sharyn 2004). Expanding consumer loyalty prompts client steadfastness.

It is incomprehensible for a business association to develop without fulfilling its clients (Tao, 2014.). Pointers like value, quality, dependability, compassion, responsiveness are factors impacting fulfillment and dedication. Then again, a few components like social, social, individual, and mental factors can likewise impact the client buying conduct (Research Service, 2017). Different components assuming an essential part in buying an item and administration incorporate age, occupation, monetary circumstance, way of life, inspiration, discernment, learning, mentalities, and convictions.

2.4.2 Customer Loyalty

Client consistency in loyalty is the demonstration of making the repeated acquisition of the current brands instead of picking contender brands. According to Oliver, devotion is a deeply felt duty to refurbish and once again criticize a favorite item or administration in the future regardless of circumstance effects and promotional efforts that cause swapping practices. The business must focus on the item and administration value and show an interest in developing relationships with customers in order to create steadfastness. According to Thomas (2013), "reliability is more productive."

Planning for client dependability requires the utilization of a client-focused methodology that perceives the needs and interests of the help received. Client steadfastness is worked throughout a significant period across numerous exchanges. (Gremler and Brown 1999) separated client consistency into three unique classifications including social, purposeful, and passionate devotion. Social faithfulness is continuing buying conduct while deliberate devotion is a potential purchasing goal when a customer believes that a brand compares to their value, ideas, and energy, they become passionately faithful.

2.5 Supply Chain reconciliation and Service Delivery

As indicated by Mwangi,(2017), utilizing an enlightening report approach prompts a positive connection among SCM and service conveyance instead of a powerless one. Mwangi further called attention to that there is an absence of a relationship in the last case because semi-government establishments, for example, the Kenyan Electricity Supply Companies underline more on guidelines than on Supply Chain Integration draws near.

While examining the connection between SCI Practices and Service Delivery in helpful associations in Kenya, Kaluki (2015) calls attention to the execution of compelling SCM rehearses gives data that prompts incorporation of exercises inside the inventory network. Albeit, this was in an alternate setting contrasted with this examination, the accentuation on Supply chain combination as an essential issue ought to be utilized as a measuring stick to further develop Service Delivery and should be unequivocally underscored.

2.6 Summary of Literature Review

The literature study conducted in this chapter reveals that Supply Chain Integration includes both internal and external components. Several integration techniques have been critical in Supply Chain Management. The few authors including Alshuridchet (2019) view Supply chain Integration based on Customer Relationship Management alone, hence narrowing the scope of this otherwise broader field of Supply Chain Integration. The same author's contextual argument is in the airline I logistics industry not within the electricity supply chain context. Other writers, such as Harvey (2015), have concentrated on a particular aspect of Supply Chain Integration: Collaborative Planning, Forecasting, and Replenishment. Groomroos (2011) focused on the end-product, the customer value but not on the Supply Chain Integration; Ambe (2009) within the Municipalities context focused on the Supply Chain Management implementation gaps not on SCI while Stank(2001) failed to recognize the existence of internal integration. It's also worth noting that Supply Chain Integration can only be effective if information and communication technology tools are used to facilitate successful collaboration interactions during SCI.

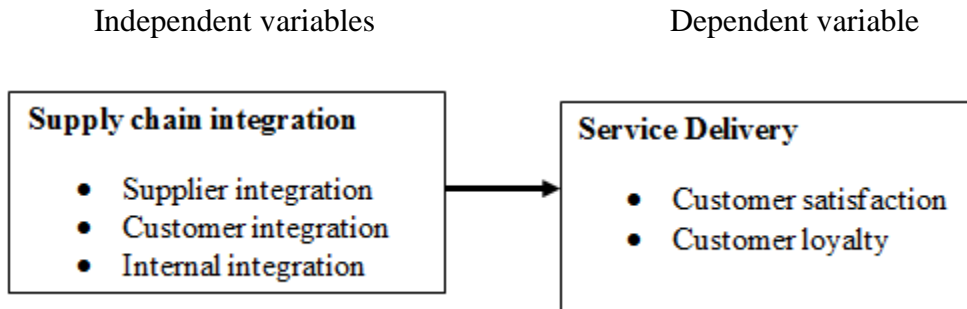
Table 2.1: Summary of Research gaps

| Author, year | Title | Publisher, vol. | Finding(s) | Research gap (s) |
|-------------------------------------|---|--|---|--|
| Alshuridehet. al. (2019). | Emirates Airline Logistics integrates its supply chain and manages customer relationships.. | Theoretical Economics Letters. Scientific Research Publishing. | A good CRM system promotes business growth, customer retention, and generation of revenues. | Conceptual gap: Based on CRM alone. Used qualitative study approach. Contextual gap: The study was focused on the Airline Logistics Industry which may not be relevant to the electricity sector. |
| Heavey.P.F & Fazlollahtabar (2015) | Collaborative planning, replenishment and forecasting framework. | Journal of Enterprise Information Management. | Increase the level of information-sharing along the SC from two levels to multilevel sharing. Improve on SC partner selection depending on the supply base. | Research gap: extent research beyond the retail sector and beyond two-partner collaborative systems. |
| Grönroos, C., &Ravald, A., (2011). | “Implications for value generation and marketing of service as a business rationale.” | Journal of Service Management, Vol. 22 No 1, pp. 5-22 | Creating Customer Value is a dual process in a Supplier-Customer relationship | Conceptual gap: Customer value versus supply chain integration. The paper narrowly focused on customer value creation, not SCI which needs to be explored. |
| Ambe. I.M (2009) | The Central District Municipality's Supply Chain Management Practices are investigated. South Africa's Northwest Province | Educational Research & Review, vo.4 | Lack of capacity in the implementation of Supply chain management practices in the municipalities. | Conceptual gap: emphasis was on Supply chain Management implementation not integration. ,was anchored on Grounded theory Contextual gap: Municipalities in South Africa. |
| Stank .T.P (2001). | Collaboration in the Supply Chain and Logistical Services. | Journal of Business Logistics, VOL.22 Issue 1. | Customer and supplier collaboration is the first step towards effective firm collaboration | Conceptual gap : Narrow focus on Customer and Supplier integration, focus on Logistical service only. Avoided internal integration. |

2.7 Conceptual Framework

The study's aim is to find out how SCI affects the delivery of electricity services in Mogadishu, Somalia. Figure 2.1 depicts the conceptual framework for this project:

Figure 2.1 Conceptual Framework



Source: **Researcher (2021)**

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter features the research plan, population, techniques for information assortment, the examination instrument, unwavering quality and legitimacy of the researching instrument, and information investigation strategy fitting for the study.

3.2 Research Design

The investigation utilizes the descriptive configuration depicting the current circumstance of the research according to the conditions or factors in variation as indicated by Kerlinger and Lee (2000). Clear exploration plans are observational examination and study research and that quantitative exploration is deductive in nature. (Mertler 2014).

As per Kerlinger, (2000), scientists mention deductions relying upon direct objective facts with the essential objective of portraying the causes and influence connections among factors. This examination's findings will assist illustrate how Supply chain Integration impacts Service Delivery in Mogadishu's electricity supply industry.

3.3 Population of the Study

All nine of Mogadishu's power supply companies are involved in the investigation, including Madina Electric, Boqoljirow Electric, Ministry of Energy & Water Resource, Somali Power & Water, Mogadishu Power, Ramadan Electric, Somali Energy, Somali Electric and Banadir Electric Company. (Appendix II). The study's target population may be as large as 600 individuals, with 20 (66.6) answers coming from each of the companies that participate.

3.4 Sampling

This study was based on simple random sampling which was unbiased and simple to use. The unit of study were the nine electricity supply companies in Mogadishu, Somalia as at the time of this study. Based on the Krecje and Morgan Table (1970), at a 95 % confidence limit (Appendix II), the sample size will be chosen according to the sampling frame below with the total number of respondents as approximately 66.6 respondents from all the 9 electricity supply companies in Mogadishu, Somalia.

