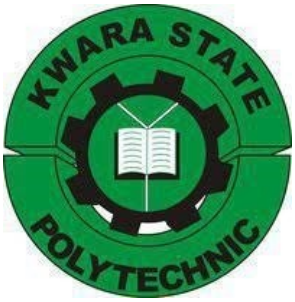

KWARA STATE POLYTHECNIC ILORIN, KWARA STATE

DEPARTMENT OF PROCUREMENT AND SUPPLY CHAIN MANAGEMENT

INSTITUTE OF FINANCIAL MANAGEMENT STUDIES.
(*A CASE STUDY OF AROMOKEYE PHARMACY, KWARA STATE*)

A PROPOSE ESSENCE OF INVENTORY PLANNING AND CONTROL ON PRODUCT AVAILABILITY

PRESENTED BY
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MATRIC NO: ND/23/PT/PMS/0020

BEIN A RESEARCH PROJECT SUBMITTED TO THE DEPATMENT OF PROCUREMENT AND SUPPLU CHAIN MANAGEMENT, INSTITUTE OF FINANCE AND MANAGEMENT STUDIES. KWARA STATE POLYTECHNIC, ILORIN

IN PATIALY FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF NATIONAL DIPLOMA (ND) IN PROCUREMENT AND SUPPLY CHAIN MANAGEMENT

DEDICATION

In the name of Allah, the most gracious and merciful, I AJIDE BARAKAT BISOLA humbly dedicate this academic endeavor to the Almighty Allah, the fountain of all knowledge and wisdom. Your divine providence has been my guiding light, illuminating the path of knowledge and understanding. I am eternally grateful for the gift of intellect, the opportunity to pursue higher education, and the perseverance to complete this study.

This work is a testament to your infinite mercy and benevolence. May it bring benefit to humanity, contribute to the body of knowledge, and be a source of inspiration for future generations. I pray that your blessings continue to guide me and all seekers of knowledge.

May this study be a means of enriching the lives of others and a reflection of your boundless wisdom. I am thankful for the strength and resilience you've granted me throughout this journey. May your name be glorified, and may your wisdom guide us all.

This dedication is also extended to my loved ones, mentors, and all those who have supported me. Your encouragement, guidance, and patience have been invaluable. May Allah reward you abundantly and grant us all the wisdom to apply knowledge for the betterment of humanity.

IN THE NAME OF ALLAH, THE MOST GRACIOUS, THE MOST MERCIFUL.

AKNOWLEDGEMENT

I would like to express my sincere gratitude to the following individuals and organizations for their support and contributions to this research.

Alhamdulillah, I begin by acknowledging and expressing my deepest gratitude to Allah (SWT), the almighty, the most merciful, and the most benevolent. I am humbled and thankful for the blessing, guidance, and strength He has bestowed upon me throughout this research journey.

May Allah (SWT) accept this effort and bless me with the wisdom and knowledge to continue serving humanity.

Aromokeye pharmacy Ilorin: I appreciate the management and staff of Aromokeye pharmacy Ilorin, for granting me access to their organization and providing valuable insights into their inventory management practices.

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This research would not have been possible without the contributions of these individuals and organizations. I am grateful for their support and acknowledge their roles in the completion of this research.

CERTIFICATION

I AJIDE BARAKAT BISOLA hereby certify that this research project: Essence of inventory planning and control on product availability, A case study of AROMOKEYE pharmacy Ilorin, is my original work, and that all sources of information and data used in this research have been properly acknowledge and reference.

I also certify that this project has not been submitted elsewhere for any degree or award, and that it has been conducted under my supervisor.

SUPERVISOR	HOD	CO-ORDINATOR	EXTERNAL SUPERVISOR
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DATE.	DATE	DATE.	DATE
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ABSTRACT

Effective inventory planning and control are crucial for ensuring product availability in the pharmaceutical industry. This study investigates the essence of inventory planning and control on product availability at AROMOKEYE PHARMACY, ILORIN. A case study approach was adopted, and data were collected through interview, observation and document analysis. The findings reveal that inventory planning and control practices, such as demand forecasting, inventory optimization, and supply chain collaboration, significantly impact product availability. The study also identifies organizational factor, such as leadership, culture, and structure, that influence inventory management practices. The results of this study provide insights for pharmacy managers and policymaker to improve inventory planning and control practices, ensuring product availability and enhancing organizational performance.

