THE RELATIONSHIP BETWEEN SUPPLIER SELECTION CRITERIA AND SUPPLY CHAIN AGILITY PERFORMANCE IN ELECTRIC & ELECTRONICS INDUSTRY IN SOMALIA

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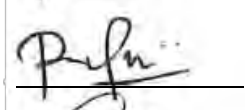
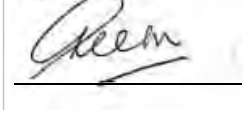
Pemeriksa Dalam *(Internal Examiner)*	:	**Assoc. Prof. Dr. Rahimi Abidin**	Tandatangan *(Signature)*	
Pemeriksa Dalam *(Internal Examiner)*	:	**Dr. Rushanim Hashim**	Tandatangan *(Signature)*	

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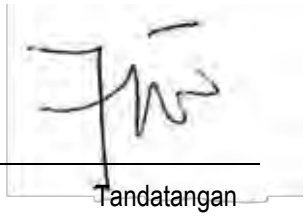

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Abstract

In the current volatile business environment, supply chain agility is critical, especially in dynamic sectors such as the electrical and electronics industry. This study examines the relationship between four supplier selection criteria which is supplier quality, supplier delivery, supplier profile, and supplier cost and the supply chain agility performance of electrical and electronic companies in Somalia. However, many electrical and electronics companies in Somalia lack structured supplier evaluation systems, leading to inconsistent selection practices that hinder their supply chain agility. The study targeted a population of 200 employees involved in procurement, supply chain, and managerial roles from four major E&E companies in Somalia: Beco, Necsom, Sompower, and Beder Electronics. Using a random sampling technique, structured questionnaires were distributed, and responses were obtained from 145 participants. Data analysis was conducted using *Partial Least Squares Structural Equation Modeling (PLS-SEM)* method. The results show that supplier quality, delivery reliability and supplier profile have a significant relationship with supply chain agility performance. These elements support companies to react to market changes quickly and flexibly. On the other hand, supplier costs do not show a significant relationship, indicating that only cost efficiency is not enough to guarantee operational continuity in this context. This study underlines the need to prioritize trustworthy, experienced, and quality vendors from a management perspective. It is important to think through vendor assessments considering long-term relationships, the integration of logistics, and quality indicators to build a flexible supply chain. While cost factors were always to be important, it is essential to find a balance between the need for flexibility and sustainability. This research contributes to the supply chain management literature in developing economies and provides practical suggestions to enhance operational agility in the electricity and electronics sector in Somalia.

Keywords: Supplier chain agility performance, Supplier quality, Supplier profile, Supplier delivery, Supplier cost

Abstrak

Dalam persekitaran perniagaan yang tidak menentu semasa, ketangkasan rantaian bekalan adalah kritikal, terutamanya dalam sektor dinamik seperti industri elektrik dan elektronik. Kajian ini meneliti hubungan antara empat kriteria pemilihan pembekal iaitu kualiti pembekal, penghantaran pembekal, profil pembekal, dan kos pembekal dengan prestasi kelincahan rantaian bekalan syarikat elektrik dan elektronik di Somalia. Namun, banyak syarikat elektrik dan elektronik di Somalia tidak mempunyai sistem penilaian pembekal yang tersusun, yang menyebabkan amalan pemilihan yang tidak konsisten dan menjejaskan kecekapan rantaian bekalan mereka. Kajian ini menyasarkan populasi seramai 200 orang pekerja yang terlibat dalam perolehan, rantaian bekalan, dan peranan pengurusan daripada empat syarikat utama E&E di Somalia: Beco, Necsom, Sompower, dan Beder Electronics. Menggunakan teknik persampelan rawak, soal selidik berstruktur telah diedarkan, dan respons telah diperoleh daripada 145 orang peserta. Analisis data dijalankan menggunakan kaedah *Partial Least Squares Structural Equation Modeling (PLS-SEM)*. Hasil kajian menunjukkan bahawa kualiti pembekal, kebolehpercayaan penghantaran, dan profil pembekal mempunyai hubungan yang signifikan dengan prestasi kelincahan rantaian bekalan. Unsur-unsur ini menyokong syarikat untuk bertindak balas terhadap perubahan pasaran dengan cepat dan fleksibel. Sebaliknya, kos pembekal tidak menunjukkan hubungan yang signifikan, menunjukkan bahawa kecekapan kos sahaja tidak mencukupi untuk menjamin kesinambungan operasi dalam konteks ini. Kajian ini menggariskan keperluan untuk mengutamakan vendor yang boleh dipercayai, berpengalaman dan berkualiti dari perspektif pengurusan. Adalah penting untuk memikirkan penilaian vendor dengan mempertimbangkan hubungan jangka panjang, penyepaduan logistik dan penunjuk kualiti untuk membina rantaian bekalan yang fleksibel. Walaupun faktor kos akan sentiasa penting, adalah penting untuk mencari keseimbangan antara keperluan untuk fleksibiliti dan kemampanan. Penyelidikan ini menyumbang kepada literatur pengurusan rantaian bekalan dalam membangun ekonomi dan menyediakan cadangan praktikal untuk meningkatkan ketangkasan operasi dalam sektor elektrik dan elektronik di Somalia.

Kata kunci: Prestasi ketangkasan rantai pembekal, Kualiti pembekal, Profil pembekal, Penghantaran pembekal, Kos pembekal

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"In the name of Allah, the Most Gracious, the Most Merciful"

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List of Abbreviation

SQ	Supplier Quality
SD	Supplier Delivery
SP	Supplier Profile
SC	Supplier Cost
SAP	Supply Chain Agility Performance
RBV	Resource Based View
TEC	Transaction Cost Economics
PLS-SEM	Partial Least Square Structural Equation Modelling

CHAPTER ONE
INTRODUCTION

1.0 Introduction

This chapter provides an overview of the study, establishing the foundation for the research on supply chain agility in Mogadishu's electric and electronic industry. It begins by presenting a background of study followed by the problem statement, highlighting the challenges businesses face in selecting suppliers and how these challenges impact supply chain performance. The research questions and objectives are outlined to define the study's focus. The chapter also specifies the scope and significance of the study. Additionally, key terms are defined to ensure clarity, and the organization of the thesis is described to guide the reader through the subsequent chapters.

1.1 Background of the Study

In today's dynamic and rapidly evolving business landscape, the concept of supply chain agility has emerged as a crucial determinant of organizational success (Lee, 2021). Supply chain agility refers to the capacity of a supply chain to respond swiftly and effectively to changes in market conditions, customer demands, and external challenges. Supply chain agility exists because organizations can increase their flexibility along with responsiveness and resilience toward uncertainties (Aliahmadi et al, 2022). Supply chain agility demonstrates its fundamental role for competitive advantage in electric and electronics business success due to industry requirements of speedy technological advancements and dynamic customer demands. Strategic supply chain management demands businesses to choose their suppliers carefully to optimize operations and stabilize business operations (Aliahmadi et al, 2022).

Supplier selection criteria are essential factors that organizations consider when choosing suppliers for their procurement needs (Haris et al., 2021). These criteria help companies

evaluate and select the most suitable suppliers to ensure the quality, reliability, and efficiency of their supply chain. In the context of the electronics and electrical industry, supplier selection becomes an even more critical and complex process. The rapidly evolving technological landscape, coupled with the intricate nature of electronic components, necessitates a comprehensive and strategic approach to supplier selection (Chang et al., 2021). Organizations in this industry must carefully evaluate potential suppliers to ensure they align with the company's strategic objectives and operational requirements, ultimately securing a reliable and efficient supply chain. This multifaceted process requires thorough assessment of various factors, such as the supplier's technical capabilities, quality standards, delivery performance, and alignment with the organization's long-term goals (Abigail, 2020).

The concept of supplier selection criteria encompasses various factors that organizations use to assess potential suppliers (Mohammed et al., 2021). These criteria typically include price and cost considerations, supplier capabilities, quality standards, delivery performance, financial stability, and technological expertise. For instance, price and cost are crucial factors, as organizations aim to strike a balance between cost-effectiveness and quality (Kamble et al., 2022). However, it is essential to note that selecting the cheapest supplier may not always be the best option, as it could compromise quality or service levels. Organizations must consider the total cost of ownership, which includes not only the purchase price but also factors such as maintenance costs, potential downtime, and long-term reliability (Israël & Curkovic, 2020).

In the electronics and electrical industry, supplier selection takes on additional dimensions due to the specialized nature of components and the rapid pace of technological change (Makinde et al., 2020). When selecting suppliers in the electronics and electrical industry, organizations often prioritize criteria such as technical capabilities, innovation potential, and compliance with industry-specific standards. For example, companies may look for suppliers who are ISO certified or adhere to other industry-recognized quality standards to ensure the reliability and

consistency of their offerings (Hąbek & Villahoz, 2020). The ability of suppliers to meet stringent quality requirements is particularly crucial in the electronics industry, where even minor defects can lead to significant performance issues or product failures that could impact the end-user experience. Additionally, organizations in this sector may also evaluate suppliers' research and development capabilities, their wasingness to collaborate on new product designs, and their track record of delivering innovative solutions to stay ahead of the competition (Hashe, 2020).

The electric and electronics supply chains in Mogadishu require better tactical readiness because technological changes and changing customer requirements speed up rapidly. Selecting strategic suppliers serves as an essential process which strengthens supply chain agility together with operational performance and business stability (Beigi et al., 2024). Organizations that select effective suppliers benefit from getting premium parts with speedy distribution at reasonable prices which creates consistent supply chain operations (Maleghemi,2020). Companies achieve success together with minimized risks and enhanced resource efficiency by developing proper supplier selection models that they need to establish according to Kumar (2020).

The electric and electronics sector in Mogadishu operates under daunting challenges including economic turbulence and substandard infrastructure alongside worker difficulties with expensiveness in deliveries and regulatory instability (Adam 2023). The constraints in this area make it difficult for suppliers to maintain a reliable performance level. Business operations need structured supplier selection schemes which both boost their supply chain flexibility and develop long-term sustainability (Romero-Hernández et al., 2021).

The supply chain agility depends on four primary criteria for supplier selection which include delivery performance, quality, supplier profile and cost aspects. The specified factors produce

substantial effects on product reliability alongside customer satisfaction and operating efficiency (Wang & Yu, 2023). Manufacturers who partner with superior suppliers achieve better product quality which decreases returns and strengthens businesses reputation to ultimately enhance supply chain operational agility. The delivery performance helps companies sustain their manufacturing timetables and market adaptability by minimizing product delivery issues which may cause lost profit possibilities (Aldhaheri & Ahmad, 2023). The strength of an organization depends on how well their suppliers demonstrate industrial experience together with financial stability alongside their technological capabilities and their reputation in the market. The trade-off between affordability and delivery reliability and quality gets determined by cost factors (Maleghemi, 2020).

Electric and electronics businesses operating in Mogadishu with limited resources need to establish systematic evaluation methods to select suppliers that fulfill their ongoing needs per Adam (2023). Organizations improve supplier reliability by making decisions through supplier scorecards and risk assessments due to data-driven selection procedures (Kusrini & Primadasa, 2024).

This study focuses on understanding the relationship between supplier quality, supplier delivery, and cost and supply chain agility outputs for Mogadishu's electric and electronic industry. The researched data enables businesses to enhance operational efficiency and optimize supplier selection frameworks because of its quantitative findings (Aldhaheri & Ahmad, 2023). The study integrates the relationship between supplier selection criteria of supplier quality, supplier delivery, and cost and to supplier chain agility performance of Mogadishu of electric and electronic industry in Somalia.

Table 1.1 Electrics and Electronics companies in Somalia

Table 1.1 lists electric and electronics companies in Somalia. This study focuses on four key firms Beco, Necsom, Sompower, and Beder Electronics due to their prominent roles in the country's energy and electronics sectors.

NO	Name of The Companies	Company Address
1	Beco	Tarabuun street, Hodan, Mogadishu, Somalia
2	Necsom	Islan Mohamed Road, Garowe, Puntland, Somalia
3	Sompower	H3J6+C55 Hargeysa TG, Somalia
4	Mogadishu power supply	21 November Street Opposite Abu Huraira Mosque Mogadishu BN, Mogadishu, Somalia
5	Beder Electronics	382F+CQV, Muqdisho, Somalia
6	National Electronics	28M8+67R, Muqdisho, Somalia
7	Kaamil Electronics	382F+WG4, Mogadishu, Somalia.
8	Al Noor General Trading Company	Rd Number 1, Hargeisa, Somalia
9	Naciim Electronics	Kasoo horjeedka Kalkaal, Muqdisho BN00000, Somalia
10	Luul Mobile	3866+VVM, Mogadishu, Somalia

Sources: Ministry of Commerce and Industry (MoCI) & *Somalia - Energy and Electricity*, 2024

1.2 Problem Statement

High business performance in competitive markets depends mainly on supply chains that are agile (Aldhaheri & Ahmad, 2023). Companies need to adjust their supply chain methods for market direction changes and shifting customer demands along with technology developments to preserve operational excellence and business success (Mishra et al., 2025). Competitiveness in the electric and electronics industry depends on adaptable supply networks due to its features of short product lifecycles and rapidly changing customer demands (Piprani et al., 2024).

