

**ASSESSMENT OF THE BENEFITS OF
IMPLEMENTING SUPPLY CHAIN
MANAGEMENT IN THE NIGERIA
CONSTRUCTION INDUSTRY**

ESSAY PROJECT SUBMITTED TO THE DEPARTMENT OF
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CERTIFICATION

This is to certify that this work- ASSESSMENT OF THE BENEFITS OF IMPLEMENTING SUPPLY CHAIN MANAGEMENT IN THE NIGERIA INDUSTRY– was undertaken by EBIDA GODWIN GIDEON in the department of Quantity Surveying, Auchi Polytechnic, Auchi.EDO STATE

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DEDICATION

I want to use this profound and great privilege to dedicate this project to God Almighty for his protection and guidance, whose mercies, grace, kindness, favour and power during my programme.

ACKNOWLEDGEMENT

I wish to express my profound gratitude to God Almighty for his supernatural grace and strength He bestowed on me throughout my HND programme. My gratitude and appreciation to my project supervisor, Qs Dr Ebekozi, A for finding time to go through my work. To other lecturers in the department Qs I.O Bejide, Mr. S.O Sumanu, Mrs M.I Amiebenomo, Qs I.S Yesufu, Qs A.O Idowu, Qs S.B Oso, Mr C.O Eboreime and to the HOD Qs. Mr Uwadia F.E, I say thank you for your immeasurable contribution toward the period of my HND programme. To my parents Mr And Mrs Ebida, that contributed to this success and supported me on the concerning financial aspect and advices, and moral support.

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ABSTRACT

Globalization and managing across cultures and borders make the business sense of efficient supply chain management more challenging than ever before. The demand and supply chain can now be as long or as short as the distance between suppliers and consumers who have critical influence on the value chain. This is important because the demand and supply chain processes often have profound effect on productivity levels of the organization. The exploratory research design was deployed for the investigation to gauge the effect of supply chain management on productivity. Organizations around the globe are getting increasingly concerned about the process with which their goods and services reach the ultimate consumer or customer. It is believed that an effective and efficient supply chain management is the corner stone for customer satisfaction, and to this extent, supply chain management is an important topic in business and management today. challenges facing the implementation of supply chain management in the Nigeria industry such as; Lack of commitment ranked as 1st. Poor Understanding of supply chain management, Lack of Awareness, Lack of partnership /Collaborative skills, Lack of Training, Inappropriate organizational structure, Passive contractors, Inadequate investment in I.T, Inappropriate Teaching Methods, Lack of creativity and Ineffective communication. so the prefer measures to improve implementation of supply chain management in the Nigeria industry such as; Stronger cash flow, Better visibility and data analytics, Reduced inventory and overhead costs, Improved risk mitigation, Better collaboration with suppliers, and a more agile business.

CHAPTER ONE

1.0 INTRODUCTION

1.1 BACKGROUND TO THE STUDY

Supply chain management (SCM) is a concept that has flourished in manufacturing industry. It originated from just-in-time (JIT) production and logistics (Vrijhoefand & koskela, 1999; Project Management National Conference, Nigeria, 2020). It was observed that supply chain management is recognized as a leading process improvement, cost savings and revenue enhancing business (Aneesa, 2015). It therefore behooves all organizations involved in the delivery of construction projects to incorporate the initiative supporting strategy and tactical planning as well as systems thinking which promote the practice and application of supply chain management as a concept. In Nigeria, although the concept of supply chain management is still a new area to construction stakeholders, there exist certain elemental challenges identified as inhibitors to the effective development of construction supply chain management practices in the construction industry. These inhibitors commonly reported in the construction industry are inadequate investment in IT; diverse objectives; ineffective communication; poor understanding; inappropriate tendering methods; ignorance; lack of training; ineffective problem solving mechanism; passive subcontractors and the like (Olaniyan, Bosede and Olusola, 2020).The aforementioned challenges have become enormous problems faced by Nigerian construction companies in the management of supply chain which is the bane of successful project delivery. Also these challenges or inhibitors of Supply Chain Management (SCM) have resulted to poor project planning, variation of project scope, faulty designed and wrong estimates which are a direct consequence of wrong practices by construction

stakeholders (contractors, consultants and clients) who are yet to fully lend credence to the conduct and practice of this management technique known as supply chain management.

It is in dealing with these inhibitors that this study seeks to identify the common challenges faced by construction stakeholders in the application of SCM in effective project delivery in Nigeria (Edo) state. Construction projects require numerous agents and specialists hired by clients who involved project designers (e.g. architect and structural designers), main contractors, subcontractors, suppliers, or project management consultants/third-party consultants. They are all expected to manage the supply chain of construction process/projects by integrating all process and activities of different agents as well as effective co-operation/coordination for a successful project delivery (Yadav, 2019). It is in this light, that Saka and Mudi(2021) supported that supply chain management synchronize a firm's functions and those of its suppliers to match the flow of material services and logistics in the supply chain. Therefore, construction supply chain management is the management of suppliers, subcontractors, related parties, all agents and processes in order to deliver information to planning, ordering, producing, delivery and installing materials and services for construction project through an organized network of organizations (Saka and Mudi, 2021). The construction industry possesses a lot of similarity with manufacturing industry which makes SCM adoptable to the construction industry (Aloini, et al 2012). Its goal was to greatly decrease inventory, reduce cost and duration of project thus improving project performance, to transfer site activities offsite to a more favourable condition, and to use integrated management options so as to effectively regulate supplier interaction (Saka & Mudi, 2021). The Nigerian construction industry is however known for high inventory, absence of formal relationship and interaction with supplier (Saka & Mudi 2022), and cost and time overruns (Babalola 2021). The Nigeria construction industry faces immense challenges in managing its supply chain which is critical to a successful project delivery Saka & Mudi (2021). These challenges in the

opinion Aje, (2019) could have resulted from paucity of awareness or paucity of involvement in supply chain management practices by various professionals.