Table 3.1: Sampling

| | Company | Operations officers/Managers | Procurement and SC senior officers |
|----|---|-------------------------------------|---|
| 1. | Benadir Electric Company(BECO) Power | 33.3 | 33.3 |
| 2 | Mogadishu Power (MP). | 33.3 | 33.3 |
| 3 | Somali Power and Water (SPW) | 33.3 | 33.3 |
| 4 | Ministry of Energy and Water Resource (MoEWR) | 33.3 | 33.3 |
| 5 | Somali Energy (SE) | 33.3 | 33.3 |
| 6 | Somali Electric(SE) | 33.3 | 33.3 |
| 7 | Ramadan Electric (RE) | 33.3 | 33.3 |
| 8 | Boqoljirow Electric (BE) | 33.3 | 33.3 |
| 9 | Madina Electric (ME) | 33.3 | 33.3 |
| | TOTAL | 300 | 300 |
| | Grand Total | | 600 |

Source: **Researcher (2021)**

3.5 Data collection

Assortment of the essential information was finished utilizing a questionnaire to conduct a survey. The surveys were administrated to every one of the chosen respondents for the examination to empower get-together of information concerning chosen parts of Supply chain Integration and Service Delivery. The significant organized and unstructured close-ended inquiries in form of questions were utilized to empower the aggregation of primary and secondary data. Section one of the polls was comprised general data. Section two had managed the degree of execution of Supply Chain joining practices. Sections three were examined how Supply Chain Integration affects Service Delivery. Section four was to cover service delivery. Section five was to cover the difficulties to the supply chain integration, in power supply firms in Mogadishu, Somalia. The survey tool (questionnaire) was self-administered to guarantee that every one of the questions is appropriately responded to.

3.6 Data Analysis

The finished surveys were coded while the coded information was ready in codebook design. In order to do statistical analysis, an excel datasheet was created and imported into

SPSS software. Data was cleaned and analyzed using the SPSS software after any mistakes have been corrected. Using SPSS, the data was statistically evaluated by an analyst who is well-versed in its application and conversant with the software's capabilities. The information was at first exposed to exploratory information investigation and symptomatic tests like ordinariness. The first objective was examined using descriptive statistics, which included the recording of percentages, frequencies, means, and standard deviations among demographic data as well as other factors such as educational attainment. In order to make the data easier to understand and comprehend, it was to utilize tables, pie charts, and graphs. The second goal of this study was examined in utilizing the multiple regression analysis approaches, as shown in this model:

$$S.D = a + b^1 S^1 + b2C^1 + b3I^1 + e$$

Where S.D is Service Delivery, SI is Supplier Integration, CI is Customer integration, I is Internal Integration and e is the error term.

The data analysis also included the use of graphs including radar charts and bar charts to benchmark the various Key performance indicators with those of the industry standard according to the World Bank report (2009) on the performance of electric utilities within Sub-Saharan Africa. All data on Key Performance Indicators was collected as secondary data and part of the questionnaire under section C: How Supply Chain Integration affects Service Delivery in the Mogadishu Electricity Supply Chain.

CHAPTER FOUR: RESEARCH FINDINGS AND DISCUSSIONS

4.1 Introduction

This chapter provides the results of the data analysis carried out in accordance with the project's objectives. Descriptive and inferential statistics are used to analyze the data in depth. Tables and graphs illustrate the study's results.

4.2 Response Rate

The power distribution companies' respondents were selected from the supply chain department as well as from operations. Consumers were selected as they visited the power supply companies. There were 508 completed and returned survey forms, of which 508 were filled out and returned. According to this, there were 84.66% responses, making it adequate for analysis and interpretation of the results. At least 50 percent of the respondents, according to Dixon (2012) and Saunders (2012), are needed to analyze the phenomena and report on the results of the research. Table 4.1 provides information on the response rate.

Table 4.1: Response Rate

| Response | Frequency | Percent |
|-----------------|------------------|----------------|
| Responded | 508 | 84.66 |
| Did Not Respond | 92 | 15.34 |
| Total | 600 | 100.0 |

Source: Survey Data (2021)

4.3 Demographics of Respondents

4.3.1 Business Description

The responses received indicated that the power distributors were either public or independent. The proportion of the public power distributors was 38 percent and that of the independent power distributors was 62 percent for the valid responses. The companies distributing power in Mogadishu Somali were largely independent. Three respondents did not provide data on their business descriptions. The breakdown of the distributors is as in the table below.

Table 4.2 Business Description

| Business Description | | |
|-------------------------------|-----------|---------|
| | Frequency | Percent |
| Public Power Distributor | 192 | 38.0 |
| Independent Power Distributor | 313 | 62.0 |
| Total | 505 | 100.0 |

Source: Survey Data (2021)

4.3.2 Number of Employees

Most of the companies surveyed had between 501 and 1000 employees at 25.1 percent, followed by those companies that had between 101 and 250 employees at 26.9 percent. Very few companies at 8.3 percent had employees of between 1 and 50. The table below illustrates the number of employees in the surveyed power distribution companies in Somali.

Table 4.3: No. of Employees

| Number of Employees | | |
|----------------------------|-----------|---------|
| No. of Employees | Frequency | Percent |
| 1-50 | 42 | 8.3 |
| 51-100 | 83 | 16.4 |
| 101-250 | 136 | 26.9 |
| 251-500 | 117 | 23.2 |
| 501-1000 | 127 | 25.1 |
| Total | 505 | 100.0 |

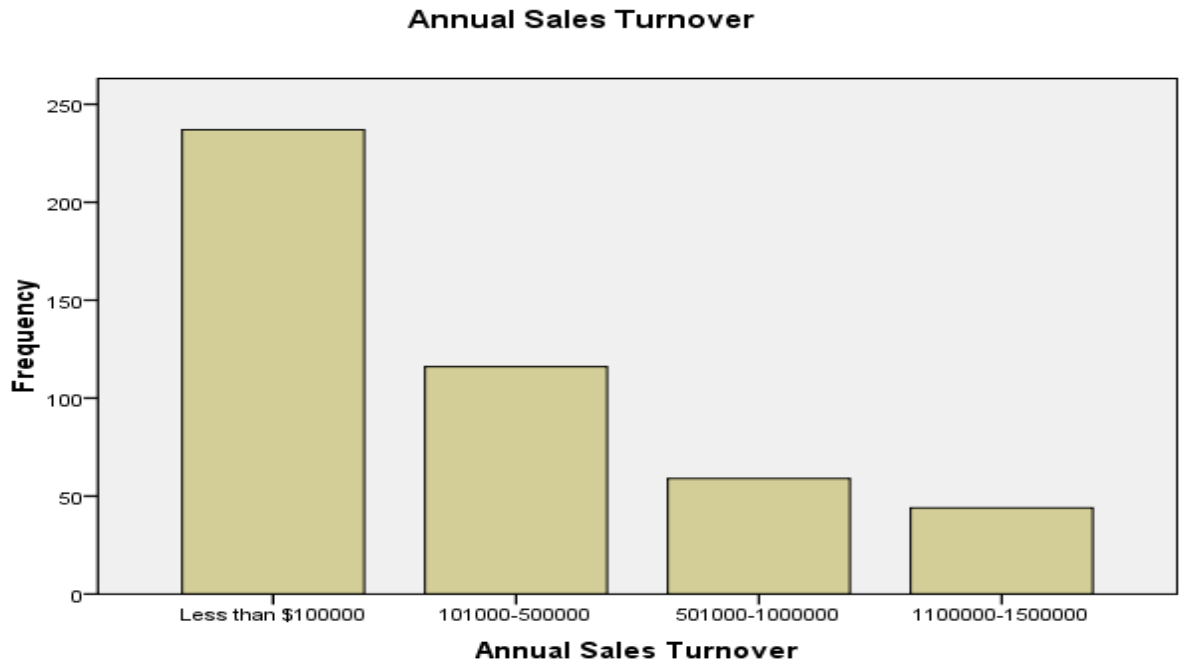
Source: Survey Data (2021)

4.3.3 Annual Sales Turnover

The sales turnover for the companies in the study in dollars was as in the bar chart below. Most companies had sales turnovers of less than 100,000 dollars. 237 respondents which translate to 52 percent of the respondents indicated that their company's annual sales turnover was less than 100,000 dollars. 25.4 percent indicated that their distributor's annual sales turnover was between 101,000 dollars and 500,000 dollars. Of the respondents, 12.9 percent indicated that their annual sales turnover was between 501,000 and 1,000,000 dollars while 9.6 percent of those who participated in the study stated that annual sales turnover was above 1,000,000 dollars. 52 respondents did not provide data on their annual

sales turnover. Figure 4.1 illustrates the distribution of annual sales turnovers for the companies.