The selection of suppliers represents a leading operational challenge for businesses involved in the electric and electronics sector of Mogadishu. Businesses which lack orderly evaluation processes experience several issues that slow operations and create supply chain weaknesses (Muse, 2022). The quality of supplies suffers when bad suppliers are chosen, and it leads to delays and increased cost expenses that defeat operational agility (Gedi, 2022). Especially in the sectors of electric and electronics sector of Mogadishu lacks sufficient research into both supplier selection and supply chain performance despite continuous worldwide research efforts (Mishra et al., 2025).

The fundamental requirement of supply chain agility depends on suppliers maintaining high-quality standards because superior suppliers enable reliable delivery and cost-effective operations and resilient supply chain performance (Aldhaheri & Ahmad, 2023). Suppliers' assessment poses multiple challenges to Mogadishu businesses due to insufficient transparency levels and regulatory challenges, alongside political instability and infrastructural issues (Muse, 2022). These difficulties in operations and market competition stem from factors that worsen supply chain breakdowns (Gedi, 2022).

The businesses in Mogadishu pursue immediate cost reductions at the expense of sustainable supplier relationships which causes their supply chains to deteriorate and become inefficient (Muse, 2022). A complete framework that selects suppliers was boost supply chain agility and help reduce operational risks and establish sustainable business operations. The study establishes a relationship between primary supplier assessment variables and supply chain agility results within Mogadishu's electric and electronics market segment.

In the context of the electronics and electrical sector in Mogadishu, Somalia, detailed and comprehensive supplier profiles are crucial for enhancing the agility and performance of the supply chain (Meru et al., 2023). These supplier profiles provide valuable insights into the

capabilities, capacities, and reliability of various vendors, enabling supply chain managers to make more informed decisions and adapt to changing market conditions more effectively (Makudza et al., 2023). However, the sector faces significant challenges, including inadequate infrastructure and regulatory frameworks, which complicate the integration of suppliers into the supply chain (Warsame, 2021). These challenges are further exacerbated by global issues such as component shortages and technological advancements, which necessitate agile supply chain practices and strategic partnerships (Desai, as cited in Ultra Librarian, 2024).

The assessment of supplier criteria through extensive evaluation and their relationship with supply chain adaptability produces effective data-based tools for supplier evaluation processes (Mishra et al., 2025). Electric and electronics businesses operating in Mogadishu was establish better market positioning because of supply chain adaptations developed from this study which promotes operational sustainability (Waweru, 2023). Current research lacks sufficient investigation regarding how supplier selection criteria such as quality, delivery performance, supplier profile and cost affect supply chain agility in this specific region (Gedi, 2022).

This research of supplier selection criteria and their relationship to agility needs urgent attention because of this industry's special economic difficulties. The research outcomes present critical knowledge for business owners and supply chain managers and policymakers to create flexible supplier evaluation systems which increase operational effectiveness while lowering supply chain risks (Muse, 2022). The research was added to academic supply chain management knowledge about emerging economies through concrete results from an understudied situation (Gedi, 2022).

1.3 Research Questions

This study aims to explore the relationship between supplier selection criteria and supply chain agility performance within Somalia’s Electric and Electronics (E&E) industry. The research

questions are formulated to examine how specific criteria such as supplier quality, delivery, profile, and cost relate to the agility of supply chains. Understanding these relationships was help identify which supplier attributes are closely linked to achieving supply chain responsiveness and flexibility in this industry.

I. What is the relationship between of supplier quality on supply chain agility performance?
II. What is the relationship between supplier delivery on supply chain agility performance?
III. What is the relationship between supplier profile and supply chain agility performance?
IV. What is the relationship between supplier cost and supply chain agility performance?

1.4 Research Objectives

The purpose of this research is to investigate the relationship between supplier selection criteria and supply chain agility performance in the Electric and Electronics (E&E) industry in Somalia. The objectives focus on four main supplier-related factors: quality, delivery, profile, and cost. Each objective is designed to examine how these criteria relate to supply chain agility, guiding the study toward a better understanding of supplier roles in achieving agile supply operations.

I. To investigate the relationship between supplier quality and supply chain agility performance.
II. To examine the relationship between supplier delivery and supply chain agility performance.
III. To analyse the relationship between supplier profiles and supply chain agility performance.
IV. To examine the relationship between supplier cost and supply chain agility performance.

1.5 Scope of the Study

The research examines supply chain agility through an assessment of survey by Mogadishu electric and electronics businesses that concentrate on quality evaluation along with delivery management and supplier selection and cost assessment methods. The electric and electronics industry insists on businesses constructing supply chains which offer both speedy market adjustments together with technological development capabilities (Piprani et al., 2024).

Business owners of electric and electronics enterprises and procurement officials together with supply chain personnel from Mogadishu, Somalia participated in providing information. The research source conducts survey to analyse supplier selection methods and their relationship on agility levels.

The study examines the relationship between supplier selection criteria and supply chain agility. The unexpected business situations in Mogadishu create regular supply chain disruptions throughout the city. The study develops practical recommendations to enhance business proficiency in supplier selection and supply chain durability.

1.6 Significance of study

This research provides practical solutions regarding supplier selection techniques within Mogadishu's electric and electronic industry even though it encounters specific research limitations. The research-generated findings were enabling businesses to enhance their supply chain agility which results in better efficiency along with cost reduction and superior market response capabilities. The research analysis was supporting academic expansion regarding supply chain management in developing economies by providing knowledge about Somalia's business climate and its challenges and prospects.

The study maintains its reliability for supply chain decisions in Mogadishu’s electric and electronic sector by openly acknowledging and addressing these identified restrictions.

Through this study the authors aim to establish cutting-edge research which focuses on digital procurement systems and supplier relationship methods to enhance supply chain agility processes in emerging nations.

1.7 Definition of Key Terms

1.7.1 Supply Chain Agility performance

Organizations possess supply chain agility when they provide rapid solutions to changes in market demand together with interruptions to supply and alterations in customer needs. Supply-chain agility stands as a vital factor for rapid response against quick-paced changes in both electric and electronics industry technology advancements and consumer behavior (Holloway, 2025). Firms that implement an agile supply chain system create flexible networks which adapt swiftly to market changes thus they deliver efficient procurement and production and distribution services. A well-designed agile supply chain system helps businesses protect themselves against unpredictable market conditions and supplier breakdowns and distribution issues while supporting stable business operation and superior market performance. As a derivative of organizational resilience entities must identify upcoming risks and create forward-thinking approaches (Singh et al., 2024).

1.7.2 Supplier Selection Criteria

The evaluation process for supplier choice involves established operational requirements that organizations use to determine their supplier match. Supplier selection stands as an essential process for enhancing supply chain agility because wrong supplier choices produce higher costs and longer lead times and operational depriations (Modarress et al., 2023). Quality and delivery performance and supplier profile and cost constitute the main selection criteria for potential suppliers. Companies enhance supplier relationships together with supply chain

management through the use of precise assessment metrics and key performance indicators (KPIs).

1.7.3 Supplier Quality

Suppliers get selected based on quality standards because delivery dependability and operational component performance rely on it. Developing long-lasting relationships with superior suppliers produces items that fulfil market expectations which helps decrease manufacturing difficulties and recall incidents (Albadry et al., 2025). Product delays from using defective raw materials lead to increased business expenses that result in dissatisfied customers. The supplier evaluation process of companies achieves high-quality standards through their implementation of ISO 9001 certifications together with Six Sigma process requirements (Talib et al., 2020). The quality controls system ensures that supplier performance standards remain excellent to improve supply chain agility efficiency.

1.7.4 Supplier Delivery

The speed and dependability of supply chain logistics operations about delivery relationship with supply chain agility outcomes (Mate, 2022). Supplier delivery delays result in product shortages that cause several problems including missed sales possibilities and dissatisfied customers. Supply chain delivery effectiveness manifests through its ability to maintain high delivery punctuality and minimal delivery time unpredictability while achieving full precision in order delivery (Huang & Tan, 2021). Real-time tracking systems together with electronic data interchange (EDI) allow companies to improve their supplier delivery reliability through supply chain monitoring tools. The quick market adaptation capabilities of organizations depend on strong delivery performance which maintains seamless manufacturing flows alongside distribution operations.

1.7.5 Supplier Profile

A supplier profile shows their expertise in their sector together with their financial condition and operational limits and their known status in the market. Organizations that partner with well-established suppliers who have an established track record demonstrate higher capability to deliver reliable services throughout enduring business relations (Kang & Bhawna, 2025). The financial stability of suppliers stands as an essential criterion because unstable financial conditions prevent them from following production schedules which brings about supply chain interruptions. Organizations run complete supplier risk evaluations to select solid capable partners who was strengthen supply chain responsiveness.

1.7.6 Supplier Cost

The cost evaluation includes expenses for materials and production together with shipping costs and financial management above expenses (Xiao-yuan & Wei-hua, 2023). Business entities assess expenses for materials production in addition to shipping expenditures and economic management beyond base costs when studying costs. Financial damage arises when suppliers agree to follow strict price reduction criteria because this practice results in failures across quality standards and delivery timelines. The total cost ownership (TCO) methodology enables business organizations to calculate all expenditure related to supplier choice selection (Xiao-yuan & Wei-hua, 2023). Efficient supply chain execution becomes possible for organizations when they absorb cost reduction strategies that start with bulk supplier acquisition followed by negotiation and expense distribution agreements to minimize purchase costs.

1.8 Organization of the Thesis

This research is organized into five chapters. The first chapter introduces the study by providing the research background. The second chapter reviews relevant literature, focusing on supply

chain agility and supplier selection criteria. The third chapter details the methodology employed in the study. Chapter four presents the research findings, while the fifth concludes the study by summarizing key insights and implications.

CHAPTER TWO
LITERATURE REVIEW

2.0 Introduction

The study presented here is the second chapter of a study on the relationship between supplier selection criteria and supply chain agility performance in electric and electronics. The literature review covers how various researchers and authors have run related studies in this field. However, in this chapter, the relationship between supplier selection criteria and supply chain agility performance is within its focus area. The dependent variable is supply chain agility performance while the independent variable is supplier selection criteria. It also includes an underpinning theory, conceptual framework and formulation of hypothesis.

2.1 Supply chain agility performance

Supply chain agility is a complex concept that encapsulates a supply chain organization's propensity to adjust in a timely manner to the changing demand of the customer, market variability and any crisis including geopolitical, labor shortage or natural disasters (Tufan et al., 2024). Today, in the dynamic and volatile global economy, businesses must deal with intensified uncertainties, fast changing technologies as well as customer expectations (Tufan et al, 2024) and adaptation becomes increasingly important.

Broadly, supply chain agility can be organized into two types of agility: the structural and the operational (Tufan et al., 2024). The structural agility relates to the capacity to rapidly revamp procurement, inventory flow and capacity usage among them. With these organizations can scale up or down production by reallocating assets across supply chain network (Tufan et al., 2024). In contrast to operational agility, which focuses on optimization of the supply chain processes to respond quickly to short term, unexpected shifts in demand and supply, operational agility focuses on optimization of supply chain processes to respond quickly to short term,

unexpected changes in demand and supply. Real time supply chain planning, vertical integration, and close relationships with suppliers (Tufan et al., 2024) have often been used to achieve this.

A blend of the supply chain agility definition and framework that enables the capturing of its benefits is provided through a review which identifies opportunities (Tufan et al., 2024). The popularity of the idea remains elusive; although the idea is well known, it is unclear what the idea means, and definitional fragmentation prevents it from reaching its full potential. Tufan, et al. (2024) point out that supply chain agility leads to its enablers and outcomes and therefore it is imperative for developing strategies to be implemented.

The concept of supply chain agility is not limited to impacting the reaction to a disruption; proactive strategies for the mitigation of risks and exploitation of new opportunities (Makudza et al., 2023) are also essential. Real-time data analytics included in this partnership help in identifying bottlenecks and thereby reroute the shipments in case of necessity. This was done by placing supply chain agility at the top of the agenda for organizations, create an edge over competitors, most importantly allowing them to serve evolving set of customer demands, and sustain their position in a highly competitive global economy of today (Makudza et al., 2023).

2.2 Supplier selection criteria

Supplier selection criteria refer to a set of measures and characteristics being used to evaluate and select the most appropriate supplier for goods and services by organizations (Xiao-yuan & Wei-hua, 2023). It is highly critical in procurement as it directly influences the organization's efficiency, competitiveness, and the bottom line. Factors that are used in the criteria can include price, quality, reliability, financial stability, capacity, scalability, logistics and technological ability (Xiao-yuan & Wei hua, 2023).

Normally, organizations start by specifying what requirements they need with respect to the quality standards, delivery time and funding limit (Xiao-yuan & Wei-hua, 2023). Thus, for the selected supplier to meet the organizational objective and mitigate any risk, it is vital to set clear selection criteria. Price is a common criterion but not the only one; cost should be balanced with quality and value over the long run (Xiao-yuan & Wei-hua, 2023).