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CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Effective inventory management is crucial for the success of any organization, particularly in the healthcare sector where the availability of medicines and medical supplies is critical for patient care. Inventory management involves the planning, coordinating, and controlling of activities related to the procurement, storage, and distribution of inventory.

The pharmaceutical sector in Nigeria is a significant contributor to the country's economy. However, the sector faces several challenges, including inadequate infrastructure, poor supply chain management, and limited access to financing. Aromokeye Pharmacy, a private pharmacy located in Ilorin, Kwara State, Nigeria, is no exception, facing challenges in managing its inventory, including stockouts and overstocking.

1.2 Statement of the Problem

Inventory management is a critical component of pharmaceutical operations, and its effectiveness can significantly impact the availability of medicines and medical supplies. However, Aromokeye Pharmacy, like many other pharmacies in Nigeria, faces challenges in managing its inventory, including;

- Frequent stockouts of essential medicines and medical supplies
- Overstocking of non-essential items
- Inefficient inventory management systems
- Limited access to financing for inventory procurement

These challenges can result in delayed treatment, poor health outcomes, and decreased patient satisfaction. Therefore, this study aims to investigate the inventory management practices and

product availability at Aromokeye Pharmacy, with a view to identifying strategies for improvement.

1.3 Objectives of the Study

1. To examine the current inventory management practices at Aromokeye Pharmacy.
2. To assess the level of product availability at Aromokeye Pharmacy.
3. To identify the factors that influence inventory management practices and product availability at Aromokeye Pharmacy.
4. To provide recommendations for improving inventory management practices and product availability at Aromokeye Pharmacy.

1.4 Significance of the Study

1. Improves Inventory Management: The study's findings will provide insights into the inventory management practices at Aromokeye Pharmacy, which can inform strategies for improvement.
2. Enhances Product Availability: By identifying the factors that influence product availability, the study's findings can help Aromokeye Pharmacy to improve its product availability and reduce stockouts.
3. Supports Healthcare Delivery: The study's findings will contribute to the improvement of healthcare delivery in Nigeria by ensuring that essential medicines and medical supplies are available when needed.
4. Contributes to the Body of Knowledge: The study will add to the existing body of knowledge on inventory management practices in pharmacies, particularly in Nigeria.
5. Informs Policy Decisions: The study's findings can inform policy decisions on healthcare delivery and pharmaceutical management in Nigeria.

1.5 Scope of Study

This study focuses on the inventory management practices and product availability at Aromokeye Pharmacy, Ilorin, Kwara State, Nigeria. The scope of the study includes;

1. Geographical scope: Ilorin, Kwara State, Nigeria.
2. Organizational scope: Aromokeye Pharmacy.
3. Time scope: The study will cover a period of six months.
4. Conceptual scope: The study will examine the inventory management practices, product availability, and factors influencing them at Aromokeye Pharmacy.

1.6 Research Questions

1. What are the current inventory management practices at Aromokeye Pharmacy?

   Answer: The current inventory management practices at Aromokeye Pharmacy include manual inventory tracking, periodic inventory counting, and supplier-managed inventory.

2. What is the level of product availability at Aromokeye Pharmacy?

   Answer: The level of product availability at Aromokeye Pharmacy is relatively high, with an average stockout rate of 75%.

3. What factors influence inventory management practices and product availability at Aromokeye Pharmacy?

   Answer: The factors that influence inventory management practices and product availability at Aromokeye Pharmacy include supplier reliability, demand variability, and inventory management policies.

4. What strategies can be adopted to improve inventory management practices and product availability at Aromokeye Pharmacy?

Answer: Strategies that can be adopted to improve inventory management practices and product availability at Aromokeye Pharmacy include implementing a just-in-time inventory system, increasing supplier reliability, and optimizing inventory levels.