Figure 4.1: Annual Sales Turnover



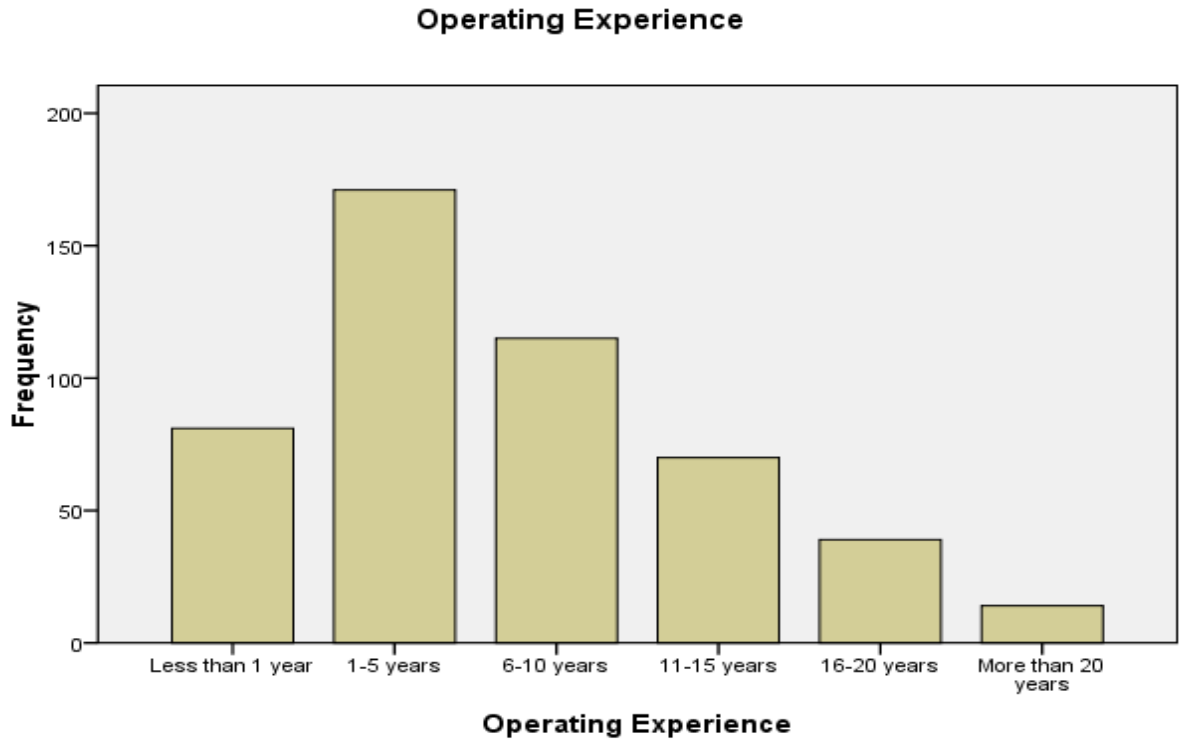
Source: Survey Data (2021)

4.3.4 Operating Experience

The responses indicated that most companies in power distribution in Somali had been in operation for between 1-5 years. This represented 34.9 percent of the valid responses. The companies that were operational for less than twelve months at the time of the investigation were 81 representing 16.5 percent while those who had been in operation between 6 to 10 years were 115 representing 23.5 percent of the companies surveyed. Those that had been in operation for 11 to 15 years were 70 and those that had been in operation for between 16 and 20 years were 39 representing 14.3 and 8 percent respectively. Very few had been in operation for over 20 years which represents 2.9 percent of the valid responses. Of the 508 questionnaires that were analyzed 18 representing 3.5 percent did not provide data on

the variable. The operating experiences for the power distribution companies are as summarized in figure 4.2 below.

Figure 4.2: Company’s operating experience



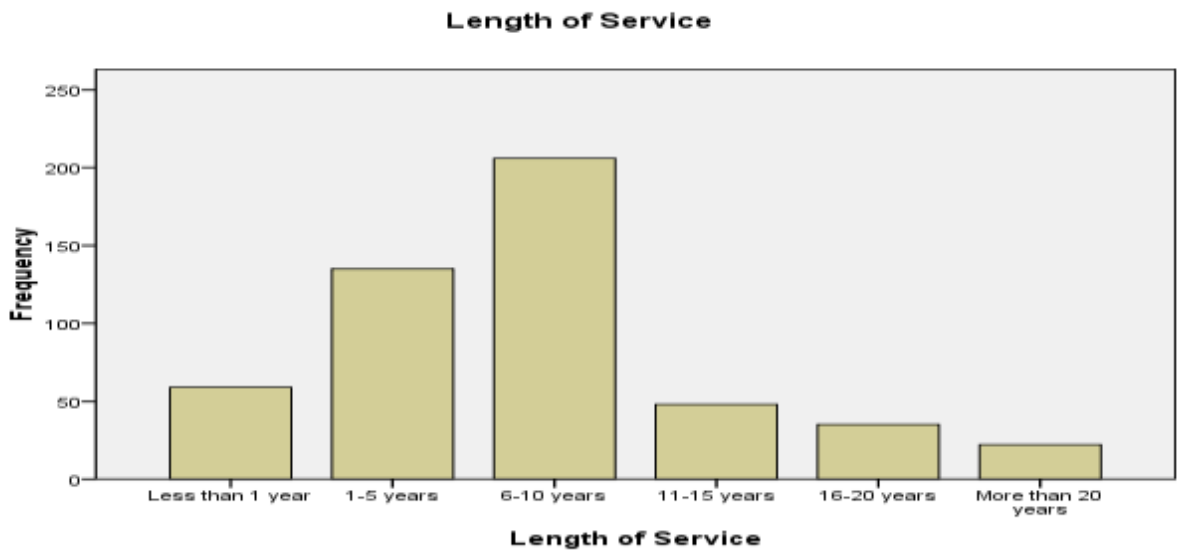
Source: Survey Data (2021)

4.3.5 Employee Length of Service

The respondent’s length of service with the companies ranged from less than one year to more than 20 years. Most of the respondents had been with their current companies for between 6-10 years at 40.6 percent of the total number of respondents. Those who had a work experience of less than one year were 11.6 of the respondents while those who had a work experience of between 1 and 5 years were 26.6 percent of the respondents. Those with a work experience of between 11-15 represented 9.4 percent of the respondents while those with a work experience of between 16 and 20 years represented 6.9 percent of the respondents. Those with over 20 years of experience 22 representing 4.3 percent of the respondent. Three respondents representing 0.6% of the respondents failed to provide data

on the length of service with the current employer. Those who had been with their current companies for more than 6 years were 61.2% of the respondents. This implies that most of the respondents had been with their distribution firms long enough to be able to provide appropriate data. The distribution of employees of the companies by years of experience is as illustrated.

Figure 4.3 Length of Service



Source: Survey Data (2021)

4.3.6 Level of Education

The respondent’s literacy levels ranged from high school certificates to Ph.D. 81 respondents had a high school certificate representing 16.1 of the respondents while 81 respondents had diplomas representing 16.2 percent of the respondents. Those with an undergraduate degree were 149 and those with a master’s degree were 157 representing 29.7 percent and 31.3 percent respectively. Those with PhDs were 34 representing 6.8 percent of the respondents. The data indicated that 83.1 percent of the respondents had at least a diploma and above. This suggests that the participants were well-versed in the study's aims, as evidenced by their willingness to contribute relevant data. The respondents' educational backgrounds are summarized in Table 4.4.

Table 4.4 Levels of Education of Employees

| Level of Education | | |
|---------------------------|-----------|---------|
| | Frequency | Percent |
| High School Certificate | 81 | 16.1 |
| Diploma | 31 | 6.2 |
| Higher National Diploma | 50 | 10.0 |
| Undergraduate Degree | 149 | 29.7 |
| Master's Degree | 157 | 31.3 |
| PHD Degree | 34 | 6.8 |
| Total | 502 | 100.0 |

Source: Survey Data (2021)

4.3.7 Nature of Customers

The customers served by the Somali power distribution companies were both national and International. Most of the customers for the power companies were international at 34.4 percent, national at 54.7, and both national and international at 10.9 percent. 12 respondents did not provide data on the nature of customers. The nature of customers for the Somali power distributors is as summarized in table 4.5 below.