High quality products focus on filling consumers' needs and expectations and that there is no extra cost associated with quality (Xiao-yuan & Wei-hua, 2023). Also, financial stability is important as suppliers with stable finances was not have production and delivery problems. Capacity and scalability on the side of the supplier is essential to meet current and future demands, assuring that the supplier can develop enough to accommodate growth and the changing market (Xiao-yuan & Wei-hua, 2023).

Both logistics and location effects significantly impact, particularly proximity would be able to reduce shipping cost and shorten lead time in response to change (Xiao-yuan and Wei-hua, 2023). Increasingly, technological capabilities and innovation play an increasingly important role, because by way of improvements in processes and the offers in products they constitute a competitive edge. There are generally five steps of supplier selection process research, proposal evaluation, audits, negotiations, and contract management which lead to supplier relationship. (Xiao-yuan & Wei-hua, 2023).

2.2.1 Supplier quality

High quality standards are important to supplier quality in the electronics and electrical (E&E) industry because it makes the electronic components remain reliable and function as expected (Theeraworawit et al., 2022). As in this sector, Electronic Products have complex nature, by which means Supplier quality Management is very important because of the risk of defect products. In the E&E industry, the Quality management initiatives such as Total Quality

Management (TQM) and Lean Manufacturing are being widely adopted to reduce its operation costs (Sabil et al., 2023).

With respect to the E&E industry, supplier quality is usually assessed by defect rates, on time delivery and industry standards compliance (İnce et al., 2023). It is a common practice among suppliers; companies should implement quality management systems like ISO 9001 to maintain quality and reliability. In addition, advancement in the manufacturing technology and the practice of Industry 4.0 have further improved supplier quality by increasing process efficiency and reducing variability (Liu et al., 2023).

Currently, the unique characteristics of the E&E industry are marked by sustainability and resilience, and the importance of supplier quality management is manifested. Supply chain industries are under the pressure from consumers and regulatory bodies to employ eco-friendly manufacturing process and decrease their environmental footprint (Xiao-yuan & Wei-hua, 2023). This entails the use of recycled materials, and also energy efficient production methods and circular supply chain for reuse and recycling.

Besides these factors, the E&E industry also features supply constraints of components and the labor in relation to supplier quality and reliability. To minimize these risks, manufacturers use strategies such as multisourcing and the partnering with distributors to secure sound supply streams and maintain quality standards (Xiao yuan & Wei hua, 2023).

2.2.2 Supplier Delivery

Supplier delivery includes how the suppliers transport goods from their facilities to those of their customers thus helping to ensure timely and efficient delivery of products (Mate, 2022). Supply chain management to a great degree depends on this process since it directly impacts inventory control, production planning, and customer satisfaction. Leading supplier delivery means managing lead times, or the overall time, from a buyer's placing an order and the

delivery of the goods. The design should be flexible enough that lead times include several stages such as order processing, production, packaging, and shipment, during which the floating lead time incorporates a great diversity of factors: supplier capacity, product complexity, shipping method, and supplier buyer distance.

Delivery orders also serve an important role in supplier delivery because they are documents authorizing the release of ordered goods and describe delivery (Huang & Tan, 2021). These orders are ordered in these order numbers, date, supplier or buyer information, deliverables, instructions and payment terms, which is proof of delivery and contract completion. In coordination with buyers, delivery orders may be issued in long-term collaboration thereby making it unnecessary to make any separate transactions to book an order and may come in handy busting lags.

Another critical aspect is supplier's delivery reliability, that is supplier's ability to deliver goods timely and react to such volatility in lead time (Xiao-yuan & Wei-hua, 2023). And this reliability is usually measured by comparing wishes with confirmed delivery dates, in other words it is because the jobs required a high degree of flexibility to meet customer demands. In manufacturing and supply chain management, it is extremely important to manage supplier delivery lead times well, as lead time is unpredictable and can cause disturbances in production planning and hence increases in inventory needs (Mate, 2022).

Over recent years, ports have become congested, transportation is being overcrowded, raw material is being short, and labor is limited hence, this has caused longer lead times that adversely affect different industries. To resolve these issues, businesses invest in methods, akin to alternative shipping routes or adjusting supply chain planning and timing in consideration of longer timelines (Takawira & Pooe, 2024).

2.2.3 Supplier profile

A supplier's profile is a complete document that supplies complete details regarding capabilities, performance, and compliance with industry customary (Hanson, 2024). On the side of supplier selection, risk management and performance evaluation, it can be a decent tool for decision making in a 'successful' supply chain. As shown in this section, a typical well-structured supplier profile contains information such as factory, agent and subcontractor, in-house capability, social and safety management practice, environmental management and the relevant certification (Xiao-yuan & Wei-hua, 2023).

Lastly, in the factory and agent information section, the factory's name, location and contact info, production capacity, agent role and responsibility are provided (Li, 2024). Information about subcontractors is also important, as it comprises subcontractor's name, place of business, and any certifications the subcontractor may hold. The in-house capabilities section gives insights into the supplier production processes, technology and research and development capabilities (Hanson, 2024).

It provides social and safety management practices embracing compliance with labour laws, and social and safety standards as well as environmental management in documenting supplier's efforts on environmental impact (Hanson, 2024). The supplier is also documented to have certifications such as quality management or environmental certification to ensure compliance with the industry standards (Hanson, 2024).

Supplier information management systems are often used to manage supplier profiles by collating, integrating, categorizing and maintaining supplier data in a continuous area. This is a process that ensures that the supplier information is accurate and all the time to support the effective supplier lifecycle management (Xiao-yuan and Wei-hua 2023).

2.2.4 Supplier cost

Supplier cost includes the cost that a supplier incurs to produce and satisfy the goods or services for a buyer (Xiao-yuan & Wei-hua, 2023). Knowing these costs is critical for the businesses so that they can negotiate better deals or keep their supply chain operations on track. Supplier cost analysis is a means of examining these costs, namely, to check various suppliers and choose the options offering the lowest possible costs (Xiao-yuan & Wei-hua, 2023). The analysis in this work involves carrying out various cost components such as life cycle costs, make or buy analysis, target costing and activity-based costing.

Life cycle costing is comprehensive coverage with all the costs involved in purchasing, operating and discarding a product or service in its entire course of life (Wu et al., 2023). In making or buy analysis, the best decision is to construct or buy goods either within the company's premises or from them. In target costing, a target price of a product or service is set and the cost of individual components that are required is determined. Firmandani et al. (2024) say activity-based costing allocates costs related to the activities needed to produce goods and services in a detailed manner.

Another key method used in the evaluation of the supplier cost is Total Cost of Ownership (TCO). TCO is more than just the initial purchase cost, but rather all costs related to owning and operating that product or service over its life. Specifically, this refers to acquisition costs, operating cost, and support costs, so that the organizations can evaluate through comparing the TCO of different suppliers (Panjaitan et al., 2024).

Suppliers cost is important to analyze to determine the choice of distribution methods and to negotiate firm deals with suppliers. As it includes the evaluation of supplier expenses to choose the best way, either direct to the stores or through distribution centers (Pajić et al., 2024); hence this is important in this profession.

2.3 Hypotheses Development

2.3.1 The relationship between supplier quality and supply chain agility performance.

A supply chain organization can respond efficiently and successfully to market vulnerabilities, such as those induced by Basel III financial regulation, geopolitical crises, and raw material shortages, as supply chain agility (Tufan et al., 2024). This agility can be classified in terms of structural and operational component, structural agility refers to rerouting procurement and inventory flows based on changes in the environment, operational agility refers to the operational process and procedures for quick response demand shifts. These 2 dimensions of agility are interplay which allows supply chain organization to be more responsive, resilient, and adaptable to dynamic market forces (Tufan et al., 2024).

Reliability and performance of the supply chain are positively related to supplier quality. Consistent services are essential from high quality suppliers to be able to provide supply chain agility (Tufan et al., 2024). For example, supplier integration is one practice that affects supply chain performance as well, but its effectiveness can vary by competitive capabilities. Supplier integration has been found to benefit a supply chain's productivity but not its effectiveness in the study of the medical sector, and the alignment of supplier quality with capabilities within the organization was the reason behind this (Tarigan et al. 2020).

High quality suppliers can strengthen supply chains agility by delivering the supplies to the specified point in time and could help in reacting to the demand fluctuation situations (Tufan et al., 2024). High quality suppliers also provide much visibility and resilience to supply chain, which allows organizations to be more strategic, identify optimization opportunities, and reduce risk of disruptions. It also strengthens the overall supply chains agility. Additionally, supplier quality also helps facilitate communication and collaboration within the supply chain, allowing organizations to respond fast to changes of demand or supply (Tufan et al., 2024).

Supply chain visibility and resilience are also important, in such a case, emphasizing the suppliers' quality role in the supply chain effectiveness. In other words, high quality suppliers promote enhanced supply chain transparency, making the manufacturers more agile, more strategic in their decisions, identifying additional opportunities for optimization and performance improvement (Tufan et al., 2024) which would in turn enhance supply chain resilience. Supplier quality is important as an enabler for increasing the organization's capacity to adapt quickly and effectively to fluctuations of consumer demand and market vulnerabilities and for supply chain transparency and resilience. In this case, high-quality suppliers who help promote transparency and resilience can contribute a great deal to making supply chain more agile by reducing disruption risk and facilitating proactive decision-making (Tufan et al., 2024).

H1: There is a positive relationship between supplier quality and supply chain agility performance.

2.3.2 The relationship between supplier delivery and supply chain agility performance.

Supplier delivery is a very important factor in supply chain management due to its dependence on the reliability of the supply chain (Tufan et al., 2024). Suppliers' delivery with high quality can improve supply chain agility by helping to deliver timely and consistent services that are necessary to react to demand variations based on the supply chain needs. On time delivery, lead time and order accuracy are key metrics for supplier delivery metrics. For instance, a supplier's on-time delivery rate is directly related to a company's ability to fulfil a production schedule and any customer commitments (Mate, 2022).

A good supplier delivery can increase the supply chain agility by having products delivered promptly and accurately to let organizations quickly respond to changes in demand and supply (Tufan et al., 2024). Likewise, reliable supplier delivery enables better cross panel

communication and collaboration constraining the supply chain to optimize stock levels, lessen lead times and assist in faster reaction to market aircraft, none of which are essential for maintaining flexibly and robustness in the supply chain. With increased supply chain visibility and transparency provided by high quality supplier delivery, there is further potential for an organization to make strategic decisions and find opportunities for operational improvement (Tufan et al., 2024).

It is in this light that supply chain visibility and resilience become the more critical in the context of enhancing overall supply chain agility (Tufan et al., 2024). High quality of supplier delivery helps manufacturers improve operational flexibility, and make more strategic, and thus more informed, decisions as well as discover more opportunities for further optimization in the supply chain. Thereby, consistent and reliable supplier delivery can significantly improve supply chain agility of the organization by making proactive decisions and effectively avoiding the negative effects of possible disruptions (Tufan et al., 2024).

H2: There is a positive relationship between supplier delivery and supply chain agility performance.

2.3.3 The relationship between supplier profile and supply chain agility performance.

There are many studies that analyse the relationship between supplier profile have and supply chain agility. Supply chain innovativeness, information sharing, and collaboration impact a supply chain's ability to respond to the market (Tufan et al., 2024). The wasingness to take risk and the ability to come up with new ideas need to be fundamental features in supplier innovation – through innovative technologies and processes suppliers can create quick, market responsive actions in uncertain environment. Suppliers can improve total supply chain responsiveness and shorter time to market specific customer needs by integrating manufacturing innovations, digital tools and predictive analytics. Due to the necessity of firms

to establish strong relationships with innovative suppliers with advanced technology, who could meet the needs of the agile supply chains in today's competitive business landscape (Tufan et al., 2024).

Supply chain agility requires effective sharing information between suppliers and manufacturers. Businesses can also adjust production plans in a timely manner, take care of inventory and supply levels (Alqarni et al., 2023). Thus, through real time data sharing from suppliers' companies can plan their supply chain decision proactively and still maintain responsive operations. It has been made possible by introducing digital tools, like cloud platforms and blockchain technologies, which have created information sharing systems and reduce the uncertainty as well as speed up decision making. Such tools allow the data to be exchanged precisely in time, thus making it possible for companies to react in a short time to unplanned occurrences and improve supply chain flexibility (Balcıoğlu et al., 2024).

To achieve supply chain agility, it is necessary to collaborate with suppliers. Companies and suppliers can work together quickly if partners are strong and based on trust and problem solving to respond to market changes (Tufan et al., 2024). Planning and risk sharing is collaborative, allowing predictions and adapting to fluctuations of supply and demand. In addition, supplier collaboration also adds process flexibility to firms, and the firms may adjust delivery time and business operation to the market needs. Supply chain agility resulting in a greater margin of quality and supply, as well as enough and low prices, is directly associated with high collaboration with suppliers in the company. Firms need supplier profiles that are innovativeness, information sharing and collaboration to thrive in an unpredictable market (Tufan et al., 2024).

H3: There is a positive relationship between supplier profile and supply chain agility performance.