1.2 STATEMENT OF THE RESEARCH PROBLEM

Supply chain management is a network of organizations or entity, that are tied through an upstream and downstream linkages via different processes and activities with a view to producing valuable goods and services to satisfy end users Tiwari, (2021). Supply chain management is therefore important to satisfying the clients and end-users. This highlights the need for professionals to be aware, and fully involved in supply chain management encouraged by an industry prepared to fully adopt the innovation. These challenges in the opinion Aje (2019) could have resulted from paucity of awareness or paucity of involvement in supply chain management practices by various professionals. Aje (2019) surveyed the extent of awareness and involvement of quantity surveyors in supply chain management practices and concluded that though the awareness was high, the level of involvement of quantity surveyors was however low, this is a result of inadequate infrastructure in information Technology. Saad, (2021) identified and raised a fundamental issue related to the effective implementation of supply chain management practices which is the degree of preparedness of the organisation to adopt supply chain management practices. This was confirmed in Aje, (2019) where there was an average level of awareness of supply chain management practices among quantity surveyors however; there was low level of participation and involvement of quantity surveyors in supply chain management practices. This could be attributed to the degree of preparedness of the organisation towards adopting supply chain management practices. Aje, (2019) investigated the level of quantity surveyors awareness of supply chain management praxis; the research similarly examined involvement extent of quantity surveyors and factors constraining their involvement in supply chain management activities. This traffic management function handles

schedules and decisions on movement methods and times taking into account costs of various alternatives, government regulations, the needs of the organization relative to quantities and timing, and external factors such as potential movement delays.

Often, poor logistics arrangements have posed serious problems for effective supply chain management in Nigeria. Logistics refer to the movement of materials and information within a facility and to incoming and outgoing movements of goods and materials. Full attention to logistics is needed for a holistic supply or value chain management. Another important challenge to supply chain management is quality control. Because goals are involved, controls are imperative in supply chain management. Quality controls are necessary to ensure that the system conforms to standards of efficiency, and effectiveness. According to Akanwa and Agu (2020) quality standard is a measure of quality of a product. They state that quality is the degree to which a product conforms to the requirements and satisfaction of customers. Thus, the omission of logistics and quality controls from the primary elements of a supply chain management is a serious gap that must be satisfied (Walker, 2019). It is consequently imperative to ascertain the degree of preparedness of organization towards adopting supply chain management practices alongside barriers that restrain the effective implementation of supply chain management despite the benefits of this innovation. According to Chase, (2021) the critical idea of supply chain management is to apply a total system approach to managing the entire flow of information, materials and services from raw materials suppliers, through factories and warehouses to the end customer. They posit that the idea of supply chain management comes from a picture of how organizations are linked together as a particular company. Such linkage is typically between suppliers that provide inputs, manufacturing and service support operations that transform the inputs into products and services, and the distribution and local service providers that localize the products. This research will assess the

benefits of implementing supply chain management in the Nigeria industry, associated to it and to improve the effectiveness. Hence there is need to assess the benefits.

1.3 RESEARCH QUESTIONS

1. What are the level of awareness of supply chain management in the Nigeria industry?
2. What are the challenges facing the implementation of supply chain management in the Nigeria industry?
3. What are the measures to improve supply chain management in the Nigeria industry?

1.4 AIM AND OBJECTIVES

This aim of this study is to assess the benefits of implementing supply chain management in the Nigeria. To achieve this aim the specific objectives are to:

1. To assess the level of awareness of supply chain management in the Nigeria industry.
2. To identify the challenges facing the implementation of supply chain management in the Nigeria industry.
3. To profer measures to improve implementation of supply chain management in the Nigeria industry.

1.5 JUSTIFICATION OF THE STUDY

The challenges mostly faced by construction stakeholders are inadequate investment; ignorance of issues which are commonly witnessed in the construction industry. Based on this, poor project planning, variation of project scope, faulty designs, and wrong estimates were witnessed in the past as a result of these inhibitors or challenges in the construction industry.

These are results of not aligning its conduct and practices fully to SCM technique in the construction industry in Edo State. In dealing with these challenges, this research paper seeks to identify the challenges faced by construction stakeholders in application of supply chain management in effective project delivering in Edo State construction industry which is a microcosm of the Nigerian construction industry as well as identify common construction supply chain management practices in curbing/curtailing these challenges faced by construction stakeholders in Nigeria. Bosede and Olusola, (2019) Amade (2019) asserts that paucity of understanding of supply chain management concept alongside unclear strategic benefits is the major constraints to the deployment of it narrowed to quantity surveyors alone as all parties plays a crucial role it is therefore imperative to investigate the extent of awareness of other professionals in the built environment and construction practices, their level of involvement in supply chain management activities alongside the constraints to successful adoption of supply chain management practices. There have also been studies done using field research, surveys, and mathematical models (Brandenburg 2019 & Chiu, 2019). There is less attention to the systemic and transformative aspects of sustainability in sustainable supply chain management research and a focus more on organizational survival or profitability (Rajeev 2017; Touboullic & Walker, 2020). Scholars are conducting more studies in the field of sustainable supply chain management considering the significance of addressing issues related to the society and environment (Pagell & Shevchenko, 2019).The field has been characterized by the separation of sustainable supply chain management research and supply chain management as well as variations in prioritizing one aspect of sustainability over others (Brandenburg, 2020). According to Stevenson (2022) coordinating activities of suppliers and customers, and addressing supply and demand issues as quickly as possible enhances the efficacy of a supply chain. He believes that co-ordination, planning and executive of policies across the supply chain requires a system for transferring data across the supply chain and

allowing access to data to those who engage in operations to which it will be useful. Effective supply chain management needs to take cognizance of the benefits of strategic partnerships. Stevenson (2022) states that strategic partnership occurs when two or more business organizations that have complementary products or services that would strategically benefit the others agree to join so that each may realize a strategic benefit. According to him, this occurs when a supplier agrees to hold inventory for a customer, thereby reducing the customer's costs; cost of holding the inventory, in exchange for the customer agreeing to a long-term commitment, thereby relieving the supplier of the costs that would be needed to find new customers, negotiate prices and services, among other challenges (Lee and Billington, 1992). All these previous studies have not assessed the benefits of implementing supply chain management in the Nigeria industry, the study will be of great benefit to contractors, clients and other construction and other professionals in the construction industry, more so this study will serve as a blue print for other researchers who wish to further their study on the future problems affecting supply chain management in Edo state among other construction stakeholders.

