

## Management Of Inventory Practices: A Key Success for Building Organizational Resilience Among Manufacturing Firms in South-South, Nigeria

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### **Abstract**

*The study investigated the correlation between Management of Inventory Practices and Organizational Resilience among manufacturing firms in South-South, Nigeria. The research used a cross-sectional survey research design and stratified purposive and random sampling methodology. The study comprised a total target population of 498 managerial staff from 30 statistically selected relevant manufacturing firms south south in the study area. Based on this, 221 staff was statistically selected as the sample size. After data cleaning, 200 copies of questionnaire were found fit for use in the analysis, four hypotheses were posited and tested. Data was collected through questionnaires. Management of Inventory Practices were operationalized using inventory planning and control, lean inventory, strategic supplier partnership, and capacity utilization. Organizational resilience was measured using adaptive capability, agility, and robustness. Structural Equation Modelling (SEM) was used to analyze the data and determine the association between organizational resilience metrics and Management of Inventory Practices. The findings indicated a substantial correlation between organizational resilience metrics and management of inventory procedures. It was concluded that Management of Inventory Practices, such as planning and control, and lean inventory, should enhance the resilience among manufacturing firms. It was recommended that firms should invest in advanced inventory tracking systems to monitor and control inventory, enabling a more adaptive response to market conditions and unforeseen disruptions.*

**Keywords:** Management, Inventory Practices, Building, Organizational Resilience, Manufacturing Firms, South-South, Nigeria

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## Introduction

Management of inventory and control are crucial to a firm because mismanagement of inventory threatens a firm's viability. Sound inventory management is the art and science of maintaining the stock levels of a given item with a view of minimizing inventory costs. Management of Inventory remains and important aspect of every company as a poor inventory system could result in loss of customers and sales while effective management inventory can guarantee more sales for the company which directly affects the performance of the company. The problem of inventory control is one of the most important concepts in organizational management. Therefore, organizations are exploring ways towards postponement strategy in response to constantly changing demands, but in many organizations, there are so many very low demand items. Poor management inventory had become an issue of great concern since performance is regarded as the main stream for development of organization. In a world of intense competition fueled by globalization, increasing customer's awareness, and technological improvement, organizations that are keen towards large scale success. The ever-changing nature of the corporate world, along with the unpredictable conditions in the industrial sector of Nigeria, have heightened the need of resilience. Every organisation, regardless of its philosophy, ideology, goal, or orientation, operates in an imperfect environment that is not free from unexpected events or problems. Therefore, in order for an organisation to ensure its continuity, it must possess the ability to persevere, adjust, and keep flexibility even in the face of a crisis. According to Letam (2020), organisational resilience improves the strength and endurance of a company, enabling it to maintain its operations even in trying or difficult times. Akhigbe and Onuoha (2019) contended that organisations that successfully navigate turbulent times are not necessarily the most financially robust, but rather those with a high capacity for resilience to withstand the unpredictable nature of the business environment. Every organisation incorporates the notion of the notion of continuity may never be accomplished unless the organisation have resilient capabilities. Hepfer and Lawrence (2022) defined organisational resilience as the ability of a corporation to anticipate, respond to, recover from, and gain knowledge from crisis situations. Hillman and Guenther (2020) asserted that resilience as a systematic process by which organisations navigate and overcome adversity in order to achieve good and resilient outcomes. It is important to acknowledge that a resilient organisation is capable of maintaining a satisfactory condition despite different forms of interruption or adversity.

Moreover, Umoh, Amah, and Wokocha (2014) argued that enhancing the resilience of manufacturing enterprises allows organisations to mitigate environmental dangers by using self-protective measures, thereby enabling them to withstand challenges and disruptions in the business environment. The indicators of organisational resilience include adaptive ability, agility, and robustness (Amareui, Bettistella & Nonino, 2020). Manufacturing firms typically engage in manufacturing operations, necessitating regular handling of inventories on a daily basis. Therefore, implementing effective inventory management techniques may significantly improve the financial success of manufacturing companies. Effective inventory management procedures are crucial as they play a pivotal role in determining the success or failure of a firm (Gitau, 2016). Agu, Ozioma, and Nnata (2016) asserted that effective management inventory practices are crucial for the success and expansion of a company. Failure to adequately control stock levels can lead to customer losses, thereby adversely impacting on the overall performance of the organisation. The authors also noted that using effective management inventory techniques in the manufacturing

firm would streamline the production process and therefore improve the operational efficiency of the organisation in the sector.

According to Ogbadu (2009) noted that good inventory management effectively reduces depreciation and waste, as stated before. Management of Inventory Practices have a significant impact on improving operational efficiency in production companies. This is because it allows organisations to minimise costs associated with holding stock by acquiring or maintaining the right amount of inventory, at the right time and in the right location. Koin, Cheruiyor, and Mwangangi (2014) observed that if organisations fail to provide adequate inventory management, it would lead to reduced cash flow, decreased effectiveness, diminished efficiency, and disrupted functioning. There has been significant academic interest in improving the ability of organisations to withstand and recover from challenges, which is sometimes referred to as corporate resilience. Achebelema and Achebelema (2021) conducted a research on the topic of collaborative management. Jaja and Amah (2014) investigated the correlation between mentorship in organisations and the resilience of manufacturing enterprises. Evenseth, Sydnese, and Gausdal (2022) noted that organisations may strengthen their resilience in the industry by improving their capacity to promote organisational learning. The capacity of an organisation to implement pertinent plans is advantageous in enhancing the firm's resilience. From the researcher's observation there has been paucity of research efforts that considered the predictive role of Management of Inventory Practices on Organizational Resilience hence a knowledge gap exists which this study as its point of departure seeks to examine the relationship between Management of Inventory Practices and Organizational Resilience among Manufacturing Firms in South South, Nigeria.