2.3.4 The relationship between supplier cost and supply chain agility performance.

Supply chain agility performance is very much affected by supplier cost structures as much as they impact manufacturing costs, labor expenditures and raw material procurement. As manufacturers improve based on building cost effective suppliers that build optimized production systems and relationships, organizations can quickly adapt to changing market demands (Tufan, Erdogmus, & Tuncel, 2024). As a result, firms can price, manage inventory, and manage distribution routes without quality degradation. Organizations remain untouched by the major expense challenges yet can adjust their operations to changing customer needs and market disturbances to enhance supply chain agility. Supplier cost related to efficiency for the supply chain agility makes it possible for an organization to change its dynamic operational choices and respond fast to changes in operations (Tufan et al., 2024).

Transactional costs that bridge suppliers give are important value in facilitating business collaboration, enabling the providers to be operationally flexible. This allows organizations and their suppliers to learn how to form cooperative cost governance and risk distribution and long-term planning and create better operating alignment (Raj et al., 2023). Firms obtain better purchasing capabilities through open cost breakdown disclosures, and through this they do better inventory management of supply chain and planning of production with more certainty. It makes it easier for businesses to predict the amount of their costs was fluctuate, since the price element is less certain. Digital tools such as blockchain technology and cloud based financial system that have enhanced cost transparency for decision processes have made it possible to do real time cost analysis. Supplier costs are open and supply chain agility improves as a result because it improves quickness in responding to unforeseen changes in supply and demand conditions (Balcıoğlu et al., 2024).

Supplier cost variability may infer reduced supply chain agility as any nonconstant procurement and production processes (Tufan et al., 2024). Unstable costs, raw material prices,

labor shortages and in some instances economic hardships can make it difficult for firms to continue to maintain stable operations and respond to the market demand. Supplier cost variability can lead to high supplier cost variability that disrupts delivery, delays or introduces operational risk. By partnering with stable and predictable suppliers, you can increase supply chain agility in better cost control and planning. Selection of strategic suppliers and long-term agreement was standardizing costs and help the supply chain network (Xiao-yuan & Wei-hua, 2023). It is essential to understand the complexity of the relation between supplier cost structure and supply chain agility to create resilient, responsive, and competitive supply chain networks.

H4: There is a positive relationship between supplier cost and supply chain agility performance.

Table 2. 1 Hypotheses Development

Hypotheses	Descriptions
H1	Supplier quality is positively associated with supply chain agility performance
H2	Supplier delivery is positively associated with supply chain agility performance
H3	Supplier profile is positively associated with supply chain agility performance
H4	Supplier cost is positively associated with supply chain agility performance

Table 2.1 presents four hypotheses that examine the relationship between supplier selection criteria quality, delivery, profile, and cost and supply chain agility performance in Somalia's Electric and Electronics industry. Each hypothesis suggests a positive association between these criteria and a firm's ability to maintain an agile supply chain.

2.4 Conceptual Framework

Since research projects must have a well-defined research framework which signifies the research goals, the variables hired for the research and the relationship between the dependent and independent variables, clearly and easily. This research investigates the connection between supply chain agility performance in Somalia's E&E industry and supplier selection criteria. The research framework for the study is shown in figure 2.1.

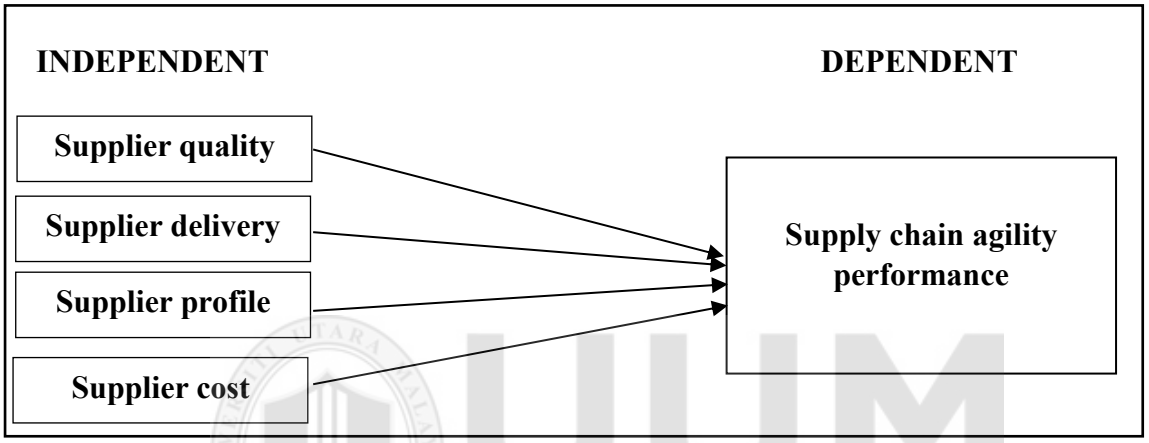

Figure 2. 1 Research Framework

Table 2. 2 Literature review for independent variables

Table 2.2 presents a literature review focused on four independent variables that are crucial for understanding supplier performance in various contexts. Each variable is accompanied by relevant statements and citations from various authors, highlighting key aspects of supplier quality, delivery, profile, and cost.

Variables	Statement	Authors
Supplier quality IV1	High quality products focus on filling consumers' needs and expectations and that there is no extra cost associated with quality. Supplier selection criteria refer to a set of measures and characteristics being used to evaluate and select the most	Xiao-yuan & Wei-hua, 2023.

	appropriate supplier for goods and services by organizations	
Supplier delivery IV2	Supplier delivery includes how the suppliers transport goods from their facilities to those of their customers, thus helping to ensure timely and efficient delivery of products. Delivery orders also play an important role in supplier delivery because they are documents authorizing the release of ordered goods and describing delivery. Another critical aspect is supplier's delivery reliability, that is supplier's ability to deliver goods timely and react to such volatility in lead time.	Mate, 2022 Huang & Tan, 2021 Xiao-yuan & Wei-hua, 2023
Supplier profile IV3	A supplier's profile is a complete document that supplies complete details regarding capabilities, performance, and compliance with industry customary. Supplier information management systems are often used to manage supplier profiles by collating, integrating, categorizing and maintaining supplier data in a continuous area.	Hanson, 2024 Xiao-yuan and Wei-hua 2023
Supplier cost IV4	Supplier cost includes the cost that a supplier incurs to produce and satisfy the goods or services for a buyer. Another key method used in the evaluation of the	Xiao-yuan & Wei-hua, 2023 Panjaitan et al., 2024

	supplier's costs is Total Cost of Ownership (TCO).

Table 2. 3 Literature review for Dependent variable

Table 2.3 defines supply chain agility performance as a company's ability to quickly adapt to market changes and disruptions, while also using proactive strategies to manage risks and seize new opportunities, as noted by Tufan et al. (2024) and Makudza et al. (2023).

Variables	Statement	Authors
Supply chain agility performance DV	Supply chain agility is a complex concept that encapsulates a supply chain organization's propensity to adjust in a timely manner to the changing demand of the customer, market variability and any crisis including geopolitical, labor shortage or natural disasters. The concept of supply chain agility is not limited to impacting the reaction to disruption; proactive strategies for the mitigation of risks and exploitation of new opportunities.	Tufan et al., 2024 Makudza et al., 2023

2.5 Underpinning Theory

In the light of E&E industry context, utilization of supply chain agility by using supplier selection criteria can be an option. The two theoretical frameworks pertaining to this connection are the Resource Based View (RBV) and Transaction Cost Economics (TCE).

2.5.1 Resource Based View (RBV)

According to the Resource Based View (RBV), a company's competitive advantage is derived from its ability to acquire, or accommodate, valuable, rare, unique, and nonreplaceable (Khan et al., 2020). When supplier selection is accomplished with RBV, use of supply chain agility

measure indicates that the firm with capability which is unique, for instance, high technical expertise, good quality management, and innovation was have greater supply chain agility. By developing partnerships with suppliers who possess skills in the E&E business, the enterprise could quickly adapt to the change by staying healthy and competitive Mukhsin and Suryanto (2021) note that in the process of leveraging agility, supply chain coordination with an increase in flexibility and responsiveness requires the presence of trust and collaboration.

2.5.2 Transaction Cost Economics (TCE)

The focus of Transaction Cost Economics (TCE) is transaction costs relating to the mandatory commodity exchanges including search, negotiation, and enforcement costs (Cherono & Keitany, 2021). The aim of TCE is to increase the efficiency of supplier selection with reference to reliability, costs, and supply flexibility. In particular, Mukhsin and Suryanto (2021) found that supply chain agility can be enhanced by choosing suppliers that can do well in the changing demand and deliver accurately. To apply this approach, efficient governance structures and supplier relations that promote an agile supply chain are needed with transaction costs lower and the supply chain more agile.

The development of the supplier selection criteria model incorporates both RBV and TCE to provide a comprehensive view of the role of supplier selection criteria in supplying chain agility in the E&E industry (Xiao-yuan & Wei-hua, 2023). If attention is paid to the uniqueness of suppliers' resources and capabilities as well as the ability of transactional relationships to be efficient, then the competitive capabilities of firms may be improved. Suppliers' selection has been emphasized as an important strategic resource to quickly develop agile supply chain to deal with the turbulent environment of E&E industry within a dual theoretical perspective.

2.6 Chapter Summary

This section describes the current studies in relation to how supply chain agility performance is influenced by supplier selection criteria, in the E&E industry. This research discusses quality, delivery, profile and cost as essential supplier selection criteria to the extent that the supply chain can be made more responsive, flexible and efficient. This chapter demonstrates how the past study emphasizes the necessity of these characteristics to dampen the supply chain risk at the same time to reinforce competitive advantages. The study uses the Resource Based View (RBV) and Transaction Cost Economics (TCE) to consider supplier selection towards strategic improvement of supply chain agility. In conclusion, this chapter creates a segment to formulate a prediction hypothesis on how the criteria of supplier selection makes the supply chain agility performance.

CHAPTER THREE
METHODOLOGY

3.0 INTRODUCTION

This chapter was emphasizing the proposition of research framework followed by hypotheses in accordance with prior literature. An appropriate methodology is essential to obtain accurate data. Research design, population and sampling design, the measurement of variables and techniques for analyzed data was be discussed thoroughly in this chapter.

3.1 Research Design

This study utilizes a quantitative approach to analyses the relationship between supplier selection criteria and supply chain agility performance in E&E industry in Somalia. The quantitative approach is chosen to this study for its ability to systematically analyze relationships between variables and gather extensive numerical data, yielding strong and generalizable findings (Bryman & Bell, 2011). The investigation concentrates on the interaction between independent variables supplier quality, supplier delivery, supplier profile, and supplier cost and the dependent variable, supply chain agility performance.

3.2 Population, Sample and Sampling Technique

This study Focuses only on E&E companies in Somalia; the researcher has selected the country of Somalia as the study population. The main reason for choosing this country is due to the lack of previous studies focusing on this region's E&E sector. Specifically, the study targets employees within major E&E companies in Somalia, Beco, Necsom, Sompower and Beder Electronics. The reason for choosing these companies is firstly that they are the leading organizations within the sector, and secondly, due to their significant role in shaping the industry. While other E&E companies exist in Somalia, the focus on these allows for a concentrated analysis of supplier selection within dominant industry players.

To ensure the results the study uses a random sampling. Random sampling is essential for ensuring that study results are representative of the target population, as it allows each unit within the population an equal or known probability of selection, thereby minimizing bias and enhancing the validity of statistical inferences (Kesemen et al., 2021)

The sample size is calculated using Krejcie and Morgan's (1970) table for sample size determination. For a population of approximately 200 business owners of electric and electronics enterprises and procurement officials together with supply chain personnel from Mogadishu, the recommended sample size is 132 to achieve a 95% confidence level with a margin of error of ±5%. This ensures statistical robustness and minimizes sampling error (Shukla & Huber, 2023).

To determine the population size for this study, the researcher focused on four major E&E companies in Somalia Beco, Necsom, Sompower, and Beder Electronics due to their dominance in the industry. Through direct communication with administrative staff from these companies, the researcher identified approximately **200 employees** involved in procurement, supply chain, and managerial roles relevant to the study. This number was further supported by available company profiles, organizational charts, and business directories such as those from the Somali Chamber of Commerce. Thus, the population size is based on verified organizational data and credible sources, not estimation.

Krejcie and Morgan's (1970) table for sample size determination

Table 3. 1 Krejcie and Morgan's (1970) table for sample size determination

N	*S*	*N*	*S*	*N*	*S*
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	132	1000	278	75000	382
210	136	1100	285	1000000	384

Note.—*N* is population size. *S* is sample size.
Source: Krejcie & Morgan, 1970

3.3 Questionnaire Design

The use of questionnaires is a prevalent method in scientific research, particularly within the social sciences and education, as they facilitate the collection of data from a large number of respondents efficiently. Questionnaires can be administered in various formats, including traditional paper forms and modern electronic versions, which enhance accessibility and response rates (Valli, 2016). Their effectiveness hinges on careful design, including appropriate question formulation and ordering, which ensures that the data collected accurately reflects the participants' views (Roopa & Rani, 2012). Thus, while questionnaires are essential tools in research, this study adapts questionnaires.