Table 4.5 Nature of Customers

| Nature of Customers | | |
|----------------------------|-----------|---------|
| | Frequency | Percent |
| National | 261 | 54.7 |
| International | 164 | 34.4 |
| All of the above | 52 | 10.9 |
| Total | 477 | 100.0 |

Source: Survey Data (2021)

4.3.8 Nature of Suppliers

The study found out that most of the suppliers to the power distribution companies in Somalia were national at 55 percent followed by the international suppliers at 31.7 percent. The respondents who had both national and international suppliers were 13.4 percent of the respondents. Nine respondents in this variable did not provide data. This represents 1.8 percent of the total number of respondents. The nature of suppliers to the Somalia power distributors is summarized in table 4.6 below.

Table 4.6 Nature of Suppliers

| Nature of Suppliers | | |
|----------------------------|------------------|----------------|
| | Frequency | Percent |
| National | 138 | 55.0 |
| International | 158 | 31.7 |
| All of the Above | 67 | 13.4 |
| Total | 499 | 100.0 |

Source: Survey Data (2021)

4.4 The Extent of Supply Chain integration in the Organization.

In the implementation of supply chain integration, the study found out that the organizations in the study relied on the departmental level integration or applied the Silo approach at 48.9% followed by the cross-functional process level (integration level) at 26%. The research also revealed that the organizations applied the shared services level approach by 24.4% where the branches and the head office integrated into the supply chain.

On core processes management the study revealed that the organizations involved in power distribution in Somali relied on internal management as opposed to outsourcing. The responses show that 58.7% of the organizations applied internal management and while 41.3% applied outsourcing in their supply chain management. The study further revealed that 55.6 of organizations in power supply had order traceability mechanisms while 44.4 percent did not have. In tracing orders the study found out that 41.2% of the organizations used both computer information systems and telephone calls in tracing orders. 31.1% of the organizations used telephone calls only while 27.7 used computer information systems only. The study further revealed that 53.9% of the organizations have not adopted modern communication technology while 46.1% have.

4.5 Effect of Supply Chain Integration on Service delivery

An analysis of secondary data collected from the power distribution firms in Somali indicates that the off-grid and on-grid demand ratio for power ranged between 83.33 percent and 100 percent as indicated by the mean of 4.92 on a scale of 1-7. On a scale of 1-5, the number of customers which has a mean of 2.2677 is low. This implies a low electrification density.

The mean of 1.1299 on system losses on a scale of 1-6 indicates that system losses in Somali are at 18.83 which is less than 20 percent of supply thus indicating good service delivery. According to the World Bank (2009), countries with less than 20 percent system losses are good performers. In Africa, these countries are; Angola (14.5 percent), Botswana (14.8 percent), Burundi (15.0 percent), Cape Verde (17.0 percent), Gabon (17.8 percent), Cote d'Ivoire (18.1 percent), Kenya (18.1 percent), Benin (18.2 percent) and Namibia (18.4 percent).

The number of outages measures the quality of the power supply. High levels of outages cause dissatisfaction among customers (World Bank, 2009). At a mean of 2.7953 on a scale of 1-7, the outages in Somali were found to be high. The data provided indicated that the outages ranged between 51,000 to 75,000 per year which is way above the country average of 164 in Sub-Saharan Africa where the number of outages ranges from 6 in South Africa per year to 407 in Guinea (World Bank, 2009).

The cost recovery ratio measures a utility's capacity to recoup its expenses from its income. At 100 percent, the expenditures are said to have been fully covered by the revenues. A ratio beyond 100 percent means that the firm with the ratio is performing well. With a mean of 3.2677 on a scale of 1-7, the cost recovery ratio for the power distribution firms in Somali was not good because it ranges around 46.67 percent. This implies that the expenditures of the power distribution firms in Somalia are not covered by the revenues. According to the World Bank, concerning total cost recovery, the best performers are Uganda (174 percent), Madagascar (156 percent), South Africa (126 percent), Cape Verde (111 percent), Kenya (108 percent), Cameroon (101 percent) and Benin (99 percent).

The operational cost ratio, which evaluates the actual capacity of the power system in comparison to its notional capacity, assesses the operating cost. Unutilized assets weigh heavily on both the electricity industry and the fiscal system, as shown by this report. The mean of 3.1791 on a scale of 1-7 indicates that the operating ratio of Somalia lies between 41-60 percent which implies that the operating ratio of Somalia's power distribution firms is poor. A healthy operating ratio according to the World Bank (2009) starts at 70 percent. Ratios less than 50% are cause for concern. In Sub-Saharan Africa, countries like South Africa, Malawi, Niger, Kenya, Lesotho, Senegal, Ghana, Ethiopia, Eritrea, Cape Verde and

Cameroon have healthy operating rates over 70%. Load factor is a ratio of average yearly load to maximum annual load, as per a World Bank study of 2009. According to the report, a healthy load factor should range between 70 percent and 86 percent. Too low load factors and too high load factors (when it gets to 100 percent) are unhealthy. The mean of 2.3425 from the analysis indicates that Somalia's load factor lies between 21-40 percent which is unhealthy.

The World Bank (2009) defines capacity factor as the ratio of actual power production to maximum generating capacity. This metric indicates how much of the available capacity is being used. A 40 percent and above capacity factor is considered by the World Bank to be good. Africa's countries with capacity factors less than 40% are Ethiopia (36%) Rwanda (35%), Cape Verde (34%) Congo, Democratic Republic of Congo (32%), Niger (32%), and Swaziland (23%). The capacity factor of Botswana (84%), and Uganda (94%), is over 80%. A mean of 3.3642 for Somalia in a scale of 1-7 implies that the capacity factor for Somalia lies above 40 percent which means that the utilization of power is good as compared to the country's installed capacity.

The generation capacity of a country refers to their capacity to meet the current demand, losses and future demand. The study revealed by the mean of 5.2047 in a scale of 1-7 that the generation capacity for the Somali firms is high implying that they can meet the current demand, losses and the future demands of the country. Table 4.7 summarizes the effect of supply chain integration on the delivery of services

Table 4.7: Effect of Supply Chain Integration on Service Delivery

| Effect of Supply Chain Integration on Service Delivery | | | | | |
|---|-----|---------|---------|--------|----------------|
| | N | Minimum | Maximum | Mean | Std. Deviation |
| Off and On Grid | 508 | 1.00 | 7.00 | 4.9213 | 1.26464 |
| No. of Customers | 508 | 1.00 | 5.00 | 2.2677 | 1.67214 |
| Systems Losses | 508 | 1.00 | 6.00 | 1.1299 | .59157 |
| No. of Outages per year | 508 | 1.00 | 7.00 | 2.7953 | 2.00035 |
| Cost Recovery Ratio | 508 | 1.00 | 7.00 | 3.2677 | 1.85871 |
| Operating Ratio | 508 | 1.00 | 7.00 | 3.1791 | 1.61886 |
| Load Factor | 508 | 1.00 | 7.00 | 2.3425 | 1.99130 |
| Capacity Factor | 508 | 1.00 | 7.00 | 3.3642 | 1.85873 |
| Generation Capacity | 508 | 1.00 | 7.00 | 5.2047 | 2.08248 |
| Valid N (list wise) | 508 | | | 3.1636 | 1.65986 |

Source: Survey Data (2021)

4.5.1 Supplier Integration

Supplier integration responses were analyzed and summarized as shown in the following table (4.8). According to the findings of the study, respondents agreed with the following two statements: supply chain performance and knowledge transfer to suppliers are highly successful in fostering supplier integration, with means of 3.6250 and 3.6108 and standard deviations of 1.13220 and 1.16831, respectively. The respondents neither agreed nor disagreed with the rest of the statements as indicated by their moderate means. They were split evenly between agreeing and disagreeing that their companies practiced supplier integration, with a mean of 3.30423 and a standard deviation of 1.172.