### **Statement of Problem**

Manufacturing engineering are the steps through which raw materials are transformed into a final product. The manufacturing process begins with the produce design and material specification from which the product is made. These materials are then modified through manufacturing processes to become the required parts in a free market economy, manufacturing is usually directed toward the mass production of products for sale to consumers at a profit. Proper inventory management enables manufacturing firms to mitigate risk by hedging against fluctuations arising from major risk-related issues economic, financial, market, weather or demand. The manufacturing enterprises in Nigeria have experienced the issue of inadequate organisational resilience throughout the years as a result of the rapid changes and unpredictability in the Nigerian business environment. The issue of organisational resilience has become more severe in recent times due to the breakout of the Corona Virus Disease (COVID-19), which has led several organisations to go bankrupt due to their incapacity to handle the pandemic. The manufacturing sector in Nigeria was a vibrant industry that made a significant contribution to the country's economic well-being prior to the growth of the oil sector. Manufacturing is the valued added product of merchandize for use or sale using labour and machines, tools chemical and biological processing or formulation. Nevertheless, the manufacturing firm's impact on the Nigerian economy has significantly declined over time, failing to meet the anticipated level in comparison to other global nations. Umoh, Amah, and Wokocha (2014) noted that manufacturing enterprises in Singapore, Malaysia, Indonesia, and South Korea contributes 60% of the Gross Domestic Product (GDP) of their respective countries.

According to their analysis, manufacturing businesses in China contribute 80% to the nation's GDP, whereas manufacturing firms in Nigeria contribute just 3% to the country's GDP.

The manufacturing enterprises' lack of resilience throughout the crises and problems has resulted in a decline in their growth over the years (Omhonria & Needorn, 2022). Achebelema and Achebelema (2021) observed that the concept of resilience has a significant impact on the long-term viability of organisations. Consequently, the limited capacity of manufacturing enterprises to recover from challenges will have a negative impact on the organization's ability to continue operating, ultimately leading to its closure. Consistent with the aforementioned premise, Abolo (2017) observed that over nine hundred manufacturing companies in Nigeria ceased operations and were dissolved from 2000 to 2016. It is important to acknowledge that the manufacturing sector is highly unstable, and other companies from different countries are importing their products to Nigeria at a lower cost. This has posed a significant threat to the survival and competitiveness of the manufacturing firms operating within Nigeria. Manufacturing enterprises allocate a significant portion of their budget to inventory. Consequently, their capacity to effectively manage this inventory plays a crucial role in their operations and resilience during catastrophes (Otchere, Adzimah & Aiken, 2016; Hannah et al., 2020). The ability of industrial firms to effectively manage inventories will allow them to endure crisis conditions. Effective inventory management is regarded to be a crucial factor in improving a firm's operations and ensuring its survival during turbulent times, particularly for industrial companies. Given this observed lacuna, the present study contributes to the literature by exploring the predictive effect of management of inventory practices on organizational resilience among manufacturing firms in south south , Nigeria.

### **Aims and Objectives of the Study**

The aim of this study is to investigate the relationship between Management of Inventory practices and Organizational Resilience among Manufacturing Firms in south south, Nigeria. Specifically, the study shall seek to:

1. Ascertain the nature of relationship between stock control and organizational resilience of manufacturing firms in South South, Nigeria.
2. Evaluate the extent of relationship between inventory planning and control and organizational resilience of manufacturing firms in South South, Nigeria.
3. Determine the magnitude of relationship between lean inventory and organizational resilience of manufacturing firms in South South, Nigeria.

### **Literature Review**

#### **Management of inventory**

The success of any business organization, particularly manufacturing, primarily relies on inventory practices they adopt to manage their inventories. They are primarily concerned with balancing demand and supply by controlling and monitoring, manufacturing and purchasing orders so as to ensure uninterrupted material flow and value added activities. Management of Inventory Practices

ensure that manufacturing firms are able to effectively and efficiently manage their inventories. Inventory management is the practice of effectively controlling and monitoring the quantity and cost of a certain set of commodities, with the aim of minimising expenses and achieving predetermined goals and objectives set by the organisation (Jessop, 1999). Managers of organisations that handle inventory must prioritise the objective of meeting customer requirements while minimising inventory expenses. According to Drury (2004), inventory expenses include holding fees, ordering charges, and shortfall costs. The expenditures associated with holding refer to the costs of maintaining physical inventory. Insurance, obsolescence, and opportunity costs are all linked to the possession of money that might be allocated elsewhere, but is instead being used to sustain inventory levels. Ordering costs refer to the financial outlays that occur while placing and receiving inventory. Expenses related to these activities include calculating the necessary amount, generating invoices, transportation expenses, and the cost of checking items. Shortage costs arise when the demand for a product exceeds the available inventory supply. Included in the charges are the foregone benefits of making a sale, the decline in customer reputation, penalties for tardiness, and other comparable costs.