Table 3. 2 Constructs and Sources

No	Variables	Items	Scale	Source
1	Supplier quality	5	Likert Scale	Masoudi, E., & Shahin, A. (2021)
2	Supplier delivery	5	Likert Scale	Choi & Hartley, 1996; Li et al., 2006
3	Supplier profile	5	Likert Scale	Dickson, 1966; Elanchezhian & Vasanth, 2020
4	Supplier cost	5	Likert Scale	Masoudi, E., & Shahin, A. (2021)
5	Supply chain agility performance	5	Likert Scale	Narasimhan et al. 2006, Swafford et al. 2006
6	Demographic	4	Close-ended	Kothari,C. R. (2004)

3.4 Measurement of Variables

In a research study, the measurement of variables involves the assignment of numerical values to the attributes or characteristics of a variable. This process requires the selection of suitable measurement tools or scales, such as physical instruments, test surveys, or questionnaires that are both reliable and valid for the variable being investigated. Supplier quality, supplier delivery, supplier profile and supplier cost are four independent variables that were adopted from previous literature and have been modified to suit this research field. Supply chain agility performance in E&E industry is the only dependent variable here. This questionnaire employed a Likert scale to measure five variables under the investigation. The Likert scale is easy to administer and understand. Respondents can quickly indicate their level of agreement or disagreement with a given statement, leading to higher response rates and more reliable data.

The following sections provide a detailed explanation of the instruments used in this research for each variable.

3.4.1 Demographic Factor

This questionnaire was divided into three sections, with the first section or section focusing on the respondents' demographic characteristics. These variables are measured using both nominal and ordinal scales. Benit and Foully (2003) describe nominal scales as tools that categorize physical states and the informational entities produced by measurement. In this study, four key demographic characteristics are assessed. The first demographic characteristic is gender, which is classified into two categories: male and female, coded as 1 for male and 2 for female. The second characteristic is age, divided into six groups: 1 = 20-25 years, 2 = 26-30 years, 3 = 31-35 years, 4 = 36-40 years, 5 = 41-50 years, and 6 = 51 years and above. The third demographic characteristic is educational level, categorized into three groups: 1 = Diploma or less 2= undergraduate, and 3= Postgraduates Level (master's or PhD). Respondents asked to specify their educational background. Finally, the fourth demographic characteristic is years of experience within the company, classified into four categories: 1 = less than 3 years, 2 = 3-6 years, 3 = 7-10 years, and 4 = more than 10 years. These demographic variables provide a detailed understanding of the participants' backgrounds, allowing for a deeper analysis of the study's findings.

3.4.2 Supplier quality

The instrument used in Section B to measure the supplier quality of supplier selection criteria was adapted from the studies of Masoudi and Shahin (2021). This section consists of five items, measured using a 5-point Likert scale. The Likert scale, ranging from (1) to (5), allows for an easy and consistent administration of responses. The scale was rated as follows: SD=strongly Disagree (1) D=Disagree (2) N=Neutral (3) A=Agree (4) SA= strongly agree (5). A score of

(1) represent A low adoption of supplier quality, while a score of (5) indicates a high adoption within the organization. Mean and standard deviation can be calculated for further analysis.

3.4.3 Supplier delivery

Supplier delivery in section B was evaluated using a Likert scale adapted Choi and Hartley, 1996 and Li et al., (2006) with five items, and the respondents were asked to rate each on a scale from (1) to (5), where (1) represents Strongly Disagree and (5) represent Strongly Agree. The scale allows for the assessment of the organization's supplier delivery performance, including consistency in on-time deliveries, responsiveness to urgent orders, accuracy of delivery schedules, and alignment with operational lead-time requirements. This standardized scale facilitates comparison of how effectively supplier delivery practices support overall procurement efficiency.

3.4.4 Supplier profile

Section B focuses on supplier profile, a critical function in procurement. The five items in this section were adopted from Dickson, (1966) and Elanchezhian & Vasanth, (2020) and were measured using a 5-point Likert scale. The scale follows the same structure as previous sections, ranging from (1) Strongly Disagree and (5) strongly agree. The items assess factors such as the supplier's industry reputation, ethical and socially responsible practices, financial stability, experience in handling E&E components, and the potential for long-term relationships. Respondents' ratings provide insights into the perceived profile and reliability of suppliers, enabling quantitative analysis using measures such as mean and standard deviation.

3.4.5 Supplier cost

Supplier costs were assessed in Section B, with five items adapted from Masoudi and Shahin (2021). This section is measured using a Likert scale, with the same response categories as the previous sections: SD=strongly Disagree (1) D=Disagree (2) N=Neutral (3) A=Agree (4) SA=

strongly agree (5). The items evaluate the organization's assessment of cost-related aspects such as material pricing, cost-effectiveness in procurement decisions, and financial impacts related to procurement failures (e.g., delays, lost sales, and debt costs). These responses offer quantitative insights into how supplier cost considerations are managed and their relationship on procurement outcomes, allowing for analysis through measures such as mean and standard deviation.

3.4.6 Supply chain agility performance

The instrument for measuring supply chain agility performance, used in Section C, was adapted from Narasimhan et al. 2006, Swafford et al. (2006). Five items were included in this section, and respondents were asked to rate them on a 5-point Likert scale. The scale ranges from (1) Strongly Disagree to (5) strongly Agree. The items capture various dimensions of agility, including the organization's ability to respond quickly to changes in customer requirements, market developments, demand fluctuations, and supply-side disruptions. These ratings provide valuable data on how agile and responsive the supply chain is, and they support quantitative analysis using statistical tools such as mean and standard deviation.

3.5 Data Collection Method

The researcher was employing a primary data collection method to obtain information directly from the source. To gather sufficient data for the study, questionnaires were used as the primary instrument. The data was collected from a selected group of respondents, specifically employees from E&E companies in Somalia. Primary data, defined as information directly was be collected by the researcher for a specific research objective, was gathered through surveys. This type of original, unprocessed data be essential for investigating new phenomena, testing hypotheses, and addressing research questions. It is encompassed by quantitative aspects. For this survey, data was be collected through an online, self-administered questionnaire distributed

to the target population. The online method allowed respondents to complete the questionnaire at their own pace and from any location, which was be particularly beneficial given the geographic distribution of participants. As well, the use of online data collection proved to be cost-effective and efficient, saving time and Resources compared to traditional paper-based methods. Google Forms was used for the creation and distribution of the questionnaire due to its ease of use and features that facilitated the organized collection of data.

3.6 Data Analysis Technique

Data analysis is a critical phase in research, involving the organization, interpretation, and presentation of collected data to address the research objectives. This study was employing Partial Least Square Structural Equation Modelling (PLS-SEM) as the analysis approach. PLS-SEM is a multivariate analysis method that can analyze complex models and can address the correlation relationship between the examined constructs (Hair et al., 2014). In addition, PLS-SEM also has advantages in its ability to provide optimal analysis results in research with a relatively small amount of data (Kock & Hadaya, 2018). Therefore, this research is suitable for using the PLS-SEM approach to be able to obtain the research objectives that have been proposed previously. Furthermore, SmartPLS was be used as a tool to conduct PLS-SEM analysis, the advantages of this tool are ease of use and good and clear quality of reporting results so that it can make it easier for general readers to easily find out the results of the analysis (Hair et al., 2019).

3.7 Reliability and Validity in Research

Reliability pertains to the stability and consistency of a measurement across different conditions and over time. In this study, reliability was be ensured through various approaches. Test-retest reliability was be assessed by administering the same questionnaire to a group of

respondents at two different intervals. This allowed for the comparison of results to determine stability and consistency over time, confirming the reliability of the instrument (Tavakol & Dennick, 2011). Inter-rater reliability was also be employed, especially in qualitative aspects of the study, by evaluating the level of agreement between two researchers interpreting the same responses. This minimized subjective biases and ensured consistent data interpretation (Heale & Twycross, 2015). Internal consistency reliability was verify using Cronbach's alpha, with a threshold value of 0.7 or above considered acceptable. This statistic ensured that all items within the questionnaire consistently measured the same construct (Tavakol & Dennick, 2011).

SmartPLS software was utilize to compute Cronbach's alpha and confirm the instrument's reliability, with a 95% confidence interval established during the planning stage to enhance confidence in the results, Validity, on the other hand, refers to the extent to which the measurement instrument accurately captures the concepts it is intended to measure, to ensure validity, content validity was addressed by consulting experts during the planning phase. The questionnaire was reviewed to ensure it comprehensively covered all dimensions of the constructions under investigation, such as supplier selection criteria and supply chain agility performance, to ensure its relevance and applicability (Creswell & Creswell, 2018). Construct validity was be established by aligning the questionnaire with the theoretical framework of the study and comparing it with validated instruments used in similar research. This process reinforced the accuracy of the constructions being measured (Heale & Twycross, 2015). Criterion validity was also examined, particularly concurrent validity, by comparing the studies' results with existing datasets on comparable populations to ensure alignment with external benchmarks (Creswell & Creswell, 2018). By meticulously addressing both reliability and validity, this study achieved robust and trustworthy results. The efforts taken to ensure

consistent and accurate measurement strengthened the overall rigor of the research and ensured that the findings were both meaningful and applicable.

3.8 Chapter summary

This chapter has explained the research framework, hypotheses, research design, location of the study, instruments of the study and the selection of respondents.

The next chapter was showing the findings of the study.

CHAPTER FOUR
DATA ANALYSIS AND DISCUSSION

4.0 Introduction

The results from the techniques outlined in the earlier chapter are detailed in this chapter. The findings shared here come from a group of 145 participants. Data assessment was performed using PLS-SEM and Smart PLS as tools. The analysis was conducted using Smart PLS. The opening part of this chapter emphasizes the evaluation of demographic information. The subsequent section reviews the measurement model, considering factors such as validity, reliability, convergent validity, and discriminant validity. The concluding part reveals the results from the structural model.

4.1 Demographic Data

The data collected included responses from 145 individuals from multiple chosen major E&E companies in Somalia. This total exceeded the minimum sample size requirement of 132 individuals. In this part, the findings based on the demographic information from the participants who took part in this study was be showcased in table 4.1.

Table 4. 1 Demographic profile (n=145)

Indicator	Category	Count	%
Gender	Male	63	43.4%
	Female	82	56.6%
Age	20-30 years	37	25.5%
	31-40 years	51	35.2%
	41-50 years	39	26.9%
	More than 51 years	18	12.4%
Educational background	Diploma or less	26	17.9%
	Undergraduate	89	61.4%
	Post-graduate	30	20.7%
Work experience	Less than 3 years	25	17.2%
	3-6 years	48	33.1%
	7-10 years	53	36.6%
	Mare than10 years	19	13.1%

The participants in this study consisted of 145 individuals with a fairly even gender proportion, where the majority were 82 women (56.6%) and 63 men (43.4%). In terms of age group, most participants were in the age range of 31-40 years with a total of 51 people (35.2%), followed by the 41-50 years age group which amounted to 39 people (26.9%), the 20-30 years age group of 37 people (25.5%), and the rest who were more than 51 years old amounted to 18 people (12.4%).

The educational background of the participants showed that most of them had an undergraduate degree, which amounted to 89 people (61.4%). Meanwhile, 30 people (20.7%) had a postgraduate degree, and 26 people (17.9%) had a diploma or lower-level education. In terms

of work experience, the majority of participants had a range of work experience between 7 to 10 years, namely 53 people (36.6%), followed by participants who had 3 to 6 years of work experience as many as 48 people (33.1%). In addition, there were 25 people (17.2%) who had less than 3 years of work experience, and 19 people (13.1%) had more than 10 years of work experience. This shows that most of the participants are individuals who are at the mid-career stage with significant work experience.

4.2 Descriptive Analysis

This section describes the descriptive analysis of the data used for the analysis process in this study. Table 4.2 shows factors such as the minimum data value, maximum data value, mean value, and standard deviation of each variable tested.

Table 4. 2 Descriptive analysis

Construct	Min	Max	Mean	Standard Deviation
Supplier Quality	1	5	4.385	0.839
Supplier Delivery	1	5	4.057	0.987
Supplier Profile	1	5	4.266	0.893
Supplier Cost	1	5	4.326	0.837
Supply Chain Agility Performance	1	5	4.361	0.867

Supplier Quality has an average of 4.385, with the lowest value of 1, a highest of 5, and a standard deviation of 0.839. This shows that respondents give a high assessment of supplier quality, with a relatively low diversity of assessments. Supplier Delivery has a mean of 4.057 and a standard deviation of 0.987. This indicates a positive view of the accuracy and efficiency in delivery from suppliers, although there is little variation in respondents' views. Supplier Profile reached a mean of 4.266 and a standard deviation of 0.893, indicating that the supplier's habits and reputation were rated fairly good overall by the respondents. Supplier Cost shows an average of 4.326 with a standard deviation of 0.837, which means that the cost provided by

the supplier is considered efficient or comparable to the services offered. Supply Chain Agility Performance shows the highest average of 4.361, with a standard deviation of 0.867, which indicates that the respondents consider the supply chain agility performance to be very good.