1.6 SCOPE OF THE STUDY

The scope of this research work is to assess the benefits of implementing supply chain management in the Nigeria industry; one will be focusing on some selected building construction projects in Edo state due to the rapid development of different building construction projects, proximity, and easy access of information. More so different categories of contractors of small, medium and large size firms will be considered in the study, also some selected professionals such as; Quantity Surveyors, Architects, Builders, Engineers, etc. in Edo state will be assessed.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 The Background of Construction Industry

The construction industry is an important sector and plays a vital role in a national economy due to the usage of its end products such as roads, buildings and dam. It is also used as an economic regulator by government who is a major client of the industry by intervening to regulate performance through financing, legislation and provision such as: Intervention in the market through finance by grant, benefits, subsidies and taxation, Grant for construction of industrial or commercial premises in areas of high unemployment, Incentives for the construction of certain types of project such as private housing. Influence construction activity through the development, repair or maintenance of project (Ashworth, 2021). Further to these, it contributes significantly to the nation's gross domestic product (GDP) which is a measure of the volume of national output and input. British construction industry in the late 1980s accounted for about 6% of GDP when it experienced a rapid growth with a total value of output reaching almost £50bn by 1990 (Ashworth, 2021). The term supply chain management (SCM) according to Mensah, Diyuoh and Oppong, (2021) is relatively new. It was first reported in logistics literature in 2021 as an inventory management approach with an emphasis on the supply of raw materials on the other hand, Olaniyan, (2019) argued that the notion of supply chain management doctrine in the 60's actually based its view on the fact that single activity cannot assure the effectiveness of a system with chain of activities. It was further reported that a supply chain involved a network of firms, their key business processes and facilities and is considered to deliver products, services or information to a given category of end users or customers (Olaniyan, 2020).

2.2 Supply Chain Management

Mensah, (2020) defined it as a set of activities undertaken in an organization to promote effective management of its supply chain. Khalfan, McDermott and Kyng (2021) in their research work defined supply chain management as a network of different organizations, linked upstream and downstream in a chain, aiming to products for the end consumers through integrated process and activities. From the definition it can be deduced that components of supply chain management practices include supply and material management issues, operations, information sharing and customer service. The concept can be said to have emanated from the need to improve performance by improving quality, decreasing cost and time of production. The concept of supply chain management having worked effectively in other segments needs to be adapted to the sector of construction in spite of the difference of this sector with other sectors like the manufacturing and production in these three ways; projects are one-off in nature, production are usually onsite and organisation is temporal (Koskela, 2020 as sighted in Khalfan, 2016) efforts have been made by researchers and workers in the construction industry to implement this concept Supply Chain Management like other innovations from the production and manufacturing industry was developed in the 1960s based on the conviction that a solitary activity from a party (be it client, consultant, contractor or subcontractor) cannot ensure the effectiveness of an entire system (Chen, 2021).

2.2.1 Overview of Supply Chain Management

A supply chain therefore consist of a network system of that shows the relationship and interdependencies of all parties (client-supplier, consultant-main contractor, and sub-contractor manufacturer) and the transfer of money, material, ideas and resources, information and knowledge to satisfy the specified requirement of the client. Supply chain management creates value through changes in time, location, quantity and quality, and has the potential for huge competitive advantage for the organization. Optimizing the supply chain management idea

means maximizing shareholder and customer value. This can be achieved by fully integrating all members of the supply chain, collaboratively balancing resources of chain members, and optimizing the flow of goods and services, and information from source to end user. According to Stevenson (2020) creating an effective supply chain requires linking the market, distribution channel, processing and suppliers. In which case, the design or model of a supply chain should enable all participants in the chain to achieve significant gains. Stevenson (2020) posits that the growing need for supply chain management has arisen so as to improve operations in organizations.

2.2.2 Supply Chain Management in Developing Countries (Nigerian)

The creation of an effective supply chain is crucial for higher organizational productivity. A supply chain that embraces the elements of suppliers, logistics and customers would seem necessary in the creation of an effective supply chain. Other steps would involve the development of strategic objectives and tactics to guide the process, as well as the integration and co-ordination of activities in the internal portion of the chain. According to Stevenson (2002) coordinating activities of suppliers and customers, and addressing supply and demand issues as quickly as possible enhances the efficacy of a supply chain. He believes that co-ordination, planning and executive of policies across the supply chain requires a system for transferring data across the supply chain and allowing access to data to those who engage in operations to which it will be useful. Effective supply chain management needs to take cognizance of the benefits of strategic partnerships. Stevenson (2002) states that strategic partnership occurs when two or more business organizations that have complementary products or services that would strategically benefit the others agree to join so that each may realize a strategic benefit. According to him, this occurs when a supplier agrees to hold inventory for a customer, thereby reducing the customers costs; cost of holding the inventory, in exchange for

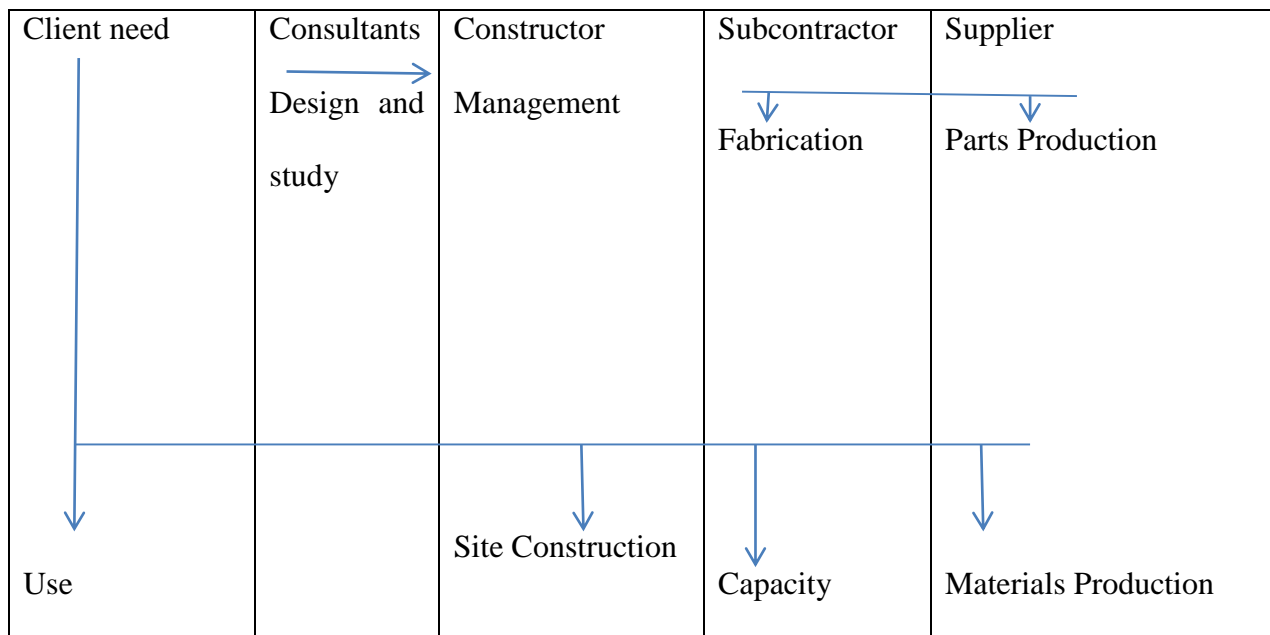
the customer agreeing to a long-term commitment, thereby relieving the supplier of the costs that would be needed to find new customers, negotiate prices and services, among other challenges (Lee and Billington, 1992). According to Salo and Karjeluoto (2016) supply chain management and information technology are two areas of research which have attracted a lot of attention in academic and practitioners camps over the last decades. They state that Internet-based technologies have changed the management of supply chains. According to them, supply chains come in different forms, lengths, and the management of the supply chain or supply chain network (SCN) is therefore a complex task. They insist that the concept of supply chain management has been applied by many people from different organizations and organizational levels to achieve economic success (Angels, 2000, Christopher, 2020, Mentzer, 2019, Dedrick, 2021).

