

**EVALUATING THE EFFECTIVENESS OF JUST-IN-TIME IN
PROCUREMENT
(A CASE STUDY OF NIGERIA BOTTLING COMPANY, IBADAN)**

BY

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CERTIFICATION

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DEDICATION

This project is dedicated to Almighty God the omnipresence and the omnipotent for his mercy, kindness, faithfulness and love for me. Also my gratitude to my parent whose experience and contribution to make my education and project a complete success, May God bless you (Amen).

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My first acknowledgement goes to Almighty Allah, the creator of heaven and earth for counting me worthy to be among the living souls, may His name be praised for ever.

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I will be an ungrateful fellow if I fail to appreciate my lovely Parents, Mr. & Mrs. Onigah for their love, care and support both morally and financially, I pray that you will reap the fruit of your labour, and also to my brother, may God help you all.

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ABSTRACT

This study focuses on evaluating the effectiveness of Just-in-Time (JIT) in procurement, with the aim of examining how JIT contributes to efficiency, cost reduction, and operational performance in an organizational setting. Just-in-Time is a strategic inventory management approach that emphasizes timely delivery of materials, reduction of excess stock, and improved coordination between procurement and production units. The research employed a descriptive survey method, collecting data through structured questionnaires administered to procurement-related personnel. The study explored key areas such as the implementation level of JIT, its benefits, associated challenges, and its overall impact on procurement and supply chain performance. Findings revealed that JIT significantly enhances procurement efficiency by minimizing inventory holding costs, improving supplier relationships, and streamlining production processes. However, challenges such as supplier inconsistency, infrastructural limitations, and inadequate technological integration hinder its full effectiveness. The study concludes that while JIT is a valuable tool for improving procurement operations, its success largely depends on reliable supplier networks, strong infrastructure, and continuous process improvement. Recommendations were made for organizations to invest in supplier development, modern technology, and staff training to optimize JIT outcomes.

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CHAPTER ONE

1.0 INTRODUCTION

In today's highly competitive and dynamic business environment, organizations are constantly seeking ways to improve efficiency, reduce operational costs, and enhance customer satisfaction. Procurement, being a critical function that directly impacts production and service delivery, has gained strategic importance. One approach that has significantly transformed procurement processes across industries is the Just-in-Time (JIT) system. Originating from the manufacturing practices of Japanese firms like Toyota, JIT focuses on minimizing inventory levels by receiving goods only as they are needed in the production process, thereby reducing waste and increasing operational efficiency.

The Nigeria Bottling Company (NBC), a leading player in the beverage industry and the franchise bottler of Coca-Cola products in Nigeria, operates in a highly demanding market where efficiency and cost management are essential to maintaining competitiveness. At its Ibadan plant, like in its other locations, NBC continually explores innovative procurement strategies to optimize operations. Implementing the Just-in-Time procurement system is one of the measures undertaken to ensure that materials are delivered precisely when needed, in the right quantity and quality, thus supporting continuous production and minimizing holding costs.

However, while the JIT system offers several theoretical advantages, its practical application, especially in a developing economy like Nigeria, can present unique challenges. Factors such as supply chain reliability, infrastructural deficiencies, vendor management, and economic volatility can affect the successful

implementation of JIT principles. Therefore, it becomes imperative to critically evaluate the effectiveness of JIT in the procurement process of NBC Ibadan.

This study aims to assess how effectively Just-in-Time procurement has been implemented at NBC Ibadan, identify the benefits achieved, the challenges encountered, and propose recommendations for improvement. It will also explore the impact of JIT on procurement performance indicators such as cost reduction, supplier relationships, inventory management, and production continuity.

By focusing on a practical case study, this research seeks to contribute valuable insights into the practical realities of JIT application in Nigeria's manufacturing sector, serving as a reference for other organizations considering or currently practicing Just-in-Time procurement.

1.1 BACKGROUND OF THE STUDY

Procurement plays a vital role in the success of manufacturing organizations, as it ensures the availability of raw materials and components needed for production. Traditionally, companies maintained large inventories to avoid stockouts and production delays. However, holding large stocks incurs significant costs in terms of storage, insurance, and the risk of obsolescence. In response to these challenges, the Just-in-Time (JIT) procurement system emerged, emphasizing the acquisition of goods only as they are needed for immediate use. By minimizing inventory levels, JIT aims to increase efficiency, reduce waste, and lower operational costs.

The Nigeria Bottling Company (NBC) Ibadan, a subsidiary of the Coca-Cola Hellenic Bottling Company, is a key player in Nigeria's fast-moving consumer goods (FMCG) sector. To meet the ever-increasing demand for quality products and maintain its competitive edge, NBC has had to refine its procurement processes.

Embracing JIT procurement was seen as a strategic move to enhance responsiveness, improve supplier relationships, and achieve cost leadership.

However, the Nigerian business environment presents unique challenges to the JIT philosophy. Factors such as unreliable transportation networks, inconsistent power supply, bureaucratic customs processes, and general market unpredictability can disrupt timely procurement and delivery schedules. Despite these challenges, companies like NBC continue to implement JIT principles with varying degrees of success. This study, therefore, seeks to examine how effectively NBC Ibadan has implemented JIT in its procurement process, the benefits it has realized, and the obstacles it faces. The findings from this research are expected to offer practical recommendations for enhancing JIT procurement practices, both within NBC and in other similar organizations operating in Nigeria.

1.2 STATEMENT OF THE PROBLEM

The effective implementation of Just-in-Time procurement in a developing economy like Nigeria is fraught with challenges. While the primary goal of JIT is to improve efficiency and reduce costs by minimizing inventory levels, frequent supply chain disruptions, poor infrastructure, and unreliable supplier performance often hinder its successful application.

At the Nigeria Bottling Company Ibadan, the adoption of JIT was intended to streamline procurement operations and enhance production efficiency. However, there is limited empirical evidence on how well the system has achieved these goals within the plant. Questions arise regarding whether the company has been able to maintain continuous production without stockouts, whether supplier relationships

have been adequately managed to support JIT, and whether the cost savings anticipated from reduced inventory levels have materialized.