4.3 Outer model test

In the initial stage of model analysis using Partial Least Squares Structural Equation Modeling (PLS-SEM), testing is carried out on the outer model to ensure that each indicator can represent the measured construct in a valid and reliable way. This outer model test evaluates a number of very important criteria, namely, factor loadings, Variance Inflation Factor (VIF), Cronbach's alpha, composite reliability (CR), and average variance extracted (AVE) (Farooq et al., 2018; Zhao et al., 2024). In this case, acceptable factor loadings above 0.70 and VIF values below 5.0 are needed to avoid multicollinearity. Furthermore, CR and AVE values must be greater than 0.70 and 0.50, respectively, as construct reliability and indicators of convergent validity (Hair et al., 2019). To show the results of the outer model analysis in a more understandable format, Table 4.3 shows the results of the outer model test.

Table 4. 3 First outer model test

	Indicators	Factor loading	VIF	Cronbach's alpha	CR	AVE
SQ	SQ1	0.929	4.751			
	SQ2	0.905	3.972			
	SQ3	0.926	4.910	0.935	0.951	0.797
	SQ4	0.925	4.976			
	SQ5	0.770	1.838			
SD	SD1	0.817	2.246			
	SD2	0.916	3.836			
	SD3	0.888	3.191	0.893	0.923	0.708
	SD4	0.902	3.361			
	SD5	0.658	1.479			
SP	SP1	0.765	1.691			
	SP2	0.848	2.331			
	SP3	0.815	2.053	0.857	0.898	0.639
	SP4	0.865	2.483			
	SP5	0.690	1.450			
SC	SC1	0.849	2.502			
	SC2	0.916	3.929			
	SC3	0.911	3.803	0.908	0.932	0.735
	SC4	0.714	1.586			
	SC5	0.881	2.958			
SAP	SAP1	0.866	2.860			
	SAP2	0.849	2.521			
	SAP3	0.935	5.084	0.937	0.952	0.799
	SAP4	0.895	3.321			
	SAP5	0.922	4.424			

Note: CR = Composite reliability

In the initial stage of model analysis using Partial Least Squares Structural Equation Modeling (PLS-SEM), testing is carried out on the outer model to ensure that each indicator can represent

the measured construct in a valid and reliable way. This outer model test includes an assessment of several important criteria, namely factor loadings, Variance Inflation Factor (VIF), Cronbach's Alpha, Composite Reliability (CR), and Average Variance Extracted (AVE) (Farooq et al., 2018; Zhao et al., 2024). In this case, the ideal factor load is above 0.70, while the VIF value should be less than 5.0 to prevent multicollinearity. On the other hand, CR and AVE values should exceed 0.70 and 0.50 respectively as indicators of reliability and convergent validity (Hair et al., 2019).

In the first test, the results show that most of the indicators have met the set criteria constraints. However, there were some indicators that showed weaknesses in their contribution to the constructs. Indicators SP5 (on the Supplier Profile construct) and SD5 (on the Supplier Delivery construct) had factor loading values below 0.70, SP5; 0.690<0.700 and SD5; 0.658<0.700, respectively, and thus were considered insufficiently representative of their constructs. In addition, indicator SAP3 (on the Supply Chain Agility Performance construct) shows a VIF value of 5.084, which exceeds the threshold and indicates possible multicollinearity. Based on these findings, the three indicators were declared not meeting the criteria and were subsequently excluded from the model as shown in table 4.3.

Table 4. 4 Second outer model test

	Indicators	Factor loading	VIF	Cronbach's alpha	CR	AVE
SQ	SQ1	0.929	4.751			
	SQ2	0.905	3.972			
	SQ3	0.926	4.910	0.935	0.951	0.797
	SQ4	0.925	4.976			
	SQ5	0.770	1.838			
SD	SD1	0.844	2.239			
	SD2	0.924	3.765	0.914	0.940	0.796
	SD3	0.903	3.191			
	SD5	0.897	3.095			
SP	SP1	0.768	1.617			
	SP2	0.872	2.326			
	SP3	0.835	2.035	0.858	0.904	0.702
	SP4	0.874	2.381			
SC	SC1	0.849	2.502			
	SC2	0.916	3.929			
	SC3	0.911	3.803	0.908	0.932	0.735
	SC4	0.714	1.586			
	SC5	0.881	2.958			
SAP	SAP1	0.868	2.472			
	SAP2	0.859	2.374			
	SAP4	0.904	3.181	0.911	0.937	0.789
	SAP5	0.921	3.660			

Note: CR = Composite reliability

After the problematic indicators were removed, the outer model testing was conducted again in the second phase. The results of the second test showed a significant improvement in the

quality of the model. The remaining indicators had factor loadings of more than 0.70, indicating solid contributions to each construct. All VIF values were recorded below 5.0, indicating the absence of multicollinearity issues between indicators. In addition, the Composite Reliability (CR) and Cronbach's Alpha (CA) values for each construct remained high (CA > 0.7 and CR >0.7), indicating good internal consistency. The AVE values for all constructs also exceeded the threshold value of 0.50, which strengthen the conclusion that these constructs have sufficient convergent validity as shown in table 4.4.

Table 4. 5 Fornell-Larckner criterion

	SAP	SC	SD	SP	SQ
SAP	**0.888**				
SC	0.760	**0.857**			
SD	0.671	0.578	**0.892**		
SP	0.776	0.822	0.558	**0.838**	
SQ	0.818	0.807	0.660	0.800	**0.893**

Furthermore, after ensuring that convergent validity and construct reliability have been tested through outer model testing, discriminant validity is also tested to ensure each construct in the model actually measures a different concept from one another. One method applied is the Fornell-Larcker criterion, where the square root value of the AVE for each construct must be greater than the correlation between that construct and the other constructs in the model (Lasker et al., 2017).

The results of testing using Fornell-Larcker show that all constructs meet the discriminant validity standard. For example, the root AVE value for the Supply Chain Agility Performance construct was recorded at 0.888, which is higher than its correlation with other constructs such as Supplier Cost (0.760), Supplier Delivery (0.671), Supplier Profile (0.776), and Supplier Quality (0.818). Similar patterns are also seen in other constructs, such as Supplier Cost which has a root AVE of 0.857, higher than all other inter-construct correlations. Overall, all diagonal

values (root AVE) in the Fornell-Larcker matrix are higher than the values below them, indicating that each construct has sufficient discriminant validity and does not overlap conceptually.

The overall results of testing the outer model show that the measurement model has met all the recommended statistical criteria. From the aspects of convergent validity, reliability, to discriminant validity, all constructs in the model have shown solid feasibility. Therefore, this model can be declared feasible to proceed to the next stage, namely testing the inner model to assess the structural relationship between constructs in this study as shown in table 4.5.

4.4 Structural model evaluation

After the measurement model (outer model) is declared valid and reliable, the next step in PLS-SEM is to assess the structural model (inner model). The goal is to assess the strength of the relationship between latent constructs and the model's ability to explain the dependent variable. Model evaluation includes the criteria of R-squared (R^2), effect size (f^2), predictive relevance (Q^2) and model fit (SRMR) Hair et al., 2014; Mbawuni and Nimako, (2017). The first result to be shown in Table 4.6 is model quality criteria.

Table 4. 6 Model quality criteria

	R^2	f	SRMR	Q^2
SC		0.017		
SD		0.093		
SP		0.069		
SQ		0.133		
SAP	0.740		0.063	0.711

After the measurement model (outer model) is declared valid and reliable, the next step in PLS-SEM is to assess the structural model (inner model). The goal is to assess the strength of the relationship between latent constructs and the model's ability to explain the dependent variable.

Structural model assessment includes indicators of R-squared (R^2), effect size (f^2), predictive relevance (Q^2), and model fit (SRMR) (Hair et al., 2014; Mbawuni & Nimako, 2017).

The results of the analysis indicate that the Supply Chain Agility Performance construct obtained an R^2 value of 0.740, which indicates that 74% of the variability of SAP can be explained by the four constructs tested, namely Supplier Cost, Supplier Delivery, Supplier Profile, and Supplier Quality. According to the R^2 classification by (Hair et al., 2019), this value resembles significant explanatory power, which indicates that this model has a high ability to explain the dependent variable. Furthermore, to assess the contribution of each construct to Supply Chain Agility Performance, an effectiveness measure (f^2) is used which shows the change in R^2 value when one construct is removed from the model. Based on the explanation of (Brydges, 2019; Cohen, 1988), the f^2 value is divided into small (≥ 0.02), medium (≥ 0.15), and large (≥ 0.35). In these results, Supplier Cost shows a f^2 value of 0.017, which is categorized as a very small effect. Supplier Delivery has a value of 0.093, Supplier Profile of 0.069, and Supplier Quality of 0.133. Although it has not reached the medium effect category, SQ shows a relatively greater relationship than other constructions.

To evaluate the predictive ability of the model, the predictive relevance indicator (Q^2) is used with the blindfolding method. According to (Chin, 1998; Hair et al., 2019), a Q^2 value that exceeds 0 indicates predictive relevance, while values above 0.25 are considered medium predictive and more than 0.50 are categorized as high predictive. In this model, Supply Chain Agility Performance shows a Q^2 value of 0.711, which indicates that this model has excellent predictive ability for endogenous variables. Finally, from the aspect of model fit, the SRMR value of 0.063 indicates that this model fits the observed data. This figure is below the general limit of 0.08, as recommended by Henseler et al. (2014), this model can be considered as a good fit model as shown in table 4.6.

4.5 Hypotheses test

Hypothesis testing is performed to analyze the cause-and-effect relationship amongst the latent constructs in the structural model. This study's four hypotheses were tested, assessing the influence of Supplier Quality, Supplier Delivery, Supplier Profile and Supplier Cost on Supply Chain Agility Performance. The testing is based on the path coefficient (β), t-statistic, and p-value as obtained using a bootstrapping approach (Hair et al., 2019). The criteria to be considered significant were set as $p < 0.05$ and t-value > 1.645 for one-tailed test, as suggested by (Hair et al., 2019). The structural model diagram shown as figure 4.1, is presented in this section to highlight the structural model structure result in this study. Furthermore, table 4.7 is shown as hypotheses result testing in this study.

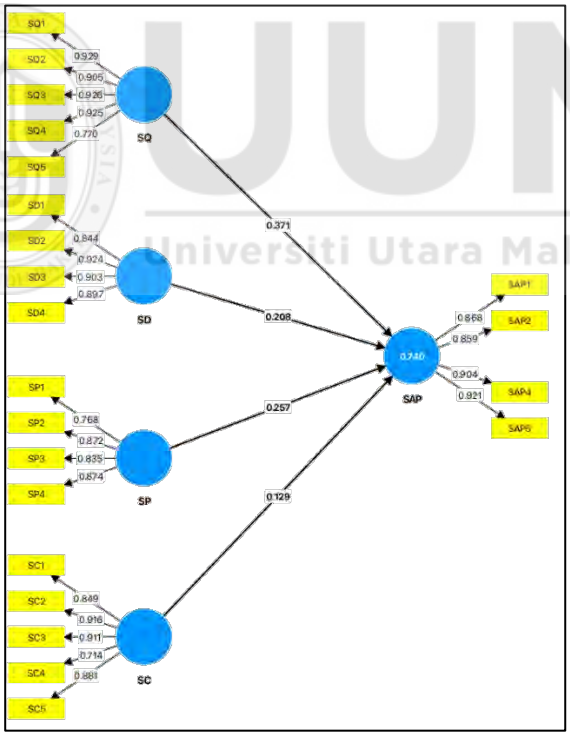

Figure 4. 1 Structural model

The testing results as shown in table 4.7 confirm the first hypothesis (H1) that Supplier Quality significantly influences Supply Chain Agility Performance, $\beta = 0.371$, $t = 2.374$ and $p = 0.009$. These conclusions are consistent with previous studies Balcıoğlu et al., 2024; Raj et al., (2023),

that showed that suppliers with higher-quality standards greatly influence supply chain flexibility and agility when firms can rely on high quality and supplier performance to rapidly respond to changes in consumer expectations and desires in their respective markets.

Table 4. 7 Hypotheses test result

Hypotheses	**Path**	***ß-values***	***t-statistics***	***p-values***	**Decision**
H1	SQ -> SAP	0.371	2.374	0.009	Supported
H2	SD -> SAP	0.208	2.382	0.009	Supported
H3	SP -> SAP	0.257	2.629	0.004	Supported
H4	SC -> SAP	0.129	1.144	0.126	Not Supported

Hypothesis testing is conducted to assess the cause-and-effect relationship between the latent constructs in the structural model. In this study, there are four hypotheses that examine the relationship between Supplier Quality, Supplier Delivery, Supplier Profile, Supplier Cost and Supply Chain Agility Performance. The assessment is based on the path coefficient (β), t-statistic, and p-value, using the bootstrapping method (Hair et al., 2019). The criteria for being considered significant was set at a significance level of $p < 0.05$ and a t-value > 1.645 for one-tailed test, as proposed by (Hair et al., 2019).