2.3 Supply Chain Management in The Construction Industry

In the construction industry, a number of construction industries have shown and are showing interest after realizing the importance of Supply Chain Management in the construction industry. Vrijhoef and Koskela (2019) and Saka and Mudi (2018) submitted that supply chain management in construction can be very complex owing to hundreds of subcontractors, suppliers involved, especially in a large scale project. A typical construction supply chain management involves information flow such as order, schedules, forecast, etc; and materials such as supplies, production, deliveries etc (Vrijhoef and Koskela: 2019). But Saka and Mudi (2020) in their own submission asserted that construction supply chain management involved suppliers, sub – contractors, related parties and processes in order to deliver information to planning, ordering, producing, delivering and installing materials and services for construction projects through organized network of organizations. Furthermore, Saka and Mudi (2020) stressed that any problem with the flow in the supply chain will disrupt

the project performance and delivery. According to Ojo, Mbohwa and Akinlabi (2019) Maintained three types of construction supply chain as follows: The primary supply chain which delivers the material that is needed in the final construction product, The support chain which provides equipment and materials that facilitate construction., The human resource supply chain which involves supply of labour. Though the construction process is different from production processes in factories, supply chain management can be effective and relevant in construction (Ojoet, 2021). The discipline of supply chain management contrasts sharply with traditional methods of planning, controlling and contracting for projects which seek at best to optimize individual activities. Therefore, supply chain, according to O'Brien (2021), currently in construction methods seeks to support the fragmentation nature that plagues construction, hence promises an engineering basis to design, plan and manage construction projects in an integral/collaborative manner. Finally Emuze and Smallwood (2019) submitted that the client or the contractor can champion the implementation of Supply Chain Management in construction process.

Model of Supply Chain In Construction: A View From Construction Industry



2.4 The Challenges Facing Supply Chain Management In The Nigeria Industry

Yadav (2020) found out that the major hurdle for not implementing supply chain management in construction projects is the temporary nature of client, designer, contractor, subcontractor, suppliers' relations is because of the unique nature of each product Project Management National Conference – Nigeria (2019). The construction supply chain which hinder not only integrated supply chain but also make the execution of the projects extremely difficult which manifest in the form of failure to share project information, fear of loss of control, lack of awareness, lack of understanding the project requirements, lack of understanding the supply chain, etc. Yadav (2020) has identified challenges related to implementing supply chain management in construction projects. These effects are expressed in his own words: The temporary nature of the relationship between agents, several layers of subcontracting within a single project setting, Lack of knowledge of downstream project agents about upstream project decisions. Olaniyan, (2022) in their research report outlined a list of challenges rocking CSCM practices in the construction industry such as inadequate investment in I.T., diverse objective, ineffective communication, passive contractors, anticipated rewards unclear; unfair risk allocation and the like. Ahmed, (2022) also mentioned some of the effects

which can impede the growth of CSCM in construction, such as: lack of guidance for creating alliances with supply chain partners, failure to develop measures for monitoring alliances; inability to broaden the supply chain vision beyond the procurement or product distribution to encompass larger business processes; lack of trust inside and outside a company; organizational resistance to the concept; lack of integrated information systems and electronic commerce linking firms, lack of suitable organizational set up, etc. Finally, Sharma, (2019) submitted that supply chain management involves challenges such as developing trust and collaboration among supply chain partners, identify best practices that can facilitate supply chain process alignment and integration and successfully implementing the latest collaborative information systems and internet technologies that drive efficiency and performance through the supply chain.

2.4.1 Globally

However, the commercial environment in Nigeria has also grown in the past decade to become highly uncertain for businesses to operate (Oyedijo., 2011; Didia & Nwokah, 2015). Despite its solid resources, oil-rich Nigeria has been affected adversely by several detrimental factors such as gigantic corruption at all levels, feeble corporate governance, an inconsistent regulatory environment, restrictive trade policies, unreliable dispute resolution mechanisms, fragmented relationships between shareholders and stakeholders (Adams et al., 2019), devaluation of the Nigerian naira, drop in global oil price, weakened consumer confidence, and an insurgency in the Northern geographic area foremost a decade (CIA, 2016). These factors have impacted the Nigerian economy adversely which ultimately led to a decline in the business market and an economic recession in 2016 for the first time in almost three decades (IMF, 2019). Likewise, the business environment in Nigeria could be highly unstructured and does not follow the distinct configurations utilized in the global industrialized settings

(Adebanjo, 2013). These issues also include bad roads and transportation links, distorted electricity supply, and poor government support etc. Several manufacturing firms have also ceased to operate in Nigeria while those who stayed manufacture goods at costs relatively higher than other competitors in different countries (Ojadi, 2017). Some of these issues are also internal issues, partially because of fraudulent practices in purchasing and supply chains arrangements (Ugoani, 2019). Although several initiatives were developed to resolve these business issues in Nigeria (Okonjo-Iweala & Osafo-Kwaako, 2007), firms are still seeking opportunities to minimise operating costs, improving product and service quality, and developing continuous relationships with supply chain partners as mechanisms to remain competitive (Oyedijo, 2011; Njoku, 2019). The Nigerian context is similar to several African countries that embarked on IMF economic reform programmes (Adams, 2014) to privatise state- owned supply chain enterprises to improve efficiency. In many ways, insights from Nigeria present a fairly accurate reflection of realities in other African countries, at least, in West Africa.