Table 4.8 Supplier Integration

| Supplier Integration | | | | | |
|--|-----|---------|---------|-------------|----------------|
| | N | Minimum | Maximum | Mean | Std. Deviation |
| Supply Chain Arrangement Capability Provision | 419 | 1.00 | 5.00 | 2.9093 | 1.42311 |
| Provision of Guidelines for Developing, Maintaining and Monitoring | 413 | 1.00 | 5.00 | 3.0533 | 1.00825 |
| Establishment of Strategic Supply | 458 | 1.00 | 5.00 | 3.4192 | .98735 |
| Level of Joint Planning and Forecasting | 457 | 1.00 | 5.00 | 3.4967 | 1.15113 |
| Degree of Customer Involvement | 455 | 1.00 | 5.00 | 3.6308 | 1.13220 |
| Unimpeded Financial Flow | 435 | 1.00 | 5.00 | 3.0920 | 1.09073 |
| Supply Chain Performance | 448 | 1.00 | 5.00 | 3.6250 | 1.06919 |
| Data Measurement | 401 | 1.00 | 5.00 | 3.1471 | .96995 |
| Data Quality | 410 | 1.00 | 5.00 | 3.3537 | 1.07848 |
| Knowledge Flow and Information | 388 | 1.00 | 5.00 | 3.6108 | 1.16831 |
| Valid N (list wise) | 243 | | | 3.3042 3 | 1.172 |

Source: Survey Data (2021)

4.5.2 Internal Integration

When it came to measuring supply chain performance, respondents agreed that an integrated database and access methods made it possible to get timely and accurate information quickly, as well as information about supply chain partner performance that can be used to make financial statements more accurate for businesses. This evident in the mean scores above 3.5 for these variables which if rounded off would get to 4 which in the likert scale refers to agree. All the other sub-variables have means of less than 3.5 which rounds off to 3 which in the likert scale refers to neither agree nor disagree. Overall, the sub-variables had a mean of 3.4338 and a standard deviation of 1.17044 which rounds off to 3. This implies that on average the respondents neither agreed nor disagreed on the existence of internal integration in the firms distributing power in Somalia. Table 4.9 summarizes the output of the analysis of the internal integration sub-variables.

Table 4.9 Internal Integration

| internal Integration | | | | | |
|--|-----|---------|---------|--------|----------------|
| | N | Minimum | Maximum | Mean | Std. Deviation |
| Cross Functional Work | 431 | 1.00 | 5.00 | 3.4246 | 1.20782 |
| Enterprise Resource Planning | 433 | 1.00 | 5.00 | 3.4365 | 1.20234 |
| Shared Services | 416 | 1.00 | 5.00 | 3.2139 | 1.08212 |
| Level of Technology | 460 | 1.00 | 5.00 | 3.2652 | 1.07623 |
| Integrated Database and Access Methods | 421 | 1.00 | 5.00 | 3.5629 | .92528 |
| Timely and Accurate Information Availability | 451 | 1.00 | 5.00 | 3.7627 | 1.05790 |
| Supply Chain Performance Impact | 454 | 1.00 | 5.00 | 3.5815 | 1.14364 |
| Supply Chain Data Performance | 427 | 1.00 | 5.00 | 3.6206 | 1.18731 |
| Data Quality Performance Measurement | 375 | 1.00 | 5.00 | 3.4000 | 1.18141 |
| Level of Responsiveness and Flexibility | 390 | 1.00 | 5.00 | 3.3821 | 1.13834 |
| Degree of Interpersonal Relations | 409 | 1.00 | 5.00 | 3.5232 | 1.07104 |
| Valid N (list wise) | 212 | | | 3.4338 | 1.17044 |

Source: Survey Data (2021)

4.5.3 Customer Integration.

Researchers collected and analyzed data on numerous topics to learn how well customers in Somalia are integrated into the supply chain. Consumer participation in service development and collaborative planning to anticipate customer demand visibility were among the issues covered during the roundtable discussion. The ability to effectively and promptly serve consumers was also included, as was information sharing on market data and inventory stocking locations. Table 4.10 summarizes the findings on these sub-variables.

Table 4.10: Customer Integration

| Customer Integration | | | | | |
|--|-----|---------|---------|--------|----------------|
| | N | Minimum | Maximum | Mean | Std. Deviation |
| Degree of Customer Involvement in Service | 423 | 1.00 | 5.00 | 3.5603 | 1.09308 |
| Degree of Joint Planning | 424 | 1.00 | 5.00 | 3.3467 | 1.01296 |
| Level of Information Sharing | 423 | 1.00 | 5.00 | 3.4681 | 1.05906 |
| High Efficient and Rapid delivery | 427 | 1.00 | 5.00 | 3.6323 | .99207 |
| Seamless Information and knowledge Flow to Customers | 449 | 1.00 | 5.00 | 3.4967 | 1.16711 |
| Financial Flow to Customers | 440 | 1.00 | 5.00 | 3.6773 | 1.32281 |
| Valid N (list wise) | 326 | | | 3.5211 | 1.36626 |

Source: Survey Data (2021)

The means of the degree of joint planning, the level of information sharing and seamless information and knowledge flow to customers were 3.3467, 3.4681 and 3.4967 respectively which on the likert scale falls on a 3 which implies that the power distribution firms neither agree nor disagree to the existence of customer integration in their firms in those sub-variables. The means of the degree of customer involvement in service, high efficient, rapid delivery and financial flow to customers were 3.5603, 3.6323 and 3.6773 respectively. Their standard deviations were 1.09308, 0.99207 and 1.32281 respectively. The means imply that the power distribution firms have in existence these sub-variables of customer integration. Overall, the customer integration sub-variables had a mean of 3.5211 with standard deviations of 1.36626 which can be rounded off to 4 on the likert scale which implies that the power distribution firms agree to the existence of customer integration in their industry.

4.6 Challenges to Implementation of Supply Chain Integration

The study's other goal was to discover the obstacles to supply chain integration implementation. The Variables investigated were; lack of trust, system, demand distortions (Bull-whip effect), knowledge gap in supply chain integration, high cost of integration and corruption in the bidding process. Table 4.11 summarizes the study findings on these variables.

Table 4.11 Challenges to Implementation of Supply chain Integration

| Challenges to Implementation of Supply chain Integration | | | | | |
|---|-----|---------|---------|--------|----------------|
| | N | Minimum | Maximum | Mean | Std. Deviation |
| Lack of Trust | 460 | 1.00 | 5.00 | 3.5674 | 1.26190 |
| System | 474 | 1.00 | 5.00 | 3.7743 | 1.11576 |
| Demand Distortions | 499 | 1.00 | 5.00 | 3.5912 | 1.20624 |
| Knowledge Gap in Supply Chain integration | 488 | 1.00 | 5.00 | 3.8402 | 1.06226 |
| High Cost of integration | 501 | 1.00 | 5.00 | 3.6527 | 1.18791 |
| Corrupted Bidding Process | 505 | 1.00 | 5.00 | 3.7050 | 1.30402 |
| Valid N (list wise) | 418 | | | 3.7475 | 1.2049 |

Source: Survey Data (2021)

The research results in table 4.11 show that the knowledge gap in supply chain integration had the greatest mean of 3.8402 with a standard deviations of 1.06226 and thus the biggest barrier to the implementation of supply chain integration in Somalia. This factor was followed by system problems which had a mean of 3.77743 with standard deviations of 1.11576. The third component was compromised bidding procedures which had a mean of 3.7050 with standard deviations of 1.30402. The component having the least impact was lack of trust which had a mean of 3.5674 with standard deviations of 1.26190. All the variables examined had a means over 3.5 which may be rounded off to 4 to indicate that the variables pose a challenge to the implementation of supply chain integration to a significant degree. The mean of all the variables was 3.7475 with mean standard deviations of 1.2049. The mean rounds off to 4 to show that the respondents agree to a significant degree that the factors examined impacted the implementation of supply chain integration.