The results of the test show that the first hypothesis (H1) which claims that Supplier Quality has a significant relationship with Supply Chain Agility Performance is accepted, with a value of $\beta = 0.371$, $t = 2.374$, and $p = 0.009$. This finding is in line with previous studies such as (Balcıoğlu et al., 2024; Raj et al., 2023), in which show that supplier quality has a great relationship on supply chain flexibility and agility, as high-quality suppliers can provide consistent products or raw materials and meet dynamic market needs.

The second hypothesis (H2) was also accepted, indicating that Supplier Delivery has a significant relationship with Supply Chain Agility Performance with $\beta = 0.208$, $t = 2.382$, and $p = 0.009$. This finding suggests that delivery reliability from suppliers, including timeliness and precision in delivery, contributes to supply chain agility performance. This is strengthened by research from (Li et al., 2006; Mate, 2022) which shows that the ability of suppliers to deliver on time supports rapid reaction to changes in demand in the market.

The third hypothesis (H3) on the relationship between Supplier Profile and Supply Chain Agility Performance also showed significant results, with $\beta = 0.257$, $t = 2.629$, and $p = 0.004$. These results suggest that supplier characteristics or profiles, such as experience, reputation, and commitment to cooperation, play an important role in supporting supply chain agility. Previous research by (Cheng et al., 2022; Shi et al., 2023) also mentioned that the selection of partners in the supply chain with the right profile can strategically accelerate and increase flexibility in responding to market changes.

In contrast, the fourth hypothesis (H4) examining the relationship between Supplier Costs and Supply Chain Agility Performance showed insignificant results, with a value of $\beta = 0.129$, $t = 1.144$, and $p = 0.126$. This suggests that the cost efficiency of suppliers does not directly contribute to improving supply chain agility. This result contradicts with the previous research as (Masoudi & Shahin, 2022; Panjaitan et al., 2024) the common approach in supply chain management that usually emphasizes low cost, but is in line with the views of recent studies that argue that an overemphasis on cost efficiency can be detrimental to flexibility and adaptation rate (Agarwal & Agarwal, 2024). In a volatile and uncertain business environment, companies emphasize responsiveness and adaptability rather than simply seeking cost savings.

CHAPTER FIVE
DISCUSSION AND CONCLUSION

5.0 Introduction

This chapter was present a summary of the results of the data analysis process that has been carried out. In addition, an in-depth discussion was also be presented to further dissect the findings obtained. This section also presents practical contributions that can be taken as insights for E&E companies in Somalia. In this chapter, limitations of the research are also presented as well as suggestions for future research.

5.1 Summary Research

This research aims to find out what factors affect Supply Chain Agility Performance. From the results of data analysis that has been carried out which tests 4 independent variables, namely supplier quality, supplier delivery, supplier profile and supplier cost. The results obtained were that only three variables were found to have a positive relationship on the Supply Chain Agility Performance of E&E companies in Somalia. The influential variables are supplier quality, supplier profile and supplier delivery. In the other hand, the variable that does not have a positive relationship with supplier cost.

From the results obtained, a more in-depth discussion was be presented to better understand these findings and to gain more practical insights and input. Therefore, in addition to academic contributions, this research was to be also able to provide practical contributions that can be applied by E&E companies in Somalia.

5.2 Discussion

This study aims to identify the relationship between of supplier selection criteria such as supplier quality, supplier profile, supplier delivery and supplier cost and supply chain agility performance in the electronics and electrical industry in Somalia. The research focuses on four

main variables, namely supplier quality, supplier delivery, supplier profile, and supplier cost, and their respective effects on supply chain agility performance. This chapter examine the hypothesis testing results in depth and relate them to industry conditions and relevant previous studies. In addition, this chapter also presents practical insights and managerial implications that can be utilized by industry players.

The analysis shows that supplier quality has a significant relationship with supply chain agility performance. This finding confirms that in the context of the electronics and electrical industry in Somalia, the quality of products and services provided by suppliers is a key determinant in supporting the flexibility and speed of adaptation of the company. In a complex and high-risk business environment like Somalia, firms rely heavily on suppliers who are able to provide materials with consistent specifications and low defect rates. Referring to the previous research conducted by Rodrigues et al., (2022) and Salimian et al., (2020), it is mentioned that high-quality suppliers help companies avoid operational disruptions that can slow response to market changes. Especially for companies that are directly affected by rapid and significant changes such as technology companies.

This finding is in line with the agility theory in supply chains that emphasizes the importance of reliability and consistency of supply partners to support the responsiveness and adaptability of firms to market uncertainty (Bogataj et al., 2024). In the electronics industry, where products are highly dependent on precision and technological integration, the quality of materials from suppliers is crucial. The study of Masoudi and Shahin (2022) and Shi et al. (2023) shows that supplier quality directly contributes to the speed and accuracy of production, so that companies are better prepared to deal with variations in customer demand. Therefore, focusing on supplier quality not only improves operational efficiency, but also enhances the firm's capability to adapt rapidly.

The result of the second hypothesis test shows that supplier delivery reliability has a significant relationship with supply chain agility performance. In the context of the Somali industry, the accuracy and speed of delivery is a major challenge due to limited logistics infrastructure and uncertain socio-political conditions. Therefore, firms supported by suppliers that have high reliability in delivery are better able to maintain smooth operations and respond more quickly to market dynamics.

This finding reinforced the results of the study by Huang and Tan, (2021), which showed that agility in supply chains is strongly influenced by logistics reliability and the speed of information and goods flow. In situations with many external disruptions, speed of delivery from suppliers becomes one of the main risk mitigation tools. Late or inaccurate deliveries resulted in production delays and lost market opportunities. The reliability of delivery can be linked to the process of channeling information from the supplier to the customer (Sheel & Nath, 2019). The chain of goods distribution process from the initial order to the goods received by the customer is a long chain that involves continuous information exchange. By ensuring that information exchange occurs optimally between E&E companies and suppliers, it can also improve the reliability of deliveries from suppliers to companies.

Based on the hypothesis testing, the third hypothesis is also accepted. These results suggest that supplier profile, such as experience, production capacity, technology, and financial stability-contribute to increased supply chain agility performance. In the electronics and electrical industry, which relies heavily on technological innovation and renewal, selecting suppliers with strong strategic profiles supports companies' agility and competitiveness. This finding is reinforced by previous literature Shi et al. (2023) and Wang et al. (2020), which suggests that a strategically appropriate supply chain partner profile was strengthen collaborative relationships and responsiveness to customer demand. In an environment of

rapidly changing demand and relatively short product cycles, companies need suppliers that are not only reliable but also have the capacity to innovate and adapt (Shi et al., 2023). Therefore, supplier evaluation should not only focus on quality and delivery aspects, but also include credibility, flexibility and market reputation of the supplier.

The results of testing the fourth hypothesis show that supplier costs do not have a significant relationship with supply chain agility. While cost efficiency can be considered as one of the most important aspects of supply chain management (Chen & Wang, 2023), this finding suggests that focusing on the lowest price alone does not guarantee supply chain agility performance. In Somalia's uncertain industrial environment, companies seem to prioritize reliability and flexibility over cost savings. This finding supports Chen and Wang (2023), Masoudi and Shahin, (2022), view that firms should be able to precisely determine the level of cost efficiency, as extreme cost efficiency can be a barrier to company agility as it often comes at the expense of reliability and spare capacity. In industries that require rapid adaptation, such as electronics, over-cutting supplier costs can lead to delivery delays or quality degradation that disrupts the entire supply chain.

5.3 Major Finding Study

This study aims to analyze how supplier selection criteria can affect supply chain agility performance in companies operating in the electricity and electronics sectors in Somalia. Findings from the analysis show that supplier quality is a critical element in creating an agile and responsive supply chain. Suppliers who are able to deliver consistently reliable quality are closely correlated with reducing variations in operational stability and providing flexibility to adapt to external change. Furthermore, punctual and consistent supply reflects positively on operational agility. Punctuality and consistency in supply enables subsequent adjustments to the production and distribution processes. Additionally, the supplier profile is also important

where supplier experience, reputation and long-term commitments toward cooperations can create partnerships that emphasize adaptation and sustainability. In contrast, the suppliers' cost did not have a meaningful relationship with supply chain agility. This finding suggests that in complex and volatile business situations like Somalia, cost efficiency cannot be the only factor in making strategic decisions. The success of a supply chain relies more on three elements: the effectiveness of relationships, performance reliability, and the suppliers' relevant product/service offering adaptable to market change. Therefore, based on this study, the recommendation is that it is essential to take a holistic approach to supplier selection in order to further create strength and competitiveness in the supply chain.

5.4 Contribution

Based on the findings of this study, there are several important managerial implications that can be used as strategic guidelines for companies in the electronics and electricity sectors in Somalia to improve more agile and adaptive supply chain performance. First, supply chain managers should prioritize supplier quality as a key criterion in the partner selection and evaluation process. High quality not only ensures operational stability but also supports speed and flexibility in responding to changes in market demand. Therefore, it is necessary to develop a system of regular audits and assessments of suppliers, along with quality indicators based on industry standards such as ISO 9001.

Second, the findings regarding the importance of delivery reliability require managers to build more intensive logistics cooperation with suppliers. Performance-based contracting, the use of tracking systems and the integration of real-time production schedules are concrete steps that can improve delivery reliability. Logistics risk management, especially in the face of transportation disruptions common in Somalia, also needs to be improved. Third, strong supplier profiles such as experience, production capacity, and financial stability should be

considered as strategic assets. Decision makers are advised to expand partnerships with suppliers who have long-term commitments, a collaborative culture, and are open to innovation. The implementation of an e-procurement system or vendor assessment can also serve as a tool to select suppliers that best suit the company's strategic needs.

Fourth, although supplier costs were not shown to have a major relationship with supply chain agility in this study, it does not mean that this element can be completely ignored. Companies must find a balance between cost efficiency and operational flexibility. Approaches such as cost transparency, quantity-based price negotiations, or strategic partnerships can still be applied without compromising agility.

In summary, supply chain managers in the sector need to adopt a holistic approach to supplier selection that not only emphasizes cost savings, but also considers factors such as quality, delivery accuracy, and long-term partner viability. Given the complexity of the business environment in Somalia, a flexible and collaboration-based approach to supply chain management was crucial in dealing with market uncertainty and pressures from globalization.

5.5 Limitation of the study

The research has limitations that must be considered. Firstly, while this study narrows in on Somalia, the results may not generalise to other developing countries that may have different supply chain contexts. Secondly, the approach is quantitative, and while PLS-SEM is a good technique for measuring relationships between variables, which establishes cause and effect, it only identifies this; it does not provide the researcher with any contextual dynamism in the field. Not only does this research consider the buyer's company perspective, but it does also not consider the suppliers perspective. It is essential to understand the two-way relation in a supply chain.

5.6 Further studies recommendation

For future research development, it is recommended that the study area be expanded to other developing countries to enable comparison between regions. In addition, qualitative methods such as in-depth interviews or case studies can be used to gain a deeper understanding of supplier selection strategies. Future research could also consider moderating variables such as uncertainty in the environment, digitalization in the supply chain, or technology adoption to analyze how external factors affect the relationship between supplier selection and supply chain flexibility. It is also important to consider the supplier's perspective in order to understand the reciprocal relationship in the supply chain more thoroughly. Finally, given that the electronics and electrical sectors are heavily influenced by technological advancements, the aspect of innovation in suppliers can also be added as a new variable to evaluate its contribution to supply chain flexibility.

5.7 Summary chapter

This chapter presents the results of the study on the relationship between of supplier selection and supply chain agility in the electronics and electrical sectors in Somalia. Of the four variables studied, namely quality, delivery time, profile, and supplier cost, only three showed a positive effect, namely quality, delivery time, and supplier profile. Supplier cost showed no significant impact. These results indicate that companies should focus more attention on trustworthy and experienced suppliers, rather than just looking for lower prices. The chapter also offers practical recommendations to companies, such as improving logistics collaboration and implementing a supplier evaluation system. This study is limited to the Somali region and uses quantitative methods, so it is recommended that future research include other areas and a more comprehensive approach.

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APPENDICES 1 QUESTIONNAIRES

Dear Respondents,

I'm Anas Abdullahi Hussein. a student of Master of Science (Supply Chain Management) from the School of Technology Management & Logistics (STML), University Utara Malaysia. This questionnaire aims to investigate **supplier selection criteria and supply chain agility performance in E&E companies in Somalia.** The information gathered was assist the researcher in fulfilling the objectives and goals of this study, which is part of the requirements for the Master of Science in Supply Chain Management at the School of Technology Management & Logistics (STML), University Utara Malaysia. Your responses remained confidential and was be used just for research purposes. If you have any questions, please feel free to contact me at +601111797690 or Anasdibad5@gmail.com. Your participation is greatly appreciated.

Sincerely,

Anas Abdullahi Hussein

School of Technology Management & Logistics (STML)

University Utara Malaysia

Instructions:

Please respond to each statement with whatever knowledge you have by circling your answer using the scales given. There is no right or wrong answer. Be honest in your assessment.

Section A: Demographic Information

Thank you for participating in this research. Please (√) answer the following questions honestly and to the best of your knowledge.