Inventory management refers to the process of overseeing and controlling the movement and storage of items, as stated by Coyle, Bardi, and Langley (2003). Inventory management involves various activities, as stated by Wikipedia (Wikipedia, 2022): regulating lead times, managing inventory carrying costs, determining inventory value, ensuring inventory visibility, overseeing asset management, forecasting inventory needs, conducting physical inventory checks, allocating physical space for inventory, implementing quality control measures, managing replenishment, handling returns and defective goods, and addressing demand. Inventory management, according to Kotler (2000), refers to the various processes involved in establishing and maintaining appropriate levels of inventory for raw materials, semi-finished materials (work-in-progress), and final products. The goal is to ensure that there are enough supplies available while minimising the costs associated with having too much or too little inventory. The role of inventory management is to supervise the flow of goods from the moment of purchase to the service point via internal operations and distribution (Smaros, Smaros, Lehtonen, Appelquist, and Holmstrom, 2003). Inventory management focusses largely on two main goals (Reid & Sanders, 2007). An effective inventory management system is primarily responsible for assuring the constant availability of commodities. In order to give a specified level of service to the client base, it is essential to have all the required supplies in the correct amounts, of excellent quality, and delivered at the right time. The second objective is to provide this level of service while minimising expenses. Not all things can be consistently maintained in stock at any expense. Therefore, choices must be made on which items to be readily available.

### **Inventory Planning and Management**

It is one of the most vital phase of material management reducing inventories without impairing operating efficiency free working capital that can effectively employ elsewhere. The aim of a sound inventory control system is to secure the best balance between “too much and too little”. Inventory control and planning are two important components of inventory management. Effective inventory management is crucial for company owners as it often accounts for the second highest expenditure in their operations. Inventory planning involves creating projections to identify the

optimal amount of inventory to maintain in order to meet customer demand (Morden, 2004). Inventory control is the systematic procedure by which managers accurately count and manage the inventory goods stored in a company's warehouse (Morden, 2004). Inventory management is a strategic approach aimed at acquiring the optimal amount and quality of raw materials in the right places. Another interpretation is a corporate structure used to regulate the financial resources allocated by a firm towards its stock investments. The job description includes tasks such as recording and monitoring stock levels, predicting future demand, and deciding when and how many units to purchase. Inventory control, as defined by Nweze (2004), is the process of ensuring that the actual movement of inventory throughout an organisation aligns with the intended plan. Inventory management encompasses the methods used by shop managers to guarantee the availability of items in the desired amount, quality, and price, while minimising the danger of stockouts or excessive stock levels. For inventory control to be successful, it is important to have a well-defined strategy that encompasses the establishment of organisational goals and the creation of several budgets to attain these objectives. The success of an organisation heavily relies on its inventory management strategy. An organisation should have the capability to ascertain the optimal degree of inventory investment that yields the most efficiency for their operations. This condition will only be achievable when the firm guarantees that its stocks are enough to satisfy the demands of production and sales. Furthermore, the company must refrain from accumulating surplus inventories that are superfluous, since this raises the likelihood of obsolescence. Nevertheless, it is imperative for a firm to avoid sales losses caused by inadequate inventories. However, it is excessively costly to maintain an excess of stocks beyond what is absolutely essential in the present market circumstances.

### **Lean Inventory**

Womack et al (1990) were pioneers in applying the lean manufacturing principle, which led to reduced inventories. There is a contention that by reducing inventory, profits will see a boost due to savings on interest, storage fees, handling fees, and waste reduction. According to research conducted by Brigham & Gapenski in 1993, it has been estimated that these savings will amount to approximately 20-30 percent in the long run. In today's highly competitive environment, Lean Management is gaining popularity. Advocates of the Lean Inventory system assert that excessive inventory can detrimentally affect a company's net cash flows. By implementing a Lean inventory management system, distributors can effectively meet and even surpass customers' demands for product availability. This approach ensures that distributors maintain optimal inventory levels for each item, ultimately maximising their net profit margin. Inventory is seen as a sign of a factory that is not operating efficiently in a Lean system of operation. Minimising inventory is crucial for optimal company performance. With savvy inventory management techniques, distributors can not only meet but surpass their customers' expectations when it comes to product availability, all while boosting their profits.

When considering costs, it's important to take into account the expenses associated with inventory holding. These expenses encompass both the financial costs, such as interest or opportunity costs, and the physical costs of managing and storing inventory, including storage fees, insurance, and potential spoilage. In the operations management industry, numerous systems have been developed to address the issue of surplus inventory. Here are some of the systems: Some examples of

management-oriented systems are Just-in-Time (JIT) delivery, material requirements planning (MRP), and enterprise resource planning (ERP). Just-in-Time is a set of practices aimed at minimising waste and maximising efficiency. These practices are implemented company-wide, including in the supply chain. Its components involve collaborating with suppliers and customers for product design, focussing on single sourcing from nearby suppliers, minimising machine set-up times, and implementing total preventive maintenance. Utilising a strategic approach to inventory management, businesses can enhance their return on investment by minimising inventory levels and the accompanying carrying costs. To achieve JIT, it is crucial for the process to be equipped with signals that effectively communicate what is happening at every stage. Implementing JIT can lead to significant improvements in a company's return on investment, the quality of its products, and overall efficiency, among other benefits. It emphasizes the importance of creating products that are delivered precisely when they are needed, rather than too early or too late.