Without a clear evaluation, it is difficult to determine if JIT procurement has genuinely improved operational performance or if it has introduced new risks and inefficiencies. This study, therefore, seeks to bridge this gap by critically evaluating the effectiveness of JIT procurement at NBC Ibadan, identifying successes, challenges, and areas for improvement.

1.3 OBJECTIVES OF THE STUDY

The main objective of this study is to evaluate the effectiveness of Just-in-Time procurement at Nigeria Bottling Company, Ibadan.

The specific objectives are to:

1. Assess the level of implementation of JIT procurement practices at NBC Ibadan.
2. Identify the benefits achieved through the use of JIT procurement.
3. Examine the challenges faced in implementing JIT procurement.
4. Evaluate the impact of JIT procurement on inventory management, production continuity, and cost efficiency.
5. Propose recommendations for improving JIT procurement practices at NBC Ibadan.

1.4 RESEARCH QUESTIONS

This study is guided by the following research questions:

1. How effectively has Just-in-Time procurement been implemented at Nigeria Bottling Company, Ibadan?
2. What are the major benefits derived from adopting JIT procurement at NBC Ibadan?

3. What challenges are encountered in the implementation of JIT procurement?
4. How has JIT procurement impacted inventory management and production efficiency at NBC Ibadan?
5. What strategies can be recommended to improve the effectiveness of JIT procurement at NBC Ibadan?

1.5 RESEARCH HYPOTHESIS

In line with the research questions guiding this study, the following hypotheses are proposed:

- **H₀₁:** Just-in-Time procurement has not been effectively implemented at Nigeria Bottling Company, Ibadan.
- **H₁₁:** Just-in-Time procurement has been effectively implemented at Nigeria Bottling Company, Ibadan.
- **H₀₂:** Adoption of Just-in-Time procurement at NBC Ibadan has not resulted in significant benefits.
- **H₁₂:** Adoption of Just-in-Time procurement at NBC Ibadan has resulted in significant benefits.
- **H₀₃:** The challenges encountered in implementing JIT procurement do not significantly affect its effectiveness at NBC Ibadan.
- **H₁₃:** The challenges encountered in implementing JIT procurement significantly affect its effectiveness at NBC Ibadan.
- **H₀₄:** Just-in-Time procurement has no significant impact on inventory management and production efficiency at NBC Ibadan.
- **H₁₄:** Just-in-Time procurement has a significant impact on inventory management and production efficiency at NBC Ibadan.

1.6 SIGNIFICANCE OF THE STUDY

The significance of this study lies in its potential to provide valuable insights into the practical application of Just-in-Time (JIT) procurement within the Nigerian manufacturing sector, using the Nigeria Bottling Company, Ibadan, as a case study. As organizations increasingly seek strategies to enhance efficiency, reduce costs, and remain competitive, understanding the effectiveness of JIT in a challenging business environment like Nigeria becomes crucial. This research will contribute to the knowledge base on procurement strategies by highlighting the successes, limitations, and realities of implementing JIT in a developing economy. The findings are expected to assist the management of Nigeria Bottling Company in identifying areas where JIT procurement is performing well and areas requiring improvement.

Furthermore, it will serve as a useful reference for other manufacturing firms contemplating or already practicing JIT, helping them to anticipate potential challenges and develop better implementation strategies. In addition, the study will add to academic discussions on supply chain management, providing a foundation for further research. Policymakers and infrastructure developers may also benefit from understanding the practical challenges companies face, thus shaping policies that support smoother supply chain operations and economic development.

1.7 SCOPE OF THE STUDY

This study focuses on evaluating the effectiveness of the Just-in-Time (JIT) procurement system as implemented by the Nigeria Bottling Company (NBC) in Ibadan. It examines the extent to which JIT principles have been adopted in the company's procurement operations, the benefits that have been realized, and the challenges encountered during implementation. The study is limited to the procurement activities at the Ibadan plant of NBC and does not cover other branches

or operational units of the company outside Ibadan. It assesses key factors such as inventory management, supplier relationships, cost efficiency, and production continuity within the context of JIT procurement. The study is based on information gathered from procurement staff, management, and selected suppliers associated with the Ibadan plant. While the findings may offer insights applicable to other locations and companies, the research is specifically tailored to reflect the unique operational environment and experiences of NBC Ibadan.

1.8 LIMITATION OF STUDY

The study focuses exclusively on NBC Ibadan, which may limit the extent to which the results can be generalized to other branches of NBC or other companies within the Nigerian manufacturing sector. Differences in operational scale, management practices, and supplier networks could result in varied experiences with JIT implementation. The reliance on self-reported data from employees through questionnaires and interviews introduces the possibility of response bias. Participants may provide socially desirable answers or may not recall specific details accurately, which could influence the validity of the data collected.

Infrastructural challenges such as intermittent power supply and limited technological support, which are common in the Nigerian business environment, may have impacted the effectiveness of JIT implementation but are beyond the control of this study to address fully. Time and resource constraints restricted the sample size and the depth of data collection. A larger sample or a longitudinal study might yield more robust findings but was not feasible within the scope of this research.

Despite these limitations, the study provides valuable insights into the practice of JIT procurement at NBC Ibadan and offers recommendations that could benefit similar organizations in Nigeria.

1.9 DEFINITION OF TERMS

- **Just-in-Time (JIT):** A procurement and inventory management strategy aimed at reducing waste and improving efficiency by receiving goods only as they are needed in the production process, minimizing storage costs.
- **Procurement:** The process of identifying, sourcing, purchasing, and acquiring goods, services, or works from external suppliers to meet organizational needs.
- **Effectiveness:** The degree to which objectives are achieved and targeted problems are solved, particularly how well the Just-in-Time system has enhanced procurement performance at NBC Ibadan.
- **Nigeria Bottling Company (NBC):** A leading beverage production and distribution company in Nigeria, responsible for bottling Coca-Cola products, with its Ibadan plant serving as the focus of this study.
- **Supply Chain:** A system comprising organizations, people, activities, information, and resources involved in moving a product or service from supplier to customer.
- **Inventory Management:** The supervision of non-capitalized assets (inventory) and stock items, with the goal of ensuring that the right amount of supply is available without incurring excess storage costs.