2.4.2 Developing Countries In Supply Chain Management (Nigerian)

The study of the practices and challenges of supply chain management by building contracting firms in the Lagos metropolitan area according to Saka and Mudi (2007) has shown that the management of material supply chains by building contracting companies in the Lagos metropolis has taken the most practical approach to source for material for their construction works. Although it was published that most contractors are still suffering from lack of creative mind set in managing material supply chain probably due to lack of research works in supply chain in the Nigerian environment (Saka sand Mudi, 2020). Ojo, (2019), also supported the views of Saka and Mudi (2020) by submitting that the level of awareness of supply chain management is low in Nigerian construction industry and that an awareness campaign be

proposed to sensitize all stakeholders in the construction industry. More so, Olaniyan, (2022) observed from their research survey that inadequate infrastructure in information technology is perceived to be the most serious constraints to the involvement of quantity surveyors in supply chain management issues whereas ignorance of buildability issues being the last constraint it can be deduced general from the three local literatures above (research work limited to Nigeria construction environment) that the major bent of supply chain management in the Nigerian construction industry is largely due to ignorance on the part of the construction participants as well as lack of literature limited to Nigerian construction environment. More so, Olaniyan, (2022) expressed hope that based on relevant researches carried out thus far, there are opportunities for improvement when it comes to deploying supply chain management practices within the Nigerian construction industry.

2.5 Measures To Improve Supply Chain Management In The Nigeria

Although supply chains have been used since the 1940s, many aspects of modern supply chains are still based on theories or relatively new methods. Because each individual business has its own needs, a “one-size-fits-all” supply chain solution doesn’t exist. With this in mind, you and your logistics partner should determine the most effective methods and theories to apply to your supply chain. In some instances, the methods applied can positively affect multiple industries at the same time. However, not every method or theory is going to have a positive effect on your specific industry or business. With that in mind, these are some of the most common supply chain management methods and theories.

- i. **Transaction Cost Analysis:** A method based on financial models, transaction cost analysis (TCA) essentially looks at prices to determine whether or not goods were bought at a low price and sold at a high price. This analysis is generally performed over a specific period of time. When applied to supply chains, TCA determines whether

materials or products were priced well when purchased and sold and, if not, how to find better prices. As an example, consider an e-commerce company that wants to stock goods for the busy holiday season. TCA would look at past data to determine fair prices at which to purchase and sell goods. Supply chain managers can then apply this information to make better decisions for stocking warehouses.

- ii. Channel Coordination: Many supply chain and logistics companies handle supply chain management for multiple businesses. As a result, it is often in everyone's best interest to look beyond individual channels and coordinate to reduce overall costs and save time. Channel coordination explains this practice. A logistics company could see that realigning some channels can help meet the objectives of multiple customers. Channel coordination is most commonly applied to inventory management and ordering.
- iii. Network Perspective: Sometimes, it takes a third party to provide some perspective. Chances are that your third-party logistics provider (3PL) is working with companies other than yours. Fortunately, this is something that can be leveraged to save everyone money. This is accomplished through network perspective (NP). The network perspective model takes an existing network of businesses and looks at potential connections that can exist beyond what's currently there. These network perspective connections are considered less "formal" because they aren't traditional business deals or agreements. By using the NP model, the supply chain becomes a value chain, and the vast network of interrelationships works to provide value to all the members. In other words, NP is essentially businesses working together via their common supply chain. This can look like many different things, but the basic idea should remain the same.

- iv. **Materials Logistics Management:** Supply chains often consist of an e-commerce business selling products online, with the 3PL taking care of warehousing, fulfillment, and shipping. But the uses of supply chains extend beyond shipping final goods. Many companies need raw materials and are only able to find affordable options through materials logistics management (MLM). Materials logistics management deals with the planning, sourcing, stocking, production, and distribution of physical materials. A 3PL should ensure that your business receives these materials on time so you can create the final product. Businesses that use a 3PL for materials logistics management can also have their logistics company negotiate for them. Because 3PLs are often working with multiple businesses, they can use the higher combined demand to drive down the aggregate cost.

- v. **Material Requirements Planning:** Similar to materials logistics management, material requirements planning (MRP) finds the lowest possible material inventory without affecting production. This cuts warehousing costs and prevents businesses from over-purchasing materials. Also like MLM, MRP includes purchase and delivery as well. Material Requirements Planning can be further divided into two groups: Independent demand: This is demand for finished goods, such as cell phones, Dependent demand: This type of demand is for parts, such as cell phone chips, phone batteries, or phone screens. While neither independent nor dependent demand deals with raw materials, both types of purchase would be included in Material Requirements Planning.

2.6 Benefits of Implementing Supply Chain Management In The Nigeria Industry.

Effective supply chain management needs to take cognizance of the benefits of strategic partnerships. Stevenson (2021) states that strategic partnership occurs when two or more business organizations that have complementary products or services that would strategically benefit the others agree to join so that each may realize a strategic benefit. According to him, this occurs when a supplier agrees to hold inventory for a customer, thereby reducing the customer's costs; cost of holding the inventory, in exchange for the customer agreeing to a long-term commitment, thereby relieving the supplier of the costs that would be needed to find new customers, negotiate prices and services, among other challenges (Lee and Billington, 2019). The creation of an effective supply chain is crucial for higher organizational productivity. A supply chain that embraces the elements of suppliers, logistics and customers would seem necessary in the creation of an effective supply chain. Other steps would involve the development of strategic objectives and tactics to guide the process, as well as the integration and co-ordination of activities in the internal portion of the chain. According to Stevenson (2022) coordinating activities of suppliers and customers, and addressing supply and demand issues as quickly as possible enhances the efficacy of a supply chain. These benefits are; Better collaboration with suppliers, better quality control, shipping optimization, reduced inventory and overhead costs, improved risk mitigation, stronger cash flow, A more agile business, better visibility and data analytics, trust based relationship, long term partnering working experience, information flow, supplier relationship management, transparency in financial management, early appointment of key members, appropriate deployment of information, long term collaboration/integration, management support/leadership, relationship development, incentive-based contracting, dedication to common goals, supply chain Integration, use of Information Technology (IT)