### **Organizational Resilience**

Organizational Resilience (OR) is one of such branches that address how organizations can combat the environmental uncertainties. Hillman and Guenther (2020) posited that the threat towards the significance of the concept for practice and research. Resilience in organizations seeks to promote competence, restore efficacy and encourage smooth through the behavioural process of mindful organizing enacted by front-line employees, therefore a resilient organization is one that is able to do this on a sustainable basis. Resilience is often associated with the ability to overcome challenges and recover from setbacks. The concept can be traced back to the Latin term "resilience," which has the same meaning as "jumping back" (Klein, Nicholls, & Thomalla, 2003; Paton & Johnston, 2006). Although the term has been widely used for many years, ecology was the first scientific discipline to incorporate it into its theoretical framework. Holling (1973) was a trailblazer in the application of the concept of resilience in the field of ecology. In the context of ecosystems, resilience is defined as an organism's ability to adapt to and survive changes in its environment, as described by Holling (1973). Since Holling's initiative in 1973, the phrase has been expanded to encompass various fields of study. An organisation that can thrive in the face of sudden and challenging changes in the business environment is considered resilient (Ateke & Nadube, 2017). When it comes to organisational resilience, the British Society for Industrial Engineering (2015) states that resilient organisations are those that have the ability to anticipate, strategise, respond, and adapt to various challenges. Experiencing unexpected and rapid changes in the working environment. When environmental conditions shift, a resilient organisation adjusts to stay effective in the long run (Ateke & Nadube, 2017). Learning from the experiences of others is crucial for resilient organisations to grow and improve (Zhang & Liu, 2012). They are prioritising business improvement as a strategic enabler for the future, rather than solely focussing on technology (Lengnick-Hall & Beck, 2005). In addition, successful businesses possess the ability to adapt, be proactive, anticipate changes, and think creatively. They also seize new opportunities by carefully assessing and taking calculated risks (Ateke & Nadube, 2017). Organisational resilience, as defined by the British Standards Institution (2015), involves implementing best practices to achieve ongoing business improvement and incorporating skill and talent across all areas of an organisation. One of the branches of study is Organisational Resilience (OR), which

specifically looks into how organisations can effectively handle unexpected environmental uncertainties as they arise. In addition to the influential research conducted by Weick (1993), there has been a growing interest in organisational resilience (OR) among both scholars and professionals. This interest has been fuelled by the escalating number of disasters in the business world. Notable contributions to this field include the works of Vogus and Sutcliffe (2008) as well as Hillmann and Guenther (2020). Dealing with the pandemic situation caused by the new COVID-19 virus, for instance, compelled us to reassess our company's resilience.

### **Adaptive Capacity**

Being able to swiftly coordinate and reconfigure resources to adapt to unexpected environmental changes while still maintaining performance is what is known as adaptive capacity (Gibson & Birkinshaw, 2004). (Aggarwal, Posen, & Workiewicz, 2015). Recognising and capitalising on new opportunities as they emerge in the market is crucial for a company's success (Hofer, Niehoff, & Wuehrer, 2015). Companies that possess a strong adaptive capacity have the ability to learn at a faster pace (Akgün, Keskin, and Byrne, 2012). They are also more adept at responding swiftly to changes that align with their business objectives (Wang & Ahmed, 2007), and are able to quickly incorporate external information into their knowledge base (Wang & Ahmed, 2007). Adaptive capacity in business refers to an organization's ability to stay ahead of the competition by adjusting, reconfiguring, or connecting its resources, capabilities, and competences. It also involves expanding the range of strategic options to swiftly respond to changes in the environment and market conditions (Kaehler, 2014). Despite the wide range of attributes and processes that fall under the term "adaptive capacity," researchers in the literature have yet to reach a consensus on what these attributes and processes should entail (Adger et al., 2004). As Adger et al. (2004) explained, the concept of adaptive capacity which refers to a system's ability to adjust its traits or behaviour in response to external shocks, whether they are currently occurring or anticipated in the future. In the resilience literature, definitions of adaptive capacity often revolve around the system's ability to adapt to disruptions. This includes the capacity to enhance or maintain quality of life, as well as the ability to successfully transition from an unfavourable situation to a more favourable one.