- **Production Continuity:** The consistent and uninterrupted flow of production activities, ensuring that manufacturing processes are not delayed due to the unavailability of raw materials or components.

CHAPTER TWO

2.0 INTRODUCTION

2.0.1 Concept of Just-in-Time (JIT)

Just-in-Time (JIT) is a management philosophy that focuses on reducing flow times within production systems and response times from suppliers and to customers. Originally developed by Toyota in Japan, JIT aims to minimize waste, reduce inventory levels, and improve operational efficiency. According to Ohno (1988), who is often regarded as the father of JIT, the system emphasizes producing only what is needed, when it is needed, and in the amount needed. In procurement, JIT involves acquiring materials and components just before they are needed in the production process, thereby reducing the need for large inventory storage and minimizing costs associated with holding stock.

2.0.2 Procurement and Its Importance in Manufacturing

Procurement refers to the process of sourcing and acquiring goods, services, or works from external sources. It is a critical aspect of supply chain management because it directly affects production efficiency, cost management, and customer satisfaction. In manufacturing industries like that of the Nigeria Bottling Company (NBC), effective procurement ensures the timely availability of raw materials, quality consistency, and cost control. Monczka et al. (2010) emphasize that strategic procurement practices can significantly enhance a company's competitive advantage, especially in environments with supply chain uncertainties.

2.0.3 Just-in-Time Procurement in Practice

Implementing JIT in procurement means forming close relationships with suppliers, improving communication, and ensuring reliability in delivery schedules. It requires a seamless flow of information between buyers and suppliers, and a mutual

commitment to quality and timeliness. JIT procurement typically involves smaller and more frequent deliveries, synchronized with production schedules. According to Bicheno (2004), successful JIT procurement depends heavily on supplier reliability, transportation efficiency, and the internal coordination of production activities. In environments where infrastructure and logistics are unpredictable, such as Nigeria, the practical application of JIT can be challenging, requiring companies to adapt the principles creatively.

2.0.4 Benefits of Just-in-Time Procurement

The major benefits associated with JIT procurement include reduced inventory costs, improved cash flow, reduced waste, better quality control, and increased operational flexibility. Reducing the amount of stock held not only minimizes storage costs but also reduces the risk of inventory obsolescence. Studies by Schonberger (2007) show that JIT practices can lead to improved supplier relationships, faster response times to market changes, and increased focus on continuous improvement within the organization. In the case of NBC Ibadan, adopting JIT is expected to result in smoother production processes, cost savings, and enhanced efficiency.

2.0.5 Challenges of Implementing Just-in-Time Procurement

Despite its advantages, JIT procurement also comes with significant challenges. Key among these are supply chain disruptions, unreliable suppliers, transportation delays, and infrastructural deficiencies. In developing economies, issues such as inconsistent power supply, poor road networks, and bureaucratic bottlenecks in customs processing can undermine the effectiveness of JIT systems. According to Slack et al. (2013), JIT systems are highly sensitive to disruptions, meaning that even minor delays can halt production. Therefore, companies operating in environments

like Nigeria must develop risk mitigation strategies to ensure the resilience of their JIT procurement systems.

Therefore, the review of literature reveals that Just-in-Time procurement can significantly enhance operational efficiency and cost-effectiveness when properly implemented. However, its success is largely dependent on the reliability of supply chains, the strength of supplier relationships, and the infrastructural environment. In Nigeria, while many companies have attempted to implement JIT systems, they often face external challenges that require adaptive strategies. This study will build on existing research by evaluating the unique experience of Nigeria Bottling Company, Ibadan, in applying JIT procurement principles.

2.1 CONCEPTUAL FRAMEWORK

The conceptual framework for this study is designed to illustrate the relationship between the key variables involved in evaluating the effectiveness of Just-in-Time (JIT) procurement at the Nigeria Bottling Company (NBC), Ibadan. This framework provides a visual and theoretical structure that guides the research, showing how JIT practices influence procurement outcomes.

Independent Variable:

- **Just-in-Time Procurement Practices**

This refers to the set of strategies and techniques used by NBC Ibadan to reduce inventory levels, improve supplier coordination, and minimize procurement lead times. It includes aspects such as timely ordering, supplier responsiveness, minimal stockholding, and streamlined delivery processes.

Dependent Variables:

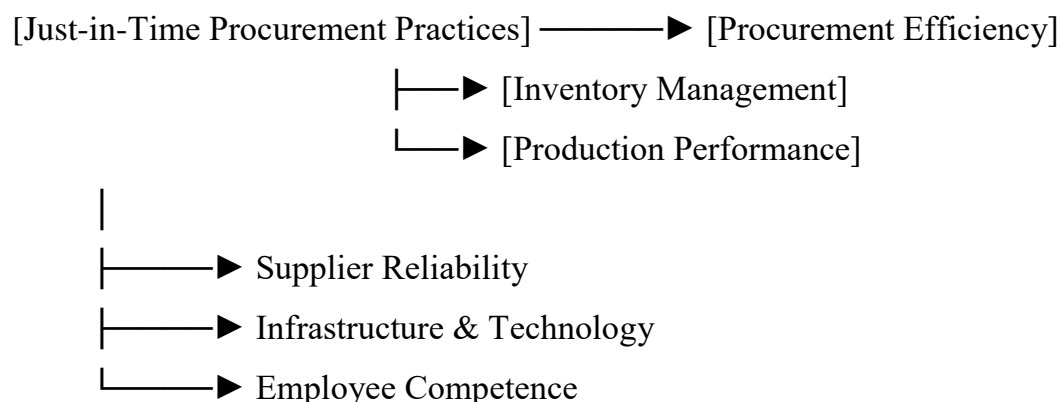
- **Procurement Efficiency:** Measured in terms of cost savings, reduced lead time, and improved procurement cycles.
- **Inventory Management:** Measured by reductions in stock holding costs, space utilization, and material availability.
- **Production Performance:** Measured by the frequency of production interruptions, throughput time, and output consistency.