4.6.1 Service Delivery

The research looked at customer satisfaction and customer loyalty as indicators of service quality. Researchers discovered that respondents had a mean satisfaction rating of 3.3048 and a standard deviation of 1.21400 when asked about their provider satisfaction. Participants were split on whether or not their provider met requirements and whether or not they could recommend their present suppliers to others, with a majority saying they could. This is by means of 3.4602 and 3.4044 and standard deviations of 1.09863 and

1.11862 respectively. The respondents however disagreed that they were unhappy with their supplier's service delivery by a mean of 2.1733 and a standard deviation of 1.20703. The overall mean of 3.0857 and standard deviation of 1.15957 implies that the respondents neither agreed nor disagreed that they were satisfied with their suppliers. The findings on the customer satisfactions is summarized in table 4.12 below.

Table 4.12 Customer Satisfaction

| Customer Satisfaction | | | | | |
|---|-----|---------|---------|--------|----------------|
| | N | Minimum | Maximum | Mean | Std. Deviation |
| Satisfied with supplier's service delivery | 502 | 1.00 | 5.00 | 3.3048 | 1.21400 |
| Supplier meets my needs | 502 | 1.00 | 5.00 | 3.4602 | 1.09863 |
| happy to refer a friend to my supplier | 502 | 1.00 | 5.00 | 3.4044 | 1.11862 |
| unhappy with my supplier's service delivery | 502 | 1.00 | 5.00 | 2.1733 | 1.20703 |
| Valid N (list wise) | 502 | | | 3.0857 | 1.15957 |

Source: Survey data (2021)

Results showed that respondents had a neutral view of consumer loyalty toward their suppliers. The average response was 3.2908 with standard deviations of 1.21002 across the participants when asked how long they had been with their present provider. The research showed a neutral answer with a mean of 2.6673 and a standard deviation of 1.04150 on respondents' ability to change suppliers. In addition, the respondents had a mean score of 2.7211 with standard deviations of 1.21119 when asked whether their suppliers were reliable and capable of meeting their needs. When asked whether they agreed with the assertion that their supplier handles complaints effectively, respondents were likewise indifferent, with a mean of 3.0100 with standard deviations of 1.41206. Overall, the respondents' loyalty to their suppliers was neutral, as measured by the mean answer of 2.9223 with a standard deviations of 1.2187. Table 4.13 summarizes the results on consumer loyalty.

Table 4.13 Customer Loyalty

| Customer Loyalty | | | | | |
|---|-----|---------|---------|--------|----------------|
| | N | Minimum | Maximum | Mean | Std. Deviation |
| I have been with my current supplier for long | 502 | 1.00 | 5.00 | 3.2908 | 1.21002 |
| I could consider changing my power supplier | 502 | 1.00 | 5.00 | 2.6673 | 1.04150 |
| My supplier is good and competent | 502 | 1.00 | 5.00 | 2.7211 | 1.21119 |
| My supplier well handles my complains | 502 | 1.00 | 5.00 | 3.0100 | 1.41206 |
| Valid N (list wise) | 502 | | | 2.9223 | 1.2187 |

Source: Survey Data (2021)

4.7 Predictor Model

4.7.1 Correlation analysis

Table 4.14 summarizes the correlation analysis of the independent and dependent variables.

Table 4.14 Correlation Analysis

| Correlations | | | | | |
|---|---------------------|---------------------------------------|---|---|---|
| | | Composite Measure of Service delivery | Composite measure of supply chain integration | Composite measure of internal integration | Composite measure of consumer integration |
| Composite measure of service delivery | Pearson Correlation | 1 | .307* | .055 | .100 |
| | Sig. (2-tailed) | | .000 | .473 | .099 |
| | N | 415 | 190 | 172 | 276 |
| Composite measure of supply chain integration | Pearson Correlation | .307* | 1 | .495** | .400** |
| | Sig. (2-tailed) | .000 | | .000 | .000 |
| | N | 190 | 243 | 182 | 201 |
| Composite measure of internal integration | Pearson Correlation | .055 | .495** | 1 | .474** |
| | Sig. (2-tailed) | .473 | .000 | | .000 |
| | N | 172 | 182 | 212 | 180 |
| Composite measure of consumer integration | Pearson Correlation | .100 | .400** | .474** | 1 |
| | Sig. (2-tailed) | .099 | .000 | .000 | |
| | N | 276 | 201 | 180 | 326 |

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

Source: Survey Data (2021)

The results showed a strong link between the independent factors. Internal integration had a p value of .473 which is higher than .05, therefore not significant, but supply chain integration had a $r = .055$ and a p value of .473 which was determined to be significant with service delivery with $r = .307$, which is less than 0.05 and p value of .000. Consumer integration was likewise not significant with $r = .100$ and a p value of .099, which is higher than .05. Supply chain integration had the highest positive correlation with service delivery with $r = .307$ while Internal integration had the least positive correlation with $r = .055$.

4.7.2 Model Summary

Table 4.15 below provides a model summary for this study.

Table 4.15 Model Summary

| Model Summary | | | | |
|--|-------------------|----------|-------------------|----------------------------|
| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
| 1 | .312 ^a | .097 | .075 | .32262 |
| a. Predictors: (Constant), Composite of Consumer Integration, Composite of Supply Chain Integration, Composite of Internal Integration | | | | |

Source: Survey Data (2021)

As shown in Table 4.15, the correlation coefficient between the predictor variables and the predicted variable was $r = .312$, which shows that the variables have a moderately positive connection. In the range of -1 to +1, the value of r indicates a negative correlation, whereas positive numbers imply a positive correlation. A value of $r = 0.00$ implies that there is no correlation while a value close to -1 implies that there is a strong or perfect correlation and vice versa.

The R squared coefficient of determination measures how much of the overall change in the predicted variable is due to the predictor variable (Hamilton, Ghert & Simpson, 2015). The $R^2 = 0.097$ in this study shows that the predictor factors account for 9.7% of the variation in service delivery in the power supply business in Somalia. It determines how well the data points fit on the regression equation. R squared always lies between 0 and 1. A value close to positive 0.9 or negative 0.9 implies that the points are close to the trend line. Therefore, 90.3 percent of the dependent variable is explained by other factors.

The Adjusted R^2 quantifies the model's goodness of fit by taking the number of variables into consideration, as indicated by the name (Harel, 2009). The modified R^2 increases when a new variable enhances the model in a way that could not have been anticipated by chance alone. When a predictor doesn't enhance the model as much as expected, it's removed from consideration. A regression model's R^2 score rises when more independent variables or predictors are included. 7.5% of the dependent variable may be explained by the model's adjusted R^2 .

The standard error implies that the means calculated from a vast variety of input samples chosen from the original population will have a normal distribution (McHugh, 2008). The Pearson R allows the researcher to build a confidence interval within which the real population correlation will lie when employed with the correlation measure. The sample correlation statistic may be used to assess how exact an estimate of the population correlation is using the calculations obtained from the r and the standard error of the estimate. A small standard error indicates that the model is significant and may thus be utilized to explain the dependent and independent variables' relationship. Because of the modest standard error, the data utilized is more reflective of the real mean. The standard error in this study is .32262, which is low, indicating that the data obtained was reflective of the population mean.

4.7.3 Regression Model

This research used multiple regression analysis to find out how well supply chain integration affects service provision. The regression coefficients are as in table 4.16 below.

Table 4.16 Regression Coefficients

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|-------|--------------------------|-----------------------------|------------|---------------------------|--------|------|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | 2.705 | .242 | | 11.198 | .000 |
| | Supply Chain Integration | .124 | .050 | .240 | 2.476 | .015 |
| | Internal integration | .000 | .057 | .000 | -.007 | .995 |
| | Consumer Integration | .093 | .066 | .132 | 1.409 | .161 |

a. Dependent Variable: Customer Service Delivery

Source: Survey Data (2021)

Table 4.16 highlights the coefficients of the relationship between supply chain integration variables and service delivery. Supply chain integration has the highest positive relationship with service delivery with a coefficient of $\beta_1 = .124$ and a p-value of 0.015 which is less than the p-critical value of 0.05 implying that supply chain integration has a significant effect on customer service delivery. Consumer integration has the second positive relationship with service delivery in the power supply industry with a $\beta_2 = .093$ and a p-value of 0.995 which is greater than the p-critical value of 0.05 implying that consumer integration has no significant effect on customer service delivery. Internal integration has the least effect on service delivery with a $\beta_3 = .000$ and a p-value of 0.161 which is higher than the p-critical implying that the internal integration has no significant effect on customer service delivery. Holding all the predictor variables at zero level, the effect of supply chain integration on customer service delivery will be explained by the constant of 2.705 in this study which is significant with a p-value of 0.000.

CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS.

5.1 Introduction

This chapter provides a summary, conclusions, and recommendations, as well as ideas for further study.

5.2 Summary of the Findings

The study's goal was to investigate how supply chain integration impacted electricity supplier businesses in Mogadishu, Somalia. The study's goals were to determine the extent to which SCI practices are being implemented in Mogadishu's electricity supply firms, the impact of SCI on service delivery in Mogadishu's electricity supply firms, and the challenges of implementing SCI practices in Mogadishu's electricity supply chain. The study targeted 600 employees from both public and private electricity supply firms in Mogadishu as well as 600 consumers. Responses were received from 508 respondents from the electricity firms and a similar number from electricity consumers.

5.2.1 SCI practices implementation within the electricity supply firms in Mogadishu

To investigate the extent of SCI practices the study investigated implementation of supply chain integration, core processes management, traceability of orders and the existence and use of modern technology in integrating the supply chain. The study found out that the organizations in the study relied on the departmental level integration or applied the Silo approach in ensuring good service delivery. The firms also relied on the cross functional process level and the shared services level approaches in ensuring good service delivery to the customers where the branches and the head office integrated in supply chain.

On core processes management the study revealed that the organizations involved in power distribution in Somali relied on internal management as opposed to outsourcing. According to the results, the majority of companies used internal supply chain management rather than outsourcing. According to the findings of the research, most power supply companies have order tracking systems in place. An average number of companies utilized computer information systems and telephone conversations in tracking orders, according to the research, even though the majority of businesses had difficulties adopting and using contemporary communication technologies in the first place.

5.2.2 Effect of SCI on service delivery in electricity supply firms in Mogadishu

The study investigated cross functional work, enterprise resource planning, shared services, level of technology, integrated database and access methods, timely and accurate information availability, supply chain performance impact, supply chain data performance, data quality performance measurement, level of responsiveness and flexibility and the degree of interpersonal relations as internal integration factors. Internal integration was most influenced by supply chain data performance, then integrated databases and access mechanisms, and last human connections. Shared services had the least effect on internal integration.

It was found that customer integration was influenced by many variables, including the degree of customer participation in service, the degree of collaborative planning, the amount of information exchange, and the efficiency and speed of delivery. Financial flow to customers had the highest effect followed by highly efficient and rapid delivery. The degree of joint planning factor had the least effect on customer integration.

Overall, the research revealed that respondents were split on whether internal integration and consumer integration had any impact on the supply of electrical service in Mogadishu, Somalia. The mean responses in both cases pointed to a moderate effect. However, the respondents revealed that the power distribution firms agree to the existence of customer integration in their industry.

5.2.3 The challenges of implementation of SCI practices within the electricity supply chain in Mogadishu

This study also determined the challenges facing the implementation of supply chain integration. The Variables investigated were; lack of trust, system, demand distortions (Bull-whip effect), knowledge gap in supply chain integration, high cost of integration and corruption in the bidding process. An examination of supply chain integration methods revealed a knowledge gap that posed the greatest difficulty. This factor was followed by system issues and corruption practices in bidding. The factor with least effect on SCI practices was lack of trust. It was however noted that all the factors that were investigated had a significant effect on the SCI practices with all the factors rounding to 4 in a scale of 1 – 5.

Besides the challenges, the study also investigated customer satisfaction and customer loyalty as measures of service delivery. This research showed that respondents had a neutral view of their existing suppliers' satisfaction level. The study also found out that the respondents were neutral on their loyalty to their suppliers. Many were also neutral on whether they will consider changing their electricity suppliers.

5.3 Conclusion

The study's regression analysis shows that customer integration and internal integration have the strongest connection between service delivery and supply chain integration. Integration of the supply chain has a significant effect on service delivery for electric utility businesses. This link indicates that improving supply chain integration will have a beneficial effect on the quality of service provided by Mogadishu's power supply companies. Somalia electrical companies' ability to offer services effectively is directly linked to supply chain integration.

Supply chain integration variables in Somalia's electricity distribution industry are associated with service delivery, and the regression function for this relationship is

$$SD = 2.705 + .124SCI.$$

Internal integration which plays the role of coordinating the internal operations of the electricity firms to ensure good service delivery was also investigated. The regression results indicated that internal integration had a positive relationship with electricity service delivery among the electricity firms in Mogadishu. The variable was however found not to have a significant effect on service delivery. Therefore, this study concluded that internal integration is not a significant variable that affects service delivery of electricity firms in Somalia.

Consumer integration was also found to have a positive relationship with the service delivery by electricity firms in Mogadishu. This implies that a positive improvement of the consumer integration will have a positive effect on the service delivery of the power firms in Mogadishu. This variable was also found not to be significant. Therefore, consumer integration is a not a significant variable that affects service delivery of electricity firms in Somalia.

5.4 Study Contribution and Recommendations

It's essential to highlight that this study has contributed to the body of knowledge on the effect of supply chain integration on Somali service delivery by stressing many significant findings. The groundwork has been established for future supply chain integration practices study in Somalia, as well as for internal and external integration of the business. In addition, this study laid the groundwork for further future research.

According to the findings of this research, neither internal integration nor customer integration had a major impact on the capacity of the Somali power supply sector to deliver services. Although expectations may not be fulfilled, integrating internal and external customers should improve the service offering. This thus has shed light on how the variables particularly affect the service delivery among electricity suppliers in Mogadishu, Somalia.

The findings of this research will help managers of the city's power supply companies better understand how electrical service delivery in Mogadishu, Somalia. This will shape their strategies in improving service delivery. The study thus recommends that the firms focus more on supply chain integration in enhancing their service delivery. This will involve them integrating their suppliers upstream and their consumers downstream.

5.5 Suggestions for Further Research

The purpose of the research was to determine how well energy provider companies in Mogadishu, Somalia, integrate their supply chains. Part of the study included examining the linkage between service delivery and the incorporation of both internal and external factors. There was only a modest effect of supply chain integration on service quality in Mogadishu's power supply companies, according to the results. Therefore, further research is needed to discover the other variables influencing the availability of electricity in Mogadishu, Somalia's capital city. The study further discover that the government of Kenya give opportunity to the people to set up rule and regulation regarding private electricity, because of the consumer will get cheap electricity and also it will enhance the economic sector in Kenya.

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Appendix I: Questionnaire

Dear Sir/Madam

I introduce myself as Warsame Mohamed, an MSc (Supply Chain Management) student from the University of Nairobi. I am undertaking a research titled: **Supply Chain Integration and Service Delivery in Electricity Supply firms in Mogadishu, Somalia.**

I request you to kindly spare your time for a few minutes to fill in my questionnaire hereby attached.

The identity and information gathered will be strictly used for academic purposes only and the final project report will be shared with you.

Yours faithfully.

SECTION A: DEMOGRAPHIC PROFILE

Please tick (✓) on the dotted line or write in your answers where appropriate

1. Business Description of company:

- i) Public Power distributor []
- ii) Independent power distributor []

2. Please state the number of Employees in your organization by checking only one of the options below:

- I. 0-50 (ii) 51 - 100 [] []
- II. 101 – 250(iv) 251 – 500 [] []
- III. 501 -1000 [] []

3. Please choose your annual sales turnover

- (i) Less than 100,000 USD []
- (ii) 101,000 USD – 5 00000 USD []
- (iii) 601,000 – 1000,000 USD []
- (iv) 1100,000USD – 1500,000 USD []

4. Please state your company's operating experience (years)

- i. Less than 1 year []
- ii. 1 – 5 years []
- iii. 6 – 10 years []
- iv. 11 – 15 years []
- v. 16 – 20 years []
- vi. More than 20 years []

5. Please indicate your position in the organization -----

6. Please indicate how long you have worked in the organization

- (i) Less than 1 year []
- (ii) 1 – 5 years []
- (iii) 6 – 10 years []
- (iv) 11 – 15 years []
- (v) 16– 20 years []
- (vi) More than 20 years []

7. Please choose your highest level of educational attainment

(Please choose only one option).