### **Agility**

When it comes to business, organisational agility is all about having the right processes in place to swiftly and efficiently adapt to both internal and external changes. Embrace the ever-changing business landscape, absorb valuable lessons, and apply them to enhance the organization's capabilities. Being able to sense changes in the internal and external environment, respond efficiently and effectively, and learn from experience to improve the organization's competencies is what defines organisational agility (Seo & La Paz, 2008). The concept of agility, as described by Worley, Williams, and Lawler (2014), involves the capacity to adapt and transform an organisation in a swift, effective, and enduring manner. It is also regarded as a valuable and reproducible asset for organisations. As per Ganguly, Nichiani, and Farr (2009), agility refers to the seamless integration of response capabilities and knowledge management. This enables businesses to swiftly and accurately adapt to changes in both proactive and responsive requirements and opportunities from consumers, without compromising on cost or quality. The



range of strategies that can be employed to achieve success is known as agility. As per Sambamurthy, Bharadwaj, and Grover (2003), agility refers to a company's capacity to identify opportunities and threats, gather the required assets and skills to respond effectively, evaluate the advantages and risks involved, and take swift and competitive action to address those opportunities and threats. According to various authors, such as Van Oosterhout, Waarts, and Van Hillegersberg (2006), a company's agility enables it to swiftly adapt its businesses and processes, surpassing the typical level of flexibility. This capability empowers the company to effectively navigate unforeseen changes, whether they arise internally or externally. According to Setia, Sambamurthy, and Closs (2008), agility refers to a company's capacity to seize new competitive advantage opportunities, leverage existing knowledge, assets, and connections, and adjust swiftly and effectively to sudden and significant changes in business conditions. Being able to navigate risks by creating various options is crucial in effectively managing agility. (Holsapple & Li, 2008).

### **Theoretical Framework**

**Lean Theory:** When Krafcik (1988) introduced the concept of "Lean," he aimed to highlight the importance of reducing excess labour and inventory, commonly referred to as waste, in contrast to the more cautious approaches adopted by other auto manufacturers (Staats et al., 2011). Toyota has developed a wide range of tools, techniques, and strategies to reduce waste and improve the efficiency of manufacturing systems, which is a key aspect of their culture of continuous improvement. Toyota Manufacturing Systems (Monden, 1998). Lean theory expands upon the principles of just-in-time delivery. Just-in-time (JIT) systems are pull-based systems that aim to coordinate business as well as production processes across the supply chain (Kros, Falasca, & Nadler, 2008). Green and Inman (2009) conducted a study to examine the impact of lean theory on organisational performance. They claim that you can use the idea to eliminate excess inventory and minimise waste in the manufacturing process. As stated by Eroglu and Hofer (2011), the efficiency of a company's operations greatly influences its profitability. They believe that inventory leanness is the most powerful inventory control tool in existence. The theory provides a detailed explanation of how manufacturers can increase their purchasing flexibility, reduce on-site stock levels, and eliminate inventory carrying costs. In general, the timing and scale of adoption play a crucial role in determining the empirical validity of the lean explanation. These factors are closely intertwined with timing considerations. On the other hand, inventory can potentially limit a company's ability to quickly respond to fluctuations in demand. Research has demonstrated that businesses that successfully implement lean supply chain methods and procedures experience higher asset utilisation and customer satisfaction. This, in turn, leads to enhanced organisational growth, profitability, and market share in the long run (Green & Inman, 2009).

**Theory of Constraints:** The Theory of Constraints, or TOC, is a method used to control variables, make organisational decisions, manage manufacturing processes, and address situations with present restrictions. The total order cost (TOC) is a business management tool that integrates various manufacturing techniques. When implemented with a scientific approach, it enables the identification of solutions to crucial issues within an organisation, regardless of its scale. This ensures that the organization's process of continuous improvement remains uninterrupted. Every business faces the reality of being limited by a critical constraint that hampers their production

capabilities, according to the principles of TOC. Constraints are elements that can hinder a system from reaching its full potential. While Goldratt (1990) is often credited with the theory of constraints (TOC), it's important to note that TOC is a management philosophy focused on identifying and implementing breakthrough improvements. The main goal is to address the constraint that prevents a system from operating at its highest potential. There are various ways to implement the theory of constraints, which can be applied in different fields such as manufacturing, logistics, supply chain management, project management, research and development, and sales and marketing. Every company needs to have at least one constraint, as per the TOC paradigm, which is a generalisation. A constraint, as defined by Goldratt and Cox (1992), is an element or factor that hinders the system from achieving its intended goal. Through the application of the Theory of Constraints, management can effectively control the product's contribution margin and unit production cycle in relation to its essential resources, commonly known as constraints or bottlenecks. This leads to a boost in the overall production capacity.

### **Empirical Review**

Shukor, Newaz, Rahman, and Taha (2021) found that supply chain integration is negatively affected by environmental uncertainty and organisational ambidexterity. They also explored the connection between supply chain agility and organisational flexibility in manufacturing firms. The information was collected from 526 managers employed in the services and manufacturing sectors in Kuala Lumpur, Malaysia. We utilised the SmartPLS 3.0 tool in combination with the structural equation modelling (SEM) technique to attain the desired outcomes. The findings revealed a significant connection between supply chain and environmental uncertainty and various integrations, such as customer, supplier, and internal integrations.

In one study, Jain (2021) examined how customer and supplier connections, as well as strategic partnerships, influenced supply chain responsiveness. Additionally, he explored the relationship between supply chain responsiveness and operational performance in the Indian manufacturing industry. In addition, the study also analysed how demand uncertainty affects the relationship between supply chain responsiveness and strategic supplier partnerships, as well as the relationship between customer relationship and supply chain responsiveness. In order to collect data from manufacturing companies in India, a structured self-administered questionnaire was created and tested. After confirming the accuracy and dependability of the identified constructs, this study utilised structural equation modelling and moderated regression to test the hypotheses at hand. In addition, fostering strong partnerships with suppliers and nurturing customer relationships has a direct impact on the supply chain's responsiveness, leading to enhanced operational performance.