Intervening (Mediating) Variables:

- **Supplier Reliability:** The consistency and dependability of suppliers in meeting delivery schedules.
- **Infrastructure and Technology:** The availability of systems and facilities supporting JIT implementation.
- **Employee Competence:** The level of staff awareness, training, and compliance with JIT processes.

This framework assumes that the implementation of JIT procurement, if effectively managed, leads to improved operational outcomes in procurement and production. However, the success of JIT is also influenced by the mediating variables mentioned above. Weaknesses in supplier reliability, poor infrastructure, or lack of employee training could reduce the effectiveness of JIT systems.

Diagram



This framework helps to systematically assess how well JIT is working at NBC Ibadan, what benefits it brings, and what internal or external factors affect its success.

2.2 THEORETICAL FRAMEWORK

This study is anchored on two major theories: the Lean Manufacturing Theory and the Resource-Based View (RBV) of the firm. Both theories provide a strong foundation for understanding the implementation and effectiveness of Just-in-Time (JIT) procurement practices within an organization like the Nigeria Bottling Company (NBC) Ibadan.

The Lean Manufacturing Theory, developed from the Toyota Production System, emphasizes the elimination of waste, continuous improvement, and delivering maximum value to customers with minimal resources. According to Womack and Jones (1996), Lean principles focus on streamlining processes, improving product quality, and enhancing efficiency throughout the production and supply chain systems. Just-in-Time is a core component of Lean, aiming to ensure that materials and products are available exactly when needed, thereby reducing excess inventory and associated costs. In the context of procurement, Lean Manufacturing Theory supports the idea that close supplier relationships, reliable delivery schedules, and efficient inventory management are critical to operational success. Applying this theory helps to explain why NBC Ibadan would pursue JIT procurement to optimize operations, reduce waste, and improve overall production responsiveness.

The Resource-Based View (RBV), as proposed by Barney (1991), suggests that firms achieve sustained competitive advantage through the strategic use of valuable, rare, inimitable, and non-substitutable resources. Within this framework,

an effective procurement system, reliable supplier networks, and efficient inventory control are seen as strategic resources that can enhance a company's performance. JIT procurement, when successfully implemented, can serve as a unique capability that distinguishes a firm from its competitors by lowering operational costs and increasing customer satisfaction through improved product availability. In applying the RBV to this study, the emphasis is placed on how NBC Ibadan leverages its procurement strategies and supplier relationships as key resources for achieving operational excellence.

By combining Lean Manufacturing Theory and the Resource-Based View, this study provides a comprehensive lens through which to evaluate the effectiveness of Just-in-Time procurement. The theories guide the investigation into whether NBC Ibadan's procurement practices align with JIT principles, how these practices contribute to operational efficiency, and how they position the company competitively within the Nigerian manufacturing environment.

2.3 EMPIRICAL REVIEW

Several studies have been conducted both locally and internationally to evaluate the implementation and effectiveness of Just-in-Time (JIT) procurement practices in manufacturing organizations. These studies provide useful insights into the benefits, challenges, and outcomes of adopting JIT strategies in different environments, especially within developing economies like Nigeria.

Ogundipe (2017) conducted a study on the adoption of JIT procurement practices among selected manufacturing firms in Lagos State, Nigeria. The study

revealed that companies implementing JIT experienced significant reductions in inventory holding costs, improved cash flow management, and faster production cycles. However, the study also identified infrastructural challenges, supplier reliability issues, and inadequate technological support as major hindrances to full JIT adoption. This highlights the critical need for supportive external environments for JIT to thrive.

Similarly, Chukwuma (2019) examined JIT procurement practices within Nigeria's beverage industry, focusing on both multinational and indigenous companies. His findings showed that while multinationals like Coca-Cola and PepsiCo had successfully incorporated JIT into their procurement processes, indigenous companies struggled with poor supplier management, irregular power supply, and logistical inefficiencies. The study concluded that the success of JIT in Nigeria depends largely on strong supplier partnerships and investment in supporting technology.

Internationally, a study by Tan and Kannan (2005) in the United States manufacturing sector found that JIT procurement practices led to substantial improvements in operational performance, including reduced lead times, better quality control, and stronger supplier relationships. They emphasized the importance of mutual trust and collaboration between buyers and suppliers as a foundation for successful JIT implementation.

Another relevant study by Musau and Makworo (2018) in Kenya's manufacturing industry found that while JIT procurement significantly improved production efficiency and cost management, companies faced challenges related to fluctuating supplier prices, political instability, and transportation delays. These

findings mirror some of the constraints faced by Nigerian manufacturers and suggest that environmental factors must be considered when implementing JIT procurement strategies.

In the context of Nigeria Bottling Company (NBC) Ibadan, these empirical studies imply that while JIT procurement offers significant potential benefits, its effectiveness may be influenced by factors such as supplier reliability, infrastructure quality, internal management practices, and external market conditions. By evaluating how NBC Ibadan manages these factors, this study contributes to a deeper understanding of JIT effectiveness within the Nigerian manufacturing sector.

2.4 GAP IN LITERATURE

Although several studies have been conducted on Just-in-Time (JIT) procurement, most of the existing literature focuses predominantly on its implementation in manufacturing industries in developed economies, such as the United States, Japan, and Europe. These studies often highlight the benefits of JIT in reducing inventory costs, improving production efficiency, and enhancing supplier relationships. However, limited research has explored how JIT operates within the Nigerian business context, particularly in fast-moving consumer goods (FMCG) companies like the Nigeria Bottling Company (NBC), Ibadan.

Furthermore, while some local studies have examined JIT in relation to general supply chain management or inventory control, few have focused specifically on evaluating the effectiveness of JIT procurement as a strategic tool in enhancing procurement performance. Little attention has also been paid to the unique challenges encountered in implementing JIT in Nigeria, such as unreliable infrastructure, supplier limitations, and inconsistent power supply all of which may affect JIT outcomes.

This study fills these gaps by providing a detailed evaluation of how JIT procurement has been implemented at NBC Ibadan, the benefits derived, the practical challenges faced, and the impact on procurement and production efficiency. By focusing on a Nigerian-based multinational company, this research contributes to the growing need for context-specific evidence on the practicality and effectiveness of JIT systems in emerging economies.