- Better collaboration with suppliers: Suppliers that understand the business's cost constraints and objectives can be particularly important for businesses with tight margins.
- Better quality control: When you and your suppliers are working to the same standards, quality control problems can be detected earlier. Gahir gives an example: "One of my packaging suppliers contacted me to say that a batch of packaging that had just arrived wasn't up to the required standard and she planned to send it back, which would add three days to the delivery schedule." However, for Gahir, this delay was a better outcome than having to deal with a defective batch of packaging herself. Emphasising the benefits of trust in supplier relationships, Gahir says: "That conversation was only able to happen because we're on the same page."
- Shipping optimization: Logistics costs are set to rise significantly, potentially impacting small businesses across the Nigeria. Reducing the number of separate distribution channels and making use of logistics specialists could reduce your distribution costs relative to your competitors, helping you to maintain stronger cash flow and profits. "Having too many suppliers with independent shipping and delivery streams has been the biggest source of inefficiency," says Gahir. "We've responded to this by looking at storage and shipping aggregators."
- Reduced inventory and overhead costs: An efficient supply chain can reduce the need to maintain inventory, therefore cutting overhead costs associated with storage and security. However, a very lean inventory increases pressure on distribution networks and reduces resilience to supply chain shocks. So it's important to identify your optimal inventory level.
- Improved risk mitigation: In general, the further along a supply chain issue is detected, the more expensive it is to fix. That's why supply chain management, which offers

visibility of the supply chain from end-to-end, is so important. For this reason, around 50% of supply chain leaders own all of the six "links" frequently associated with supply chain management: product development; demand planning; supply planning; sourcing and procurement; manufacturing; and logistics and distribution.

- **Stronger cash flow:** Running an efficient supply chain that is based on good supplier relationships, maintains strict quality and stock control, and keeps a watchful eye on costs and prices can greatly benefit a business's liquidity by improving cash flow.
- **A more agile business:** A good supply chain enables us to adapt to opportunities, For example, "We realised we had a couple of suppliers whose software could help and managed to get a process in place really quickly, which they adopted and found really helpful. So, if you've got good suppliers, they can help you unlock new opportunities." As always, however, it pays to be prepared, as supplier capacity can impede business opportunities. Gahir says that it's worth investing more up-front to ensure that the suppliers you have in place are able to scale up as your business grows.
- **Better visibility and data analytics:** Business managers can keep in constant touch with suppliers using mobile phone apps, conferencing platforms and shared dashboards. Software tools can also help to manage stock levels efficiently, track distribution channels and monitor business performance. Having real-time data metrics at your fingertips will enable you to put in place contingency plans to enable your business to ride out storms and take advantage of opportunities as they arise. As you set about improving your supply chain and enjoying the business benefits of efficient supply chain management, you can take control of how you pay your global suppliers and make international payments simple, secure and rewarding with our Foreign Exchange International Payments platform.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 INTRODUCTION

The research method discusses methods that were used in a project to provide data in order to assess the benefits of implementing supply chain management in the research question in the study. This chapter provides information on how the study was carried out. This chapter was organized around the following major topics, research design, study population, sample frame, sample size, sample technique, data collection instruments, procedures for data collection as well as method of data presentation and analysis.

3.2 RESEARCH DESIGN

The research design refers to the structure plan and assesses the benefits concerned for the purpose of obtaining response to the research question and controlling variance that may arise (Brandom, 2019). A research design is a careful planning of a successful investigation for conducting and analyzing data to enhance the validity of the study. The research strategy for this study will be made through distribution of questionnaires to respondents who are professionals in the construction industry in Edo state. The respondents work in construction companies in Edo state.

3.3 RESEARCH POPULATION

The population of the study is the total number of people which a research has been planned (Agao Lokoko, 2019). It is the set of all elements in interest. The population of this study was members of the construction industry which include, Architects, Quantity surveyors, Builders and Engineers in Edo state.

3.4 SAMPLING FRAME

The accuracy of a sample is assessed by how well it represents the population of participant from which the sample is been drawn. The population for this study will include, Architects, Quantity surveyors, Builders and Engineers in Edo state.

Table 3.1: Sampling Frame of Respondents

S/N	Respondents	Nos.
A.	Architects	50
B.	Quantity Surveyors	28
D.	Engineers	30
	Total	108

3.5 SAMPLE SIZE

There are several approaches to determining the sample size. These include a census for the populations, initiating a sample size of similar studies, using published tables and applying formula to calculate a sample size (Yamane, 2021). The study will select respondent among the construction professionals within Edo state for the assessment the benefits of supply chain management in the Nigeria industry.

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

$$1+N(e)^2$$

Where N is the population size and n is sample size, e is 0.05. Therefore, for a 154 population size,

$$n = \frac{108}{1.0225} = 85 \text{ respondents.}$$

$$1+108(0.05)^2$$

Table 3.2 Sampling size

The breakdown of the respondents is shown in table 3 below:

Respondents	Population
Architects	30
Quantity surveyors	25
Engineers	30
Total	85

3.6 SAMPLING TECHNIQUE

The process of sampling or selection of part of the population, from which the characteristics of the larger population can be inferred, has long been accepted as a legitimate and expeditions method of research (Dosumu & Adenuga, 2019). Sampling theory distinguishes between probability and non-probability sampling. For the purpose of this study, convenient sampling technique will be adopted, which is one type of probabilistic sampling technique and in which case, in a population a sample/respondent is to be drawn from a group that does not constitute a homogeneous group, so as to obtain a representative sample/respondent during the administration of the questionnaire. This is considered simple and convenient to the achievement of the targeted number of respondents for this study.

3.7 DATA COLLECTION INSTRUMENT

Data for the study will generally be through an opinion based questionnaire survey. This approach was used in this study due to the questionnaire nature of the research. The close ended questionnaire method was adopted for this study because close questionnaire have a set number of response as determined by the researcher.

3.8 METHOD OF DATA PRESENTATION AND ANALYSIS

There are various methods of analyzing data such as quantitative and qualitative method. Data were analyzed quantitatively and table was used for data presentations. Descriptive analysis such as frequencies, percentage, and mean item scores analysis. The application of the above statistical tools for the analysis of the objective of this research work is as follows.