Otchere, Adzimah, and Aikens (2016) conducted a study on the Management of Inventory Practices and internal controls of a chosen Ghanaian company with the aim of providing recommendations. For gathering primary data from the company's employees, the researchers utilised an interview-administered questionnaire and observational methods. The researchers utilised a purposive sampling approach to identify fourteen employees who played a direct role in managing inventory operations. The quantitative data was analysed using the Statistical Package for Social Sciences (SPSS) and Microsoft Excel 2007 Software, while the qualitative data was

analysed using deductive and inductive reasoning. Based on the study's findings, the organisation being examined implements various inventory management protocols to ensure that its stock is always available to meet consumer demands. The organization's Management of Inventory Practices and internal control practices are both of moderate quality.

In their research, Agu, Oni-Anike, and Eke (2016) examined the relationship between demand management and customer satisfaction in a specific group of manufacturing enterprises. They also analysed the influence of inventory control on the productivity of these firms, as well as the impact of Just-in-Time delivery on the growth of selected manufacturing companies. The study included a total of 996 participants, with a sample size of 285 calculated using Taro Yemeni's formula. The study aimed for a 5 percent error tolerance and a 95 percent level of confidence in the results. Most of the data was collected using questionnaires and interviews. Out of the 285 questionnaires that were distributed, 270 were returned, leaving only 15 that were not returned. A descriptive survey research design was chosen for this investigation. The hypotheses were tested using statistical tools such as the Pearson product moment correlation coefficient and simple linear regression. Efficient management of inventory can greatly enhance the productivity of certain manufacturing companies.

In a study conducted by Kinyua and Nyang'au (2018), the focus was on determining the influence of inventory management on organisational performance. Through this research, the aim was to accomplish the following specific goals: assessing the influence of inventory investment on the overall performance of the organisation, and examining the impact of inventory turnover on organisational performance. When examining the effects of inventory management on organisational performance in Kenya's energy sector, we employed a descriptive approach to gather further insights. The study was conducted in Nairobi, with the management staff of Kenya Power as the intended audience. A basic random sampling technique was employed to determine the sample size for this study, and the primary data was directly collected from respondents using a questionnaire that was specifically designed by the researcher for this study. The questionnaire consisted of a combination of closed-ended and open-ended enquiries. To establish the correlation between inventory management and organisational performance, the researcher performed a multiple regression analysis. The intended audience comprised 300 members of management. When choosing a sample size of 90 respondents, the researcher utilised stratified random sampling to select the participants. The quantitative data was collected using questionnaires, and the results were analysed using descriptive statistics in SPSS. The study discovered a correlation between the variables.

## **Research Hypotheses**

HO<sub>1</sub>: There is no significant relationship between inventory planning and control and adaptive capacity of manufacturing firms in South-South, Nigeria.

HO<sub>2</sub>: There is no significant relationship between inventory planning and control and agility of manufacturing firms in South-South, Nigeria.

HO<sub>3</sub>: There is no significant relationship between lean inventory and adaptive capacity of manufacturing firms in South-South, Nigeria.

HO<sub>4</sub>: There is no significant relationship between lean inventory and agility of manufacturing firms in South-South, Nigeria.

### **Methodology**

A cross-sectional survey design was used in this study. A cross-sectional survey provides a snapshot of a population during a specific time frame. A cross-sectional survey, a form of quasi-experimental design, was utilised in this study. The researcher did not have control over the variables being examined, as the objective was to gather new information without intentionally manipulating the variables. All manufacturing firms in south-south Nigeria were included in the study's target population. The six states that made up the south-south region were Akwa Ibom, Bayelsa, Cross Rivers, Delta, Edo, and Rivers. However, the study's sample includes thirty (30) manufacturing enterprises. The accessible population was determined by selecting five firms from each state. The organisations were chosen because of their long-standing presence, well-equipped facilities, and a large workforce of over 100 employees. The researcher was provided with a total of four hundred and ninety-eight (498) managers and supervisors by the human resource departments of these firms. A sample of 221 was obtained from the population using Taro Yamane's formula with a 95% confidence level. Therefore, the study included a sample size of 221 managers and supervisors from the selected firms. A simple random sampling technique, a type of probability sampling, was utilized in this study. The data for this research was obtained from primary sources. The main source of data for this study was a structured questionnaire. An examination of all individual items and their loadings was conducted using the Smart PLS 3.3.3 to ensure that all loadings meet the minimum recommended cut-off. Structural Equation Modelling (SEM) with the assistance of Smart PLS 3.3.3 was utilized to analyze the connection between Management of Inventory Practices and organizational measures in both bivariate and multivariate analysis. Demonstrating resilience.