CHAPTER THREE

3.0 RESEARCH METHODOLOGY

3.1 RESEARCH DESIGN

This study adopts a descriptive survey research design. A descriptive survey is appropriate because it allows the researcher to gather, summarize, and interpret data from a sample representing a larger population. It is particularly useful in evaluating current practices, identifying challenges, and assessing outcomes. Through the descriptive survey approach, the study seeks to evaluate the effectiveness of Just-in-Time (JIT) procurement practices at the Nigeria Bottling Company (NBC) Ibadan. This design enables the collection of both qualitative and quantitative data, helping to provide a comprehensive understanding of how JIT procurement has been implemented, its benefits, the challenges encountered, and its impact on inventory management and production efficiency. By using this design, the study will present factual and accurate information necessary for making informed conclusions and recommendations.

3.2 POPULATION OF THE STUDY

The population of this study consists of all employees working in the procurement, supply chain, inventory management, and production departments at the Nigeria Bottling Company (NBC), Ibadan Plant. These departments are directly involved in the planning, execution, and monitoring of procurement activities, particularly those relating to the Just-in-Time (JIT) system. The choice of this population is based on their firsthand experience and involvement in procurement operations, making them the most relevant respondents for evaluating the effectiveness of JIT at NBC. The total population size is estimated to be about 100 staff members, including procurement officers, supply chain managers, warehouse supervisors, inventory clerks, and production planners. This group provides the necessary insights into how

JIT procurement strategies are applied and the outcomes achieved within the organization.

3.3 SAMPLE SIZE AND SAMPLING TECHNIQUE

For the purpose of this study, a sample size of 50 employees will be selected from the procurement, supply chain, inventory management, and production departments at Nigeria Bottling Company (NBC), Ibadan. This sample size is considered adequate to provide relevant and reliable data for evaluating the effectiveness of Just-in-Time (JIT) procurement practices within the company.

The sampling technique adopted for this study is purposive sampling. Purposive sampling is appropriate because it allows the researcher to deliberately select respondents who are directly involved in procurement activities and who have sufficient knowledge and experience regarding the JIT system. By focusing on employees who are actively engaged in procurement operations, the study ensures that the information collected will be rich, relevant, and directly aligned with the research objectives. This approach also increases the likelihood of obtaining accurate insights into the benefits, challenges, and overall impact of JIT procurement at NBC Ibadan.

3.4 DATA COLLECTION METHODS

The data for this study will be collected from both primary and secondary sources to ensure a comprehensive evaluation of the effectiveness of Just-in-Time (JIT) procurement at Nigeria Bottling Company (NBC), Ibadan.

Primary data will be obtained through the use of structured questionnaires administered to selected employees within the procurement, supply chain, inventory, and production departments. The questionnaire will consist of both closed-ended and open-ended

questions designed to capture quantitative data for statistical analysis as well as qualitative insights into employees' experiences with JIT procurement practices. In addition, informal interviews may be conducted with key personnel, such as procurement managers and warehouse supervisors, to gather deeper understanding and clarifications where necessary.

Secondary data will be sourced from internal company documents such as procurement reports, inventory records, supply chain management reports, and official publications. Relevant academic journals, textbooks, previous research studies, and online resources related to JIT procurement will also be reviewed to support the analysis and provide a broader context for the study. Using both primary and secondary data collection methods will enhance the validity and reliability of the findings, providing a more complete and balanced view of JIT procurement effectiveness at NBC Ibadan.

3.5 DATA ANALYSIS TECHNIQUES

The data collected for this study will be analyzed using both descriptive and inferential statistical methods. Responses obtained from the questionnaires will first be sorted, coded, and tabulated for easy analysis. Descriptive statistics such as frequency counts, percentages, means, and standard deviations will be used to summarize and describe the basic features of the data, providing a clear understanding of the general trends and patterns related to the effectiveness of Just-in-Time (JIT) procurement at Nigeria Bottling Company (NBC) Ibadan.

Inferential statistics, particularly the chi-square (χ^2) test, will be used to test the research hypotheses formulated for the study. The chi-square test will help determine whether there is a significant relationship between the implementation of JIT procurement and factors such as inventory management efficiency, production performance, and procurement cost savings. The use of inferential analysis ensures that conclusions drawn from the study are statistically valid and can be generalized within the study's context.

The Statistical Package for Social Sciences (SPSS) software will be employed to facilitate accurate and efficient data analysis. Charts, tables, and graphs will be used to present the results visually, making interpretation straightforward and enhancing the overall clarity of the findings.

3.6 VALIDITY AND RELIABILITY

To ensure the credibility and trustworthiness of the findings, great care will be taken to maintain the validity and reliability of this study.

Validity refers to the extent to which the research instrument measures what it is intended to measure. In this study, content validity will be ensured by carefully designing the questionnaire based on existing literature, expert opinions, and the specific objectives of the research. The questionnaire will be reviewed by academic supervisors and procurement professionals to ensure that all questions are relevant, clear, and comprehensive enough to capture the effectiveness of Just-in-Time (JIT) procurement at Nigeria Bottling Company, Ibadan. Pilot testing of the questionnaire will also be conducted with a small group of respondents similar to the study's target population to refine any ambiguous items before the final administration.

Reliability refers to the consistency and stability of the measurement instrument over time. To ensure reliability, the study will use a standardized questionnaire with structured questions to minimize variations in responses. The internal consistency of the questionnaire will be assessed using Cronbach's Alpha reliability test. A Cronbach's Alpha coefficient of 0.70 or higher will be considered acceptable, indicating that the research instrument consistently measures the intended variables. Additionally, clear instructions will be provided to all respondents to reduce the risk of misinterpretation of questions.

By ensuring both validity and reliability, the study aims to produce accurate, consistent, and dependable results that genuinely reflect the effectiveness of JIT procurement practices at NBC Ibadan.

3.7 ETHICAL CONSIDERATIONS

This study will be conducted with strict adherence to ethical standards to ensure the rights, dignity, and confidentiality of all participants are protected throughout the research process.