3.8.1 THE MEAN ITEM SCORE

This method was used to analyze the objectives. Data with numeric variables are been computed using the mean item score. The mean item score was gotten using the formula shown below;

$$\underline{M = 5(FX5) + 4(FX4) + 3(FX3) + 2(FX2) + 1(FX1)}$$

$$X5 + X4 + X3 + X2 + X1$$

When M = mean item score

X = range 1 – 5 with 5 being the highest and 1 being the lowest

Using 5 (five) point LIKERT SCALE which corresponds to;

“5” = strongly agree. “4” = agree. “3” = indifferent. “2” = disagree. “1” = strongly disagree.

F = Frequency of respondent in each factor.

3.8.2 TABLE

A table is used to display numeric and non-numeric data in an organized and well-coordinated manner (Noaum, 2019). It is usually arranged in rows and columns, by which each display specific information's use in this study to display collected data and analyzed information respectively.

3.8.3 PERCENTAGE

Percentages are any given ratio multiplied by 100. It helps in rating the number of factors according to degree of occurrence attached (Olabisi, 2021). A percentage describes how many parts are there out of one hundred parts of a particular thing

Mathematically $P (\%) = \frac{n}{N} \times 100$

Where P = Percentage

n = Value of the item

N = total value of the item

3.8.4 FREQUENCY

Frequency is the rate of occurrence of anything, the relationship between incidence and time period. The period is the duration of time of once cycle in a repeating event so the period is the reciprocal of the frequency. The relation between the frequency and the period T of a repeating event or Oscillation is given as: $F = 1/T$

Where F = frequency (rate of occurrence)

T = Time (period) 1 is constant

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND DISCUSSION

4.1 Introduction

This chapter focuses on the organisation, structure and characteristics of the data collected from the field as well as the analysis and interpretations drawn from it to address the key research objectives and questions outlined in chapter one. The findings were analysed and presented in the form of frequency tables. The results of other findings were also reported. Various analytical tools discussed earlier were adopted in view to achieve the aim of the research which is to discuss the benefits of implementing supply chain management in the Nigeria industry. Out of 111 questionnaires, 100 of the questionnaires

DEMOGRAPHIC INFORMATION OF THE RESPONDENT.

Table 4.1.1 Profession of Respondent

Profession of Respondent	Frequency	Percent
Contractors	20	20.00
Architects	30	30.00
Quantity surveyors	35	35.00
Engineers	15	15.00
Total	100	100.0

Source: Field survey (2022)

Table 4.1.1 shows that 35 (35.00%) of the respondents were Quantity surveyors, 30 (30.00%) were Architects, 20 (20%) were Contractors while 15 (15.00%) were Engineers. This indicates that the subject matter was well represented and making the result from the analysis more reliable.

Table 4.1.2: Type of Organization

Types of Organisation	Frequency	% of Respondent
Government	20	20.00
Consulting	30	30.00
Contractor	50	50.00
Total	100	100

Source: Field Survey (2022)

It is obvious from the above table 4.1.2 Result that among the 100 questionnaires that were successfully returned, 20(20.00%) of the respondent of Government, 30(30.00%) of the respondents of Consulting, 50 (50.00%) of the respondents Contractor.

Table 4.1.3 Professional qualification of respondent

Membership Grade of Respondents	Frequency	percent
Probationer	10	10.00
Corporate member	50	50.00
Fellow member	40	40.00
Total	100	100.0

Source: Field survey (2022)

Table 4.1.3 indicates that 10 (10.00%) are probationers while 50 (50.00%) are corporate members and 40 (40.00%) fellow members. This implies that the information hereby provided is to the very best of professional ability and their level of knowledge and professional experience will contribute to the reliability of the data.

Table 4.1.4 Years of experience

Years of experience	frequency	% of Respondent
1-5 yrs	26	26.00
6-10 yrs	35	35.00
11-15 yrs	10	10.00
16-20 yrs	11	11.00
21 yrs and above	18	18.00
Total	100	100.00

Source: Field survey (2022)

Table 4.1.4 shows the respondent's years of experience. It was clear that 10 (10.00%) had 11-15 years, 11 (11.00%) had 16-20 years, 35 (35.00%) had 6-10 years, 26 (26.00%) had 1-5 years, 18 (18.00%) has 21 years of experience and above. These indicate that respondents have better years of experience in construction.

Table 4.1.5 Academic Qualification of Respondent

Academic Respondent	Qualification	of Frequency	Percent
	HND	32	32.00
	B.SC /B. TECH.	38	38.00
	PGD	20	20.00
	M.SC /M.TECH.	10	10.00
	Total	100	100.0

Source: Field survey (2022)

Table 4.1.5 shows the academic qualification of respondents. Out of 100 respondents, 32 (33.00%) have HND, 10 (10.00%) have M.SC /M.Tech. 38 (38.00%) have B.SC /B. Tech., and 20 (20.40%) have PGD which reveals that the respondents are academically sound and will positively impact on the result of this research.

Table 4.1.6 Profession of Respondent

Profession of Respondent	Frequency	Percent
Contractors	5	5.00
Architects	20	20.00
Quantity surveyors	50	50.00
Engineers	25	25.00
Total	100	100.0

Source: Field survey (2022)

Table 4.1.6 shows that 50 (50.00%) of the respondents were Quantity surveyors, 25 (25.00%) were Engineers, 20 (20.00%) were Architects while 5 (5.00%) were Contractors. This indicates that the subject matter was well represented and making the result from the analysis more reliable.

Table 4.1.7 Projects handled

Project handled	Frequency	Percent
1-5	21	21.000
6-10	20	20.00
11-15	29	29.00
16-20	10	10.00
21 and above	20	20.00
Total	100	100.0

Source: Field survey (2022)

Table 4.1.7 shows the respondent's number of projects handled within the last ten years. It was clear that 20 (20.00%) have handled 6-10 projects, 21 (21.00%) have handled 1-5 projects, 29 (29.00%) have handled 11-15 projects, 10 (10.00%) have handled 16-20 projects and 20 (20.00%) have handled 21 projects and above.