### **Test of Hypotheses**

A total of 221 questionnaires were distributed to selected manufacturing firms in South-South, Nigeria. The completed questionnaires were collected from key collaborators at various firms and in different states. From the two hundred and twenty-one questionnaires that were distributed, we were able to retrieve two hundred and six. Unfortunately, six of them were not properly filled out and therefore could not be used. For the purpose of this study, 200 questionnaires were used for the analysis. The study utilised the bootstrap method to assess the connections between variables in the structural equation model (SEM). Path coefficients ( $\beta$  values) between .10 and 0.29 were classified as weak correlations, while those between .30 and .49 were considered moderate correlations. Strong correlations were represented by coefficients ranging from .50 to 1.0. Hypotheses with p-values below 0.05 were accepted, indicating statistical significance, while those above 0.05 were rejected. In addition, the coefficients of determination ( $R^2$  or predictive accuracy) were determined. The  $R^2$  values for endogenous variables were interpreted based on their magnitude. Values between 0.00 and 0.25 were considered weak, while values between 0.26 and 0.50 were considered moderate. Values equal to or greater than 0.75 were considered substantial.

## Inventory Planning and Control and Measures of Organizational Resilience

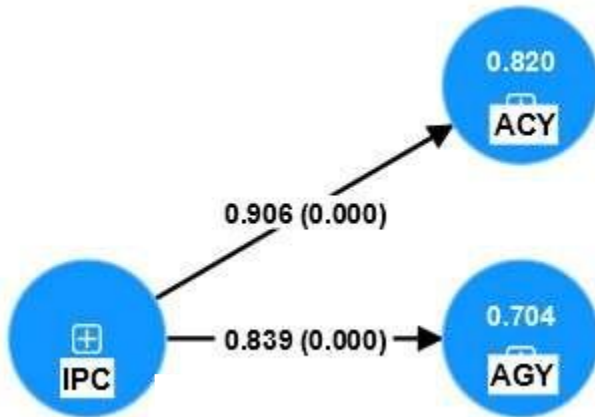


Figure 2: Hypotheses 1 and 2

Source: SmartPLS 4.0 output on Research Data, 2024

**HO<sub>1</sub>: There is no significant relationship between inventory planning and control and adaptive capacity of manufacturing firms in South-South, Nigeria.**

Figure 1 revealed a noteworthy correlation ( $p < 0.05$ ) between Inventory Planning and Control and Adaptive Capacity. The path coefficient ( $\beta$ ) indicates a strong positive relationship between Inventory Planning and Control and Adaptive Capacity, with a value of 0.906. Additionally, the coefficient of determination ( $R^2$ ) is 0.820, further supporting this strong relationship. It can be observed that a rise in Inventory Planning and Control directly correlates with an improvement in Adaptive Capacity among manufacturing companies in South-South, Nigeria. The study conclusively disproves the null hypothesis, confirming a strong correlation between Inventory Planning and Control and Adaptive Capacity.

**HO<sub>2</sub>: There is no significant relationship between inventory planning and control and agility of manufacturing firms in South-South, Nigeria.**

Figure 1 revealed a noteworthy correlation ( $p < 0.05$ ) between Inventory Planning and Control and Agility. There is a strong positive relationship between Inventory Planning and Control and Agility, with a path coefficient ( $\beta$ ) of 0.839 and a coefficient of determination ( $R^2$ ) of 0.704. It is evident that a rise in Inventory Planning and Control directly results in enhanced Agility among manufacturing companies in South-South, Nigeria. The study disproves the null hypothesis, affirming a significant correlation between Inventory Planning and Control and Agility.

## Lean Inventory and Measure of Organizational Resilience

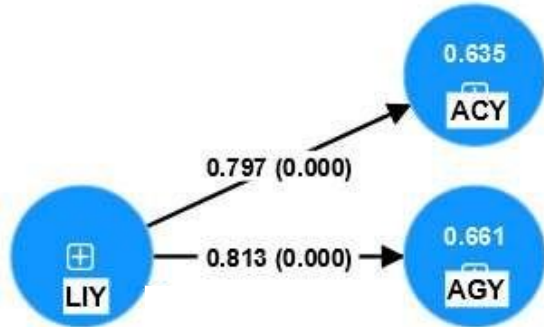


Figure 2: Hypotheses 3 and 4

Source: SmartPLS 4.0 output on Research Data, 2024

**HO<sub>3</sub>: There is no significant relationship between lean inventory and adaptive capacity of manufacturing firms in South-South, Nigeria.**

Based on the analysis shown in Figure 3, it is evident that there is a noteworthy correlation ( $p < 0.05$ ) between Lean Inventory and Adaptive Capacity. Based on the data, it appears that there is a strong positive relationship between Lean Inventory and Adaptive Capacity. The path coefficient ( $\beta$ ) is 0.797 and the coefficient of determination ( $R^2$ ) is 0.635. It can be observed that a rise in Lean Inventory directly correlates with a boost in Adaptive Capacity among manufacturing companies in South-South, Nigeria. The study disproves the null hypothesis, affirming the significant correlation between Lean Inventory and Adaptive Capacity.

**HO<sub>4</sub>: There is no significant relationship between lean inventory and agility of manufacturing firms in South-South, Nigeria.**

In line with a business consultant's expertise, the analysis reveals a noteworthy correlation ( $p < 0.05$ ) between Lean Inventory and Agility (Figure 3). Based on the data, it is evident that there is a strong positive relationship between Lean Inventory and Agility. The path coefficient ( $\beta$ ) is 0.813, and the coefficient of determination ( $R^2$ ) is 0.661, which further supports this finding. It is evident that an increase in Lean Inventory directly contributes to a boost in Agility within manufacturing firms in South-South, Nigeria. The study disproves the null hypothesis, confirming a significant relationship between Lean Inventory and Agility.