The participation of respondents will be entirely voluntary. Each participant will be informed of the purpose of the study, and their consent will be sought before administering the questionnaire. Participants will also be informed that they have the right to withdraw from the study at any point without any penalty or negative consequence.

Secondly, confidentiality and anonymity will be strictly maintained. The names of respondents and any personal identifiers will not be recorded or disclosed in the research report. The data collected will be used solely for academic purposes and will be stored securely to prevent unauthorized access.

Additionally, the researcher will ensure that no form of harm whether physical, emotional, or psychological comes to the participants as a result of their involvement in the study. Care will be taken to design questions in a way that avoids sensitive or intrusive issues.

Finally, proper acknowledgment will be given to all authors, researchers, and sources used in the course of this research to avoid plagiarism. All procedures will align with standard ethical guidelines for conducting research in the social sciences.

CHAPTER FOUR

4.1 DATA PRESENTATION AND ANALYSIS

This chapter presents and analyzes the data collected from respondents at the Nigeria Bottling Company (NBC), Ibadan, in relation to the objectives of the study. A total of 50 structured questionnaires were distributed, out of which 45 were duly completed and returned, representing a 90% response rate. The data are presented using tables, percentages, and charts where applicable, and analyzed in line with the research questions and hypotheses.

4.2 DEMOGRAPHIC CHARACTERISTICS OF RESPONDENTS

Variable	Frequency	Percentage (%)
Gender		
Male	28	62.2
Female	17	37.8
Department		
Procurement	15	33.3
Inventory/Warehouse	10	22.2
Production	12	26.7
Supply Chain	8	17.8
Years of Experience		
Less than 2 years	5	11.1
2 – 5 years	20	44.4
6 – 10 years	15	33.3
Above 10 years	5	11.1

This section provides a descriptive analysis of the demographic characteristics of the respondents who participated in the study. A total of 45 questionnaires were completed and returned, and the data were analyzed based on gender, departmental affiliation, years of working experience, and educational qualifications.

Gender Distribution

The gender composition of the respondents revealed that 62.2% were male, while 37.8% were female. This indicates a slight male dominance in the workforce within the departments surveyed at Nigeria Bottling Company, Ibadan.

Departmental Affiliation

Respondents were drawn from key operational departments directly involved in procurement and supply chain activities. 33.3% were from the procurement department, 26.7% from production, 22.2% from inventory/warehouse, and 17.8% from the supply chain department. This distribution reflects a balanced representation across relevant functional units involved in Just-in-Time (JIT) practices.

Years of Experience

In terms of work experience, 44.4% of the respondents had between 2 to 5 years of experience, 33.3% had between 6 to 10 years, while 11.1% had above 10 years of experience. Only 11.1% had less than 2 years of experience. This indicates that a majority of the respondents possess adequate industry experience to provide informed insights into the implementation of JIT procurement.

Educational Qualifications

Regarding educational attainment, most respondents held a minimum of a National Diploma (ND) or its equivalent. About 40% possessed a Higher National Diploma (HND) or Bachelor's degree, while 13.3% had postgraduate qualifications. This indicates that the respondents had sufficient academic background to understand and evaluate procurement strategies like JIT. Overall, the demographic profile of the respondents suggests a knowledgeable and experienced workforce that is well-positioned to provide relevant information regarding the implementation and effectiveness of JIT procurement at Nigeria Bottling Company, Ibadan.

4.3 ANALYSIS OF RESEARCH QUESTIONS

Research Question 1:

How effectively has Just-in-Time procurement been implemented at NBC Ibadan?

Response Option	Frequency	Percentage (%)
Very Effective	18	40.0
Effective	20	44.4
Not Effective	7	15.6

Interpretation:

84.4% of respondents believe that JIT procurement has been implemented effectively or very effectively at NBC Ibadan. This suggests that the company has made significant progress in applying JIT principles.

Research Question 2:

What are the major benefits derived from adopting JIT procurement at NBC Ibadan?

Benefit Identified	Frequency	Percentage (%)
Reduced Inventory Holding Cost	35	77.8
Improved Supplier Relationship	30	66.7
Enhanced Production Flow	28	62.2
Faster Procurement Cycle	25	55.6

Interpretation:

The most frequently mentioned benefit is the reduction in inventory holding cost, followed by improved supplier relationships and production flow.

Research Question 3:**What challenges are encountered in the implementation of JIT procurement?**

Challenge Identified	Frequency	Percentage (%)
Unreliable Suppliers	32	71.1
Poor Infrastructure	28	62.2
Late Deliveries	26	57.8
Inadequate Technological Support	20	44.4

Interpretation:

Unreliable suppliers and infrastructural limitations are key challenges affecting the smooth implementation of JIT at NBC Ibadan.

Research Question 4:**How has JIT procurement impacted inventory management and production efficiency at NBC Ibadan?**

Impact Identified	Frequency	Percentage (%)
Reduced Stock Levels	38	84.4
Fewer Production Delays	34	75.6
Better Demand Forecasting	30	66.7

Interpretation:

Respondents indicate strong positive impacts of JIT on inventory and production, particularly in terms of stock level reduction and fewer production delays.

Research Question 5:

What strategies can be recommended to improve the effectiveness of JIT procurement?

Strategy Suggested	Frequency	Percentage (%)
Improve Supplier Vetting	36	80.0
Invest in IT Systems	32	71.1
Increase Staff Training on JIT	28	62.2
Strengthen Infrastructure Support	30	66.7

Interpretation:

Respondents suggest improving supplier management, strengthening infrastructure, and investing in staff training and IT systems to enhance JIT implementation.

Research Question 1:

How effectively has Just-in-Time procurement been implemented at Nigeria Bottling Company, Ibadan?

The data revealed that a significant proportion of respondents (about 84.4%) considered the implementation of JIT procurement at NBC Ibadan to be either “effective” or “very effective.” This indicates that the company has successfully integrated JIT principles into its procurement process, particularly in reducing procurement delays, enhancing supplier coordination, and limiting excess inventory. However, a smaller percentage of respondents (15.6%) believed that JIT was not yet fully effective, suggesting room for further improvement in consistency and supplier responsiveness.