1. Gender

A) Male ☐

B) Female ☐

2. Age of the respondents

A. 20-25 ☐

B. 26-30 ☐

C. 31-35 ☐

D. 36-40 ☐

E. 41-50 ☐

F. 51 and above ☐

3. Level of education

A. Diploma or less ☐

B. Undergraduate Level ☐

C. Post-Graduate Level (master's or PhD) ☐

4. How long have you worked for this company?

A. Less than 3 years ☐

B. 3 –6 years ☐

C. 7–10 years ☐

D. More than 10 years ☐

Section B: Supplier Selection Criteria

Scale	**Description**
1	Strongly disagree
2	Disagree
3	Neutral
4	Agree
5	Strongly agree

Please respond to each statement with whatever knowledge you have by **TICK** your answer using the scales given. SD = Strongly Disagree, D = Disagree, N = Neutral, A = Agree, and SA = Strongly Agree.

No	**Supplier quality**	**SD**	**D**	**N**	**A**	**SA**
1	The supplier's product quality meets the standards					

2	The technical capability of the process quality of the supplier is acceptable					
3	Product failure of the supplier during production is traceable					
4	The supplier has quality certificate(s)					
5	The supplier uses the process capability index					

No	**Supplier delivery**	**SD**	**D**	**N**	**A**	**SA**
1	Our suppliers consistently deliver products on time.					
2	The delivery lead times from our suppliers meet our operational needs.					
3	Suppliers are responsive to urgent delivery requests.					
4	Delivery reliability from suppliers is high.					
5	Suppliers provide accurate delivery schedules and tracking.					

Please respond to each statement with whatever knowledge you have by **TICK** your answer using the scales given. SD = Strongly Disagree, D = Disagree, N = Neutral, A = Agree, and SA = Strongly Agree.

No	**Supplier profile**	**SD**	**D**	**N**	**A**	**SA**
1	Our suppliers have a strong reputation in the E&E industry.					
2	Suppliers maintain ethical and socially responsible business practices.					
3	Suppliers are financially stable and reliable partners.					
4	Suppliers are experienced in dealing with E&E components and technologies.					
5	We consider the long-term relationship potential of our suppliers.					

No	Supplier cost	SD	D	N	A	SA
1	Current costs per purchased material are reviewed in our company					
2	Our company considers cost is an important agenda.					
3	In our company, customers are satisfied due to our competitive cost range.					
4	In our company, we can control sales volume due to the cost management by our supplier					
5	In our company, cost reduction programs are well implemented.					

Section C: Supply Chain Agility Performance

Please respond to each statement with whatever knowledge you have by **TICK** your answer using the scales given. SD = Strongly Disagree, D = Disagree, N = Neutral, A = Agree, and SA = Strongly Agree.

No	Supply chain agility performance	SD	D	N	A	SA
1	We can adapt our services and/or products sufficiently fast to new customer requirements.					
2	We can react sufficiently fast to new market developments.					
3	We can react to significant increases and decreases in demand as fast as required by the market.					
4	We are always able to adjust our product portfolio as fast as required by the market.					
5	We are able to react adequately fast to supply-side changes, e.g., compensation for spontaneous supplier outages, delivery failures, and market shortages.					

END OF SURVEY

THANK YOU VERY MUCH FOR YOUR KIND COOPERATION

APPENDICES 2 All Analysis

Pilot test before distribution of questionnaire

Supplier quality

Case Processing Summary			
		N	%
Cases	Valid	30	100.0
	Excluded[a]	0	.0
	Total	30	100.0
a. Listwise deletion based on all variables in the procedure.			

Reliability Statistics	
Cronbach's Alpha	N of Items
.847	5

Item Statistics			
	Mean	Std. Deviation	N
Supplier quality [The supplier's product quality meets the standards]	2.50	1.480	30
Supplier quality [The technical capability of the process quality of the supplier is acceptable]	2.10	1.185	30
Supplier quality [Product failure of the supplier during production is traceable]	1.97	1.159	30
Supplier quality [The supplier has quality certificate(s)]	2.10	1.296	30
Supplier quality [The supplier uses the process capability index]	2.17	1.262	30

Supplier delivery

Case Processing Summary		
	N	%

Cases	Valid	30	100.0
	Excluded[a]	0	.0
	Total	30	100.0
a. Listwise deletion based on all variables in the procedure.			

Reliability Statistics	
Cronbach's Alpha	N of Items
.860	5

Item Statistics			
	Mean	Std. Deviation	N
Supplier Delivery [Our suppliers consistently deliver products on time.]	2.13	1.042	30
Supplier Delivery [The delivery lead times from our suppliers meet our operational needs.]	2.13	1.196	30
Supplier Delivery [Suppliers are responsive to urgent delivery requests.]	2.23	1.357	30
Supplier Delivery [Delivery reliability from suppliers is high.]	2.07	1.172	30
Supplier Delivery [Suppliers provide accurate delivery schedules and tracking.]	2.30	1.368	30

Supplier profile

Case Processing Summary			
		N	%
Cases	Valid	30	100.0
	Excluded[a]	0	.0
	Total	30	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics	
Cronbach's Alpha	N of Items
.762	5

Item Statistics			
	Mean	Std. Deviation	N
Supplier Profile [Our suppliers have a strong reputation in the E&E industry.]	2.90	1.029	30
Supplier Profile [Suppliers maintain ethical and socially responsible business practices.]	2.60	.770	30
Supplier Profile [Suppliers are financially stable and reliable partners.]	2.77	.568	30
Supplier Profile [Suppliers are experienced in dealing with E&E components and technologies.]	2.60	.814	30
Supplier Profile [We consider the long-term relationship potential of our suppliers.]	2.77	.935	30

Supplier cost

Case Processing Summary			
		N	%
Cases	Valid	30	100.0
	Excluded[a]	0	.0
	Total	30	100.0
a. Listwise deletion based on all variables in the procedure.			

Reliability Statistics	
Cronbach's Alpha	N of Items

.806	5

Item Statistics			
	Mean	Std. Deviation	N
Supplier Cost [Current costs per purchased material are reviewed in our company]	2.00	1.232	30
Supplier Cost [Our company considers cost is an important agenda.]	1.97	.999	30
Supplier Cost [In our company, customers are satisfied due to our competitive cost program.]	2.20	1.243	30
Supplier Cost [In our company, we can control sales volume due to the cost management by our supplier]	2.10	1.242	30
Supplier Cost [In our company, cost reduction programs are well implemented.]	2.20	1.375	30

Supply chain agility performance

Case Processing Summary			
		N	%
Cases	Valid	30	100.0
	Excluded[a]	0	.0
	Total	30	100.0
a. Listwise deletion based on all variables in the procedure.			

Reliability Statistics	
Cronbach's Alpha	N of Items
.860	5

Item Statistics			
	Mean	Std. Deviation	N

Supply chain agility performance [We can adapt our services and/or products sufficiently fast to new customer requirements.]	2.27	1.230	30
Supply chain agility performance [We can react sufficiently fast to new market developments.]	2.37	1.520	30
Supply chain agility performance [We can react to significant increases and decreases in demand as fast as required by the market.]	2.37	1.299	30
Supply chain agility performance [We are always able to adjust our product portfolio as fast as required by the market.]	2.00	1.259	30
Supply chain agility performance [We are able to react adequately fast to supply-side changes, e.g., compensation for spontaneous supplier outages, delivery failures, and market shortages.]	2.33	1.373	30

Summary of Reliability

Reliability test

No	Variable	Cronbach's Alpha	N of items
	Supplier quality	0.847	5
	Supplier delivery	0.860	5
	Supplier profile	0.762	5
	Supplier cost	0.806	5
	Supply chain agility performance	0.860	5

Analysis after collecting the respondents

Demographic profile (n=145)

Indicator	Category	Count	%

Gender	Male	63	43.4%
	Female	82	56.6%
Age	20-30 years	37	25.5%
	31-40 years	51	35.2%
	41-50 years	39	26.9%
	More than 51 years	18	12.4%
Educational background	Diploma or less	26	17.9%
	Undergraduate	89	61.4%
	Post-graduate	30	20.7%
Work experience	Less than 3 years	25	17.2%
	3-6 years	48	33.1%
	7-10 years	53	36.6%
	Mare than10 years	19	13.1%

Descriptive Analysis

Descriptive analysis

Construct	**Min**	**Max**	**Mean**	**Standard Deviation**
Supplier Quality	1	5	4.385	0.839
Supplier Delivery	1	5	4.057	0.987
Supplier Profile	1	5	4.266	0.893
Supplier Cost	1	5	4.326	0.837
Supply Chain Agility Performance	1	5	4.361	0.867

First outer model test

	Indicators	Factor loading	VIF	Cronbach's alpha	CR	AVE
SQ	SQ1	0.929	4.751	0.935	0.951	0.797
	SQ2	0.905	3.972			
	SQ3	0.926	4.910			
	SQ4	0.925	4.976			

	SQ5	0.770	1.838			
SD	SD1	0.817	2.246	0.893	0.923	0.708
	SD2	0.916	3.836			
	SD3	0.888	3.191			
	SD4	0.902	3.361			
	SD5	0.658	1.479			
SP	SP1	0.765	1.691	0.857	0.898	0.639
	SP2	0.848	2.331			
	SP3	0.815	2.053			
	SP4	0.865	2.483			
	SP5	0.690	1.450			
SC	SC1	0.849	2.502	0.908	0.932	0.735
	SC2	0.916	3.929			
	SC3	0.911	3.803			
	SC4	0.714	1.586			
	SC5	0.881	2.958			
SAP	SAP1	0.866	2.860	0.937	0.952	0.799
	SAP2	0.849	2.521			
	SAP3	0.935	5.084			
	SAP4	0.895	3.321			
	SAP5	0.922	4.424			
Note: CR = Composite reliability						

Second outer model test

	Indicators	Factor loading	VIF	Cronbach's alpha	CR	AVE
SQ	SQ1	0.929	4.751	0.935	0.951	0.797
	SQ2	0.905	3.972			
	SQ3	0.926	4.910			
	SQ4	0.925	4.976			
	SQ5	0.770	1.838			
SD	SD1	0.844	2.239	0.914	0.940	0.796
	SD2	0.924	3.765			

	SD3	0.903	3.191			
	SD5	0.897	3.095			
SP	SP1	0.768	1.617	0.858	0.904	0.702
	SP2	0.872	2.326			
	SP3	0.835	2.035			
	SP4	0.874	2.381			
SC	SC1	0.849	2.502	0.908	0.932	0.735
	SC2	0.916	3.929			
	SC3	0.911	3.803			
	SC4	0.714	1.586			
	SC5	0.881	2.958			
SAP	SAP1	0.868	2.472	0.911	0.937	0.789
	SAP2	0.859	2.374			
	SAP4	0.904	3.181			
	SAP5	0.921	3.660			
Note: CR = Composite reliability						

Fornell-Larckner criterion

	SAP	SC	SD	SP	SQ
SAP	**0.888**				
SC	0.760	**0.857**			
SD	0.671	0.578	**0.892**		
SP	0.776	0.822	0.558	**0.838**	
SQ	0.818	0.807	0.660	0.800	**0.893**

Structural model evaluation

Model quality criteria

	R^2	f	SRMR	Q^2
SC		0.017		
SD		0.093		
SP		0.069		
SQ		0.133		
SAP	0.740		0.063	0.711

Hypotheses test

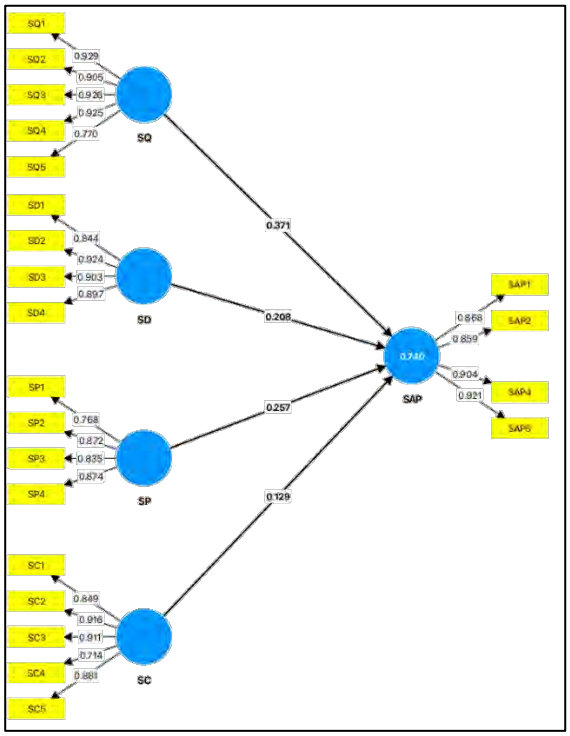

Table 4. 8 Hypotheses test result

Hypotheses	Path	*ß-values*	*t-statistics*	*p-values*	Decision
H1	SQ -> SAP	0.371	2.374	0.009	Supported
H2	SD -> SAP	0.208	2.382	0.009	Supported
H3	SP -> SAP	0.257	2.629	0.004	Supported
H4	SC -> SAP	0.129	1.144	0.126	Not Supported