Table: 4.1.8: To identify the challenges facing the implementation of supply chain management in the Nigeria industry

Challenges of supply chain management	Mean score	Ranking
Lack of commitment	3.45	1
Poor Understanding of supply chain management	3.39	2
Lack of Awareness	3.25	3
Lack of partnership/Collaborative skills	3.16	4
Lack of Training	2.98	5
Inappropriate organizational structure	2.85	6
Passive contractors	2.74	7
Inadequate investment in I.T	2.55	8
Inappropriate Teaching Methods	2.43	9
Lack of creativity	2.22	10
Ineffective communication	1.96	11

Source: Field survey (2022)

From the above table 4.1.8: shows the challenges facing the implementation of supply chain management in the Nigeria industry such as; Lack of commitment ranked as 1st, Poor Understanding of supply chain management ranked as 2nd, Lack of Awareness ranked as 3rd, Lack of partnership /Collaborative skills ranked as 4th, Lack of Training ranked as 5th, Inappropriate organizational structure ranked as 6th, Passive contractors ranked as 7th, Inadequate investment in I.T ranked as 8th, Inappropriate Teaching Methods ranked as 9th, Lack of creativity ranked as 10th and Ineffective communication ranked as 11th.

Table 4.1.9: Evaluate the measures to improve supply chain management in the Nigeria industry

Evaluate these measures	Mean score	Ranking
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Transaction Cost Analysis	3.55	1
Material Requirements Planning	3.38	2
Materials Logistics Management	3.23	3
Network Perspective	2.87	4
Channel Coordination	2.56	5

Source: Field survey (2022)

From the above table 4.1.9: shows level of awareness of supply chain management in the Nigeria industry such as; Transaction Cost Analysis ranked as 1st, Material Requirements Planning ranked as 2nd, Materials Logistics Management ranked as 3rd, Network Perspective ranked as 4th and Channel Coordination ranked as 5th.

Table 4.1.10: Identified the benefits of implementation of supply chain management in the Nigeria industry.

Benefits of supply chain management	Mean score	Ranking
Stronger cash flow	3.34	1
Better visibility and data analytics	3.21	2
Reduced inventory and overhead costs	2.68	3
Improved risk mitigation	2.44	4
Better collaboration with suppliers	2.32	5
A more agile business	2.12	6

Source: Field survey (2022)

From the above table 4.1.10: has been able to profer measures to improve implementation of supply chain management in the Nigeria industry.such as; Stronger cash flow ranked as 1st, Better visibility and data analytics ranked as 2nd, Reduced inventory and overhead costs ranked as 3rd, Improved risk mitigation ranked as 4th, Better collaboration with suppliers ranked as 5th, and a more agile business ranked as 6th.

4.2 ANALYSIS AND DISCUSSION OF FINDINGS

The findings obtained here in this study are a result of the analysis of a total of 100 questionnaires retrieved from the respondents after distribution. shows that 35 (35.00%) of the repondents were Quantity surveyors, 30 (30.00%) were Architects, 20 (20%) were Contractors while 15 (15.00%) were Engineers. This indicate that the subject matter were well represented and making the result from the analysis more reliable. 20(20.00%) of the respondent of Government, 30(30.00%) of the respondents of Consulting, 50 (50.00%) of the respondents Contractor. indicates that 10 (10.00%) are probationers while 50 (50.00%) are corporate members and 40 (40.00%) fellow members. This implies that the information hereby provided is to the very best of professional ability and their level of knowledge and professional experience will contribute to the reliability of the data. Shows the respondent's years of experience. It was clear that 10 (10.00%) had 11-15 years, 11 (11.00%) had 16-20 years, 35 (35.00%) had 6-10 years, 26 (26.00%) had 1-5 years, 18 (18.00%) has 21 years of experience and above. shows the academic qualification of respondents. Out of 100 respondents, 32 (33.00%) have HND, 10 (10.00%) have M.SC /M.Tech. 38 (38.00%) have B.SC /B. Tech., and 20 (20.40%) have PGD which reveals that the respondents are academically sound and will positively impact on the result of this research. These indicate that respondents have better years of experience in construction. 50 (50.00%) of the repondents were Quantity surveyors, 25 (25.00%) were Engineers, 20 (20.00%) were Architects while 5 (5.00%) were Contractors. This indicate that the subject matter were well represented and making the result from the analysis more reliable. shows the respondent's number of project handled within the last ten years. It was clear that 20 (20.00%) have handled 6-10 projects, 21 (21.00%) have handled 1-5 projects, 29 (29.00%) have handled 11-15 projects, 10 (10.00%) have handled 16-20 projects and 20 (20.00%) have handled 21 projects and above. shows the effects of these supply chain management in the Nigeria industry such as; Lack of commitment ranked as 1st, Poor Understanding of supply chain management ranked as 2nd, Lack of Awareness ranked as 3rd,

Lack of partnership /Collaborative skills ranked as 4th, Lack of Training ranked as 5th, Inappropriate organizational structure ranked as 6th, Passive contractors ranked as 7th, Inadequate investment in I.T ranked as 8th, Inappropriate Teaching Methods ranked as 9th, Lack of creativity ranked as 10th and Ineffective communication ranked as 11th. shows how these methods are been evaluated such as; Transaction Cost Analysis ranked as 1st, Material Requirements Planning ranked as 2nd, Materials Logistics Management ranked as 3rd, Network Perspective ranked as 4th and Channel Coordination ranked as 5th. has been able to identified these benefits of supply chain management in the Nigeria industry such as; Stronger cash flow ranked as 1st, Better visibility and data analytics ranked as 2nd, Reduced inventory and overhead costs ranked as 3rd, Improved risk mitigation ranked as 4th, Better collaboration with suppliers ranked as 5th, and a more agile business ranked as 6th.

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

This research work has been able to discover the benefits of implementing supply chain management in the Nigeria industry as well as to evaluate those effects of supply chain management in the Nigeria industry. This section discusses the result of analyzed data obtained, conclusions from observations are made, and recommendations are also made in this chapter and suggestions on subsequent areas for further research.

5.2 CONCLUSION

Based on the findings, an overwhelming majority of participants (75%) affirmed that the effects of supply chain management in the Nigerian is a concepts that must be look into because of the verity those effects associated with and must be controlled. It is however concluded that the major effects ranked from one to five; Lack of commitment, Poor Understanding of supply chain management, Lack of Awareness, Lack of partnership/Collaborative skills and Lack of Training.

5.3 RECOMMENDATION

Based on the conclusion above, the following recommendations is given to control those effects whereby boosting the supply chain management in the Nigerian industry.

- i. It is recommended that it provides stronger cash flow in the supply chain management.
- ii. Better visibility and data analytics to boost supply chain management.
- iii. It is recommended that it will reduce inventory and overhead costs in the supply chain management.
- iv. It is recommended that the supply chain management will improved risk mitigation

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