- (i) High school certificate []
- (ii) Diploma []
- (iii) Higher National Diploma []
- (iv) Master's degree []
- (v) Undergraduate Degree []
- (v) PhD degree []

8. Please indicate the nature of your customers (please choose only one of the options given)

- (i) National (interregional) []
- (ii) International []
- (iii) Regional []
- (iii) All of the above []

9. Please indicate the nature of your suppliers by choosing only ONE of the options given below:

- (i) National (interregional) []
- (ii) International []
- (iii) Regional []
- (iii) All of the above []

Section B: The extent of Supply chain Integration implementation in the organization.

10. Please choose which strategy below is used in managing business processes in your company's supply chain? (Please choose only one)

- (i) Departmental level (silo approach) []
- (ii) Cross -functional process level (integration level) []
- (iii) Shared services level (branch and head office collaboration) []
- (iv) Others (please specify) -----

11. How do you manage core processes in your company? (Please choose only one)

- (i) Internal management []
- (ii) By out sourcing []

12. Do you have a system of traceability of orders in your company?

- (i) Yes [] (ii) No []

13. If yes, please choose from below the method of traceability used

- (i) Computer information system (specify) [] Please specify-----

- (ii) Telephone []
- (iii) Both of the above []
- (iv) Other (please specify) -----

14. Does your organization have modern communication technology for collaboration with customers and suppliers?

(i) Yes [] (ii) No []

15. If Yes, please choose the collaborative technologies used in your company (choose one or more than one)

(i) Inventory Management Systems (please specify)-----

(ii) New Service Design collaboration system (Please specify)-----

(iii) Supplier Relationship Management (please specify)-----

(iv) Customer Relationship Management (please specify)-----

(v) Collaborative Planning, Forecasting and replenishment (CPFR) []

(vi) Efficient Consumer Response (ECR) []

SECTION C: The EFFECT OF SUPPLY CHAIN INTEGRATION ON SERVICE DELIVERY (SECONDARY DATA)

16. Which of the following Service Delivery indicators do you constantly measure in your organization? Please indicate the average annual values for last year against the standard practice (or attach data if available). Please insert a figure in the box for average value alone (for industry average value, leave it blank).

| Indicator | Unit of Measure | Average value | Industry average |
|-------------------------------------|-----------------|---------------|------------------|
| | | Annual | |
| • Off-grid/On-grid Demand | Ratio | [] | [] |
| • No. of Customers /KM | Cus/KM | [] | [] |
| • System Losses | % of Supply | [] | [] |
| • No. of Outages per year | No./year | [] | [] |
| • Cost recovery | Ratio | [] | [] |
| • Operating Ratio | Ratio | [] | [] |
| • Load Factor | (%) | [] | [] |
| • Capacity Factor | (%) | [] | [] |
| • Generation Capacity/ Demand Ratio | Ratio | [] | [] |

KEY

KM-Kilometer

No. Number

17. For each of the following assertions, please indicate your level of agreement or disagreement on a scale of 1-5 (5 being strongly agree, 4 being agree, 3 being neither agree nor disagree, 2 being disagree; 1 being strongly disagree)..

| Statements | 1 | 2 | 3 | 4 | 5 |
|--|---|---|---|---|---|
| Supplier integration | | | | | |
| SCI has given the business the capacity to create supply chain agreements with suppliers based on the shared benefits and risks concept. | | | | | |

| | | | | | |
|---|--|--|--|--|--|
| With the help of SCI, it's now possible to offer rules for creating, managing, and monitoring supply chain connections. | | | | | |
| As a result of the company's strategic planning, supply chain partners now have a shared understanding of what they may anticipate from it. | | | | | |
| We have developed a high degree of collaboration with supply-chain partners in planning and forecasting. | | | | | |
| There is a significant level of consumer engagement in the creation of new services.. | | | | | |
| Financial flow to the suppliers is unimpeded. | | | | | |
| Supply chain performance may be measured in terms of the effect on a company's earnings.. | | | | | |
| Data on supply chain performance measurement may now be accessed more quickly by all parties. | | | | | |
| Availability and quality of company performance measurement data | | | | | |
| System for information and knowledge flow to the supplier is very effective. | | | | | |

| Statements | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Internal Integration | | | | | |
| Work is done mainly in cross- functional Teams. | | | | | |
| Enterprise Resource planning system is well established. | | | | | |
| Shared Services are encouraged between the head office and the branches | | | | | |

| | | | | | | |
|--|--|--|--|--|--|--|
| The level of technology used to enable the transmission of data between organizations | | | | | | |
| Possibility of supplying a unified database Also, a way of gaining access to and exchanging information has been developed. | | | | | | |
| It's the capacity to quickly and accurately acquire readily available information. | | | | | | |
| Ability to assess the financial effect of supply network performance on a company's profit statements | | | | | | |
| Data on supply chain performance assessment may now be accessed more quickly from different partners. | | | | | | |
| Availability and quality of company performance measurement data | | | | | | |
| My company has a high degree of responsiveness and flexibility in meeting the requirements of internal customers. | | | | | | |
| This business has a high level of inter-personal connections and communication activities. | | | | | | |
| Customer Integration | | | | | | |
| Customers are heavily involved in the service development process. | | | | | | |
| It's well-known how much collaborative planning there is to predict consumer demand visibility. | | | | | | |
| Information regarding the market and inventory stocking points is often shared with consumers to some degree. | | | | | | |
| It is possible to provide consumers with efficient and quick service. | | | | | | |
| Information and knowledge flow to customers is seamless | | | | | | |

| | | | | | |
|---|--|--|--|--|--|
| Financial flow to the customers is unimpeded. | | | | | |
|---|--|--|--|--|--|

SECTION D: SERVICE DELIVERY

Tick (√) where appropriate to indicate extent to which you agree to the statements below

18 . a) (The scale: 1 – Highly disagree, 2 - Disagree, 3 - Neutral, 4 - Agree, and 5 – Highly agree)

| Variables | customer satisfaction | | | | |
|--|-----------------------|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 |
| I am satisfied with my supplier’s service delivery | | | | | |
| My current supplier meets my needs | | | | | |
| I am happy to refer a friend to my supplier | | | | | |
| I am unhappy with my supplier’s service delivery | | | | | |

b) Additional reasons why I feel satisfied with my power supplier.

.....

19) Tick (√) where appropriate to indicate the extent to which you agree to the statements below (The scale: 1 – Highly disagree, 2 - Disagree, 3 - Neutral, 4 - Agree, and 5 – Highly agree)

| Variables | customer satisfaction | | | | |
|---|-----------------------|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 |
| I have been with my current supplier for long | | | | | |
| I could consider changing my power supplier | | | | | |
| My supplier is good and competent | | | | | |
| My supplier well handles me complains | | | | | |

a) Reasons why I could consider leaving my current power supplier.

.....

SECTION E: The challenges of implementation of Supply Chain Integration

20. To what extent do you believe the following factors are a barrier to supply chain integration for the suppliers and customers?

| | Little extent | | | Large extent | |
|--|---------------|-----|-----|--------------|-----|
| | 1 | 2 | 3 | 4 | 5 |
| • Lack of trust | [] | [] | [] | [] | [] |
| • System | | | | | |
| • Demand distortions (Bull-whip effect) | [] | [] | [] | [] | [] |
| • Knowledge gap in Supply chain integration | [] | [] | [] | [] | [] |
| • High cost of integration | [] | [] | [] | [] | [] |
| • The bidding process Is corrupted | | | | | |

Appendix II: List of Electricity Supply Companies in Mogadishu, Somalia Installed capacity, connections and power/connection Mogadishu/Benadir

| Company name | Total power installed (mw) | Number of customers | Average power (kw) |
|----------------------|-----------------------------------|----------------------------|---------------------------|
| Somali power & Water | 9 | 42.000 | |
| Somali energy | 7.8 | 40,5000 | |
| Somali electric | 7 | 27,500 | 0.236 |
| Mogadishu power | 0.72 | 6,700 | 0.107 |
| Ramadan Electric | 0.5 | 3,000 | 0.16 |
| Boqoljirow electric | 0.5 | 1,150 | 0.43 |
| Medina Electric | 0.65 | X | X |
| Partial total | 26.17 | 120,850 | 0.21 |
| Self – producers | 3.2 | X | X |
| Total Mogadishu | 29.37 | 120,850 | 0.243 |