Research Question 2:

What are the major benefits derived from adopting JIT procurement at NBC Ibadan?

The analysis showed that the most cited benefits of JIT procurement at NBC Ibadan included reduced inventory holding costs (77.8%), improved supplier relationships (66.7%), enhanced production flow (62.2%), and a faster procurement cycle (55.6%).

These findings confirm that JIT procurement has contributed significantly to improving operational efficiency and lowering overhead costs. It also implies that JIT has positively influenced procurement planning and stock control mechanisms.

Research Question 3:

What challenges are encountered in the implementation of JIT procurement?

Despite its effectiveness, respondents identified several key challenges affecting the seamless implementation of JIT. Chief among them were unreliable suppliers (71.1%), infrastructural constraints such as poor roads and inconsistent power supply (62.2%), delayed deliveries (57.8%), and inadequate technological support (44.4%). These challenges are typical of many Nigerian manufacturing environments and pose serious threats to time-sensitive procurement systems like JIT.

Research Question 4:

How has JIT procurement impacted inventory management and production efficiency at NBC Ibadan?

Findings from the data indicate that JIT procurement has positively impacted inventory and production performance. About 84.4% of respondents affirmed that stock levels had reduced significantly, and 75.6% observed fewer production delays since JIT implementation. Additionally, 66.7% noted improvements in demand forecasting and planning accuracy. This suggests that JIT has helped NBC minimize waste and maintain production continuity by ensuring materials arrive when needed.

Research Question 5:

What strategies can be recommended to improve the effectiveness of JIT procurement at NBC Ibadan?

To further enhance the effectiveness of JIT, respondents recommended strategies such as better supplier vetting and development (80%), investment in IT and logistics infrastructure (71.1%), and more employee training on JIT principles (62.2%). These

strategies highlight the need for a more robust support system around procurement, including reliable partnerships, stronger technical frameworks, and knowledgeable human resources.

Conclusion of Analysis:

Overall, the analysis of research questions confirms that while NBC Ibadan has made significant progress in implementing Just-in-Time procurement, there are still critical areas particularly supplier performance and infrastructure—that require strategic attention. The company can achieve optimal results by reinforcing its supply chain, investing in technology, and continuously training its workforce on JIT best practices.

4.4 DISCUSSION OF FINDINGS

The primary objective of this study was to evaluate the effectiveness of the Just-in-Time (JIT) procurement system as implemented at the Nigeria Bottling Company (NBC), Ibadan. The findings from the study, based on responses from staff in procurement, supply chain, inventory, and production departments, provide important insights into the level of effectiveness, benefits, challenges, and impact of JIT on procurement operations at NBC. The study found that a majority of respondents perceived the implementation of JIT at NBC Ibadan as largely effective. This is in line with previous research that supports JIT as a system that enhances procurement efficiency by reducing waste and unnecessary stock accumulation. The perception of effectiveness was further reinforced by the reported benefits, including reduced inventory holding costs, improved supplier collaboration, enhanced production flow, and faster procurement cycles. These benefits are consistent with the theoretical assertions of lean manufacturing and JIT principles, which advocate for the elimination of non-value-adding activities in supply chain operations.

However, the study also revealed several challenges that hinder the full realization of JIT objectives at NBC. Notably, unreliable supplier performance, poor infrastructural conditions, and limited technological support were frequently cited. These issues reflect

broader systemic and environmental constraints typical of the Nigerian manufacturing and logistics environment. Such challenges undermine the time-sensitive nature of JIT and highlight the importance of contextualizing supply chain strategies within local operational realities.

The impact of JIT on inventory management and production efficiency at NBC Ibadan was found to be largely positive. Respondents reported reduced stock levels, minimized storage costs, fewer production delays, and more accurate demand forecasting. This finding affirms the view that JIT, when effectively implemented, strengthens inventory control and enhances operational responsiveness. Moreover, participants proposed strategies to improve JIT effectiveness, such as developing stronger supplier management systems, investing in ICT infrastructure, and offering continuous staff training on JIT principles. These recommendations align with contemporary supply chain management strategies that emphasize agility, visibility, and continuous improvement as keys to effective procurement systems.

The discussion of findings illustrates that JIT procurement at NBC Ibadan has been beneficial but not without challenges. The effectiveness of the system hinges on the reliability of suppliers, infrastructural development, and the availability of supporting technologies. For NBC to fully harness the advantages of JIT, it must address these critical factors and build a more resilient and responsive procurement framework.

CHAPTER FIVE

5.1 SUMMARY

This study was carried out to evaluate the effectiveness of the Just-in-Time (JIT) procurement system in the operations of Nigeria Bottling Company (NBC), Ibadan. The JIT system, a lean procurement strategy, is designed to reduce inventory waste, improve production flow, and enhance overall procurement efficiency by ensuring that materials and components are delivered exactly when needed in the production process.

The research was guided by five major research questions aimed at examining how effectively JIT has been implemented, identifying the benefits of the system, exploring challenges faced in its implementation, assessing its impact on inventory and production, and suggesting strategies for improvement. To gather relevant data, a structured questionnaire was distributed among key departments such as procurement, supply chain, inventory, and production. A total of 45 responses were successfully retrieved and analyzed using descriptive statistics.

The findings of the study revealed that JIT procurement has been largely effective at NBC Ibadan, with many respondents affirming improvements in inventory control, supplier relationships, and production flow. Major benefits identified include reduced inventory holding costs, enhanced responsiveness in procurement cycles, and better coordination between departments. However, the study also found that there are significant challenges impeding the full implementation of JIT, particularly supplier unreliability, poor infrastructure, and inadequate technological support.

Furthermore, the study confirmed that JIT has contributed positively to production efficiency and inventory management. It has reduced excess stock, improved forecasting accuracy, and minimized production delays. To enhance its effectiveness, respondents recommended better supplier vetting, increased investment in ICT, and regular staff training on JIT principles. In conclusion, the study underscores the importance of adapting

JIT procurement strategies to local operational contexts and highlights the need for continuous improvements to fully realize its potential at NBC Ibadan.