### Discussion of Findings

#### Inventory Planning and Control and Adaptive Capacity

Inventory planning and control, along with adaptive capacity, are crucial aspects to consider in any business operation. Proper management of inventory ensures that the right amount of products

is available at the right time, minimizing stockouts and excess inventory. Adaptive capacity allows businesses to quickly respond and adjust to changes in demand, market conditions, and other factors. By effectively implementing inventory planning and control strategies and fostering adaptive capacity, businesses can optimize their operations and stay competitive in a dynamic marketplace.

### **Inventory Planning and Control and Agility**

The analysis on Inventory Planning and Control and Adaptive Capacity revealed a strong and statistically significant relationship between the two variables. The path coefficient ( $\beta$ ) was 0.906 with a p-value of 0.000, indicating a positive correlation. The R<sup>2</sup> value of 0.820 indicates that 82.0% of the total variation in Adaptive Capacity can be attributed to changes in Inventory Planning and Control. This discovery emphasizes the vital importance of Inventory Planning and Control in organizations, as it plays a significant role in enhancing Adaptive Capacity. This finding is consistent with prior research conducted by Lwiki, Ojera, Mugenda, and Wachira (2013), which also illustrated a correlation between Management of Inventory Practices and organizational resilience.

### **Lean Inventory and Adaptive Capacity**

Upon analyzing Inventory Planning and Control and Agility, it was found that there is a strong and positive relationship between these variables. The path coefficient ( $\beta$ ) of 0.839 with a p-value of 0.000 confirms the significance of this relationship. Based on the R<sup>2</sup> value of 0.704, it appears that a significant portion, around 70.4%, of the variation in Agility can be attributed to changes in Inventory Planning and Control. This result emphasizes the important role of Inventory Planning and Control in organizations, making a significant contribution to the improvement of Agility. According to a study conducted by Munyao, Omulo, Mwithiga, and Chepkulei (2015), manufacturing companies have been found to employ different inventory management techniques. These techniques include just-in-time delivery, economic order quantity, and material requirement planning. The implementation of these techniques has resulted in enhanced resilience and agility for these companies.

### **Efficient Inventory Management and Flexibility**

Based on the analysis of Lean Inventory and Adaptive Capacity, it was found that there is a path coefficient ( $\beta$ ) of 0.797 with a p-value of 0.000. This suggests a strong and statistically significant positive relationship between these variables. The R<sup>2</sup> value of 0.635 indicates that approximately 63.5% of the total variation in Adaptive Capacity can be attributed to changes in Lean Inventory. This discovery emphasizes the important role that Lean Inventory practices play in organizations, making a significant contribution to improving Adaptive Capacity. These findings are consistent with prior research conducted by Anichebe and Agu (2013), which highlighted the substantial influence of efficient inventory management on an organization's ability to adapt and withstand challenges. In a study conducted by Nnadi and Ndu Oko (2021), it was discovered that lean

inventory strategies play a significant role in determining a company's productivity and delivery performance. This highlights the crucial role that these practices play in achieving organizational success.

### **Lean Inventory and Agility**

Based on the analysis of Lean Inventory and Agility, it was found that there is a strong and statistically significant relationship between these variables. The path coefficient ( $\beta$ ) was calculated to be 0.813 with a p-value of 0.000, indicating a positive and moderate relationship. Based on the R<sup>2</sup> value of 0.661, it appears that a significant portion, around 66.1%, of the variation in Agility can be attributed to changes in Lean Inventory. This discovery highlights the crucial importance of implementing Lean Inventory practices to improve an organization's ability to adapt and respond to changes in the business environment. This finding aligns with the research conducted by Kinyua and Nyang'au (2018), highlighting the importance of implementing lean Management of Inventory Practices to enhance the agility and adaptability of businesses in response to environmental changes.

### **Conclusion**

This study has offered valuable insights into the crucial connection between Management of Inventory Practices and organizational resilience in manufacturing firms. Through a thorough analysis of factors such as inventory planning and control and lean inventory, this study has pinpointed critical areas that have a significant impact on a company's ability to effectively address disruptions and challenges. These findings highlight the significance of taking a comprehensive approach to inventory management. It is crucial for companies to prioritize efficient planning strategies, implement lean inventory systems, and cultivate strategic supplier relationships. Maximizing partnerships and optimizing capacity utilization. These practices work together to improve operational efficiency and flexibility, which strengthens the organization's overall resilience. From a practical standpoint, our research indicates that manufacturing companies would benefit from implementing thorough inventory management strategies while also promoting a culture of adaptability within the company. By maintaining a dual focus, the firm can not only improve day-to-day operations, but also strengthen its resilience in the face of unexpected disruptions.

### **Recommendations**

Based on the summary and conclusion above, the following recommendations were proffered.

1. Manufacturing firms should adopt the use of modern inventory operating systems that can adequately monitor and checkmate inventory control practices.
2. Manufacturing firms should always encourage regular improvement so that staff are motivated and are ready to abide the changes that will improve adequate level of productivity.



3. Manufacturing firms should invest in more comprehensive Management of Inventory Practices and a culture that will enhance their daily operations.
4. Finally, manufacturing firms should adopt lean techniques that will prioritize more flexibility and employee participation in enhancing quick decision making process.

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