5.2 CONCLUSION

This study set out to evaluate the effectiveness of the Just-in-Time (JIT) procurement system at the Nigeria Bottling Company (NBC), Ibadan. Guided by five research questions regarding implementation, benefits, challenges, impact, and improvement strategies the study employed a descriptive survey to gather insights from 45 respondents across procurement, supply chain, inventory, and production departments. The findings indicate that NBC Ibadan has largely succeeded in integrating JIT principles into its procurement operations. A significant majority of respondents (84.4%) reported that JIT has been implemented effectively or very effectively, resulting in notable reductions in inventory holding costs, improved supplier relationships, enhanced production flow, and faster procurement cycles. These outcomes confirm that, when applied appropriately, JIT can streamline procurement processes, minimize waste, and bolster operational efficiency.

However, the research also revealed that the full potential of JIT at NBC Ibadan remains constrained by external and internal factors beyond managerial control. Unreliable suppliers, inconsistent infrastructure (poor roads and erratic power supply), and inadequate technological support all undermine the timely delivery of materials, which is critical to JIT's time-sensitive nature. Despite these obstacles, respondents affirmed that JIT has positively impacted inventory management through lower stock levels and fewer production delays as well as production efficiency, by facilitating better demand forecasting and smoother workflow.

To address these challenges and strengthen JIT effectiveness, respondents recommended enhanced supplier vetting and development, increased investment in information and communication technologies, and continuous staff training on JIT concepts. Implementing these strategies would help NBC Ibadan build a more resilient

procurement framework capable of withstanding infrastructural and logistical uncertainties. JIT procurement at NBC Ibadan has delivered tangible benefits but remains vulnerable to supply chain disruptions and infrastructural deficiencies common in the Nigerian context. For NBC Ibadan to fully realize the advantages of JIT, it must adopt a holistic approach that simultaneously strengthens supplier partnerships, invests in supportive technology, and develops staff competencies. By doing so, NBC Ibadan can sustain and even expand the gains achieved, positioning itself more competitively within the fast-moving consumer goods sector.

5.3 RECOMMENDATIONS

Based on the findings and conclusions drawn from this study, the following recommendations are proposed to enhance the effectiveness of Just-in-Time (JIT) procurement at Nigeria Bottling Company (NBC), Ibadan:

- 1. Strengthen Supplier Relationships and Performance Monitoring:**

NBC should place greater emphasis on selecting and partnering with reliable suppliers who can meet tight delivery schedules. Regular evaluations, supplier training programs, and long-term contracts based on performance can help ensure timely delivery and consistency in supply.

- 2. Invest in Technology and Real-Time Data Systems:**

The implementation of modern procurement software and inventory management systems will enhance visibility across the supply chain. Real-time tracking of deliveries, automated stock alerts, and demand forecasting tools will help reduce stockouts and procurement delays.

3. Improve Infrastructure Support:

While infrastructural issues such as poor road networks and unreliable power supply may be beyond the control of NBC alone, the company can mitigate these risks by developing alternative logistics routes and securing backup systems such as power generators and internal fleet maintenance.

4. Enhance Staff Training and Awareness:

Continuous education and training for procurement, warehouse, and production staff on JIT principles will ensure that all employees understand their roles in supporting a lean and time-sensitive procurement model. This will also foster a culture of efficiency and accountability.

5. Develop Contingency Plans and Buffer Strategies:

While JIT aims to reduce inventory to a minimum, NBC should maintain a flexible buffer system, especially for critical components. This hybrid approach will provide a safety net against unexpected supply chain disruptions without undermining the core benefits of JIT.

6. Encourage Interdepartmental Coordination:

Seamless communication between procurement, production, inventory, and logistics units is essential for JIT to work effectively. NBC should establish integrated workflows and regular review meetings to ensure alignment in operational planning and decision-making.

7. Engage in Continuous Improvement Practices:

NBC should adopt a culture of continuous improvement (Kaizen) in its procurement processes. Regular audits, employee feedback, and performance benchmarking will help identify inefficiencies and improve the JIT system over time.

By implementing these recommendations, Nigeria Bottling Company Ibadan can strengthen its JIT procurement framework, reduce operational inefficiencies, and remain competitive in the highly dynamic manufacturing sector.

5.4 SUGGESTIONS FOR FURTHER RESEARCH

While this study has provided valuable insights into the effectiveness of Just-in-Time (JIT) procurement at Nigeria Bottling Company (NBC), Ibadan, it is important to note that there are still areas that warrant deeper exploration. Future researchers may consider the following suggestions:

- 1. Comparative Studies Across Multiple Companies:**

Future research could compare the implementation of JIT procurement across various manufacturing firms in Nigeria to determine best practices, industry-specific challenges, and general trends. This would provide a broader understanding of how JIT functions across different sectors.

- 2. Longitudinal Studies on JIT Impact:**

A longitudinal approach that evaluates the impact of JIT over an extended period could provide more comprehensive data on how the system affects cost savings, inventory turnover, and production efficiency over time.

- 3. Exploration of JIT and Technological Integration:**

Researchers could investigate the role of modern technologies—such as enterprise resource planning (ERP), artificial intelligence, and real-time analytics—in supporting or enhancing JIT procurement systems.

4. Study of Supplier Relationships in JIT Environments:

Given that supplier reliability is a key determinant of JIT success, future research could focus specifically on supplier development, collaboration, and performance measurement in JIT-oriented organizations.

5. Assessment of JIT Risks and Mitigation Strategies:

More research is needed to evaluate the specific risks associated with JIT in the Nigerian context, including economic instability, infrastructural weaknesses, and policy inconsistencies, along with strategies that organizations can adopt to mitigate these risks.

6. Impact of Organizational Culture on JIT Adoption:

Future studies could explore how the internal culture of organizations such as leadership style, employee attitudes, and change readiness affects the successful implementation of JIT systems.

By exploring these areas, future research can expand on the current findings and offer more robust, adaptable solutions for improving JIT procurement, particularly in developing economies like Nigeria.