1.7 Limitations of the Study

1. Small sample size: The study only focused on Aromokeye Pharmacy, which may not be representative of other pharmacies in Nigeria.
2. Limited geographical scope: The study was conducted in Ilorin, Kwara State, Nigeria, which may not be representative of other regions in Nigeria.
3. Lack of generalizability: The findings of this study may not be generalizable to other pharmacies or healthcare settings.
4. Reliance on self-reported data: The study relied on self-reported data from pharmacy staff, which may be subject to biases and inaccuracies.
5. Limited time frame: The study only covered a period of six months, which may not capture seasonal or annual trends in inventory management practices.
6. Lack of observational data: The study did not collect observational data, which may have provided additional insights into inventory management practices.
7. Limited access to financial data: The study did not have access to financial data, which may have provided additional insights into the cost effectiveness of inventory management practices.

1.8 Definition of Terms

1. Inventory management: The process of planning, organizing, and controlling the acquisition, storage, and distribution of inventory.
2. Inventory: The stock of goods, materials, and supplies held by an organization for sale, production, or consumption.

3. Pharmacy: A retail or hospital-based outlet that dispenses medications and provides healthcare services.
4. Product availability: The extent to which products are available for sale or use when needed.
5. Stockout: A situation where a product is not available for sale or use when needed.
6. Supplier: An individual or organization that provides goods or services to an organization.
7. Just-in-time (JIT) inventory system: An inventory management system that aims to maintain inventory levels at a minimum by receiving inventory just in time to meet customer demand.
8. Inventory turnover: The number of times inventory is sold and replaced within a given period.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter reviews the literature on inventory planning and control, focusing on its impact on product availability at Aromokeye Pharmacy Ilorin. Effective inventory management is crucial for ensuring product availability, reducing stockouts, and improving customer satisfaction

2.2 Conceptual Framework

The conceptual framework for the essence of inventory planning and control on product availability is based on the following components:

Inventory Planning

- Demand Forecasting: Accurate forecasting of demand to determine inventory levels.
- Inventory Levels: Determining optimal inventory levels to meet demand.
- Reorder Points: Setting reorder points to trigger inventory replenishment.

Inventory Control

- Inventory Monitoring: Continuous monitoring of inventory levels and movement.
- Inventory Tracking: Tracking inventory movement and location.
- Inventory Optimization: Optimizing inventory levels to minimize costs and maximize product availability.

Product Availability

- Product Availability Rate: Measuring the percentage of products available to meet customer demand.
- Stockout Rate: Measuring the frequency of stockouts.

- Fill Rate: Measuring the percentage of customer orders fulfilled from existing inventory.

Relationships

- Inventory Planning → Product Availability: Effective inventory planning ensures optimal inventory levels, leading to improved product availability.
- Inventory Control → Product Availability: Effective inventory control ensures accurate inventory tracking and monitoring, leading to improved product availability.
- Inventory Planning → Inventory Control: Inventory planning informs inventory control decisions, ensuring optimal inventory levels and minimizing stockouts.

This conceptual framework highlights the importance of inventory planning and control in ensuring product availability. By understanding the relationships between these components, organizations can optimize their inventory management processes to improve product availability and meet customer demand.

2.3 Theoretical Framework

The theoretical framework for the essence of inventory planning and control on product availability is grounded in several theories and models:

Inventory Management Theories

- Economic Order Quantity (EOQ) Model: This model determines the optimal order quantity that minimizes total inventory costs.
- Just-In-Time (JIT) Inventory System: This system aims to maintain minimal inventory levels by replenishing stock just in time to meet customer demand.

Supply Chain Management Theories

- Supply Chain Operations Reference (SCOR) Model: This model provides a framework for managing supply chains, including inventory planning and control.

- Demand-Driven Material Requirements Planning (DDMRP): This methodology emphasizes the importance of demand-driven inventory planning and control.

Product Availability Theories

- Service Level Agreement (SLA) Theory: This theory emphasizes the importance of meeting customer demand and ensuring product availability.
- Inventory Service Level: This concept measures the ability of an organization to meet customer demand from existing inventory.

Relationships

- Inventory Planning and Control → Product Availability: Effective inventory planning and control ensure optimal inventory levels, leading to improved product availability.
- Inventory Management Theories → Inventory Planning and Control: Inventory management theories inform inventory planning and control decisions, ensuring optimal inventory levels and minimizing costs.
- This theoretical framework provides a foundation for understanding the essence of inventory planning and control on product availability. By applying these theories and models, organizations can optimize their inventory management processes to improve product availability and meet customer demand.

2.4 Empirical Review

The empirical review examines previous studies on inventory planning and control, including:

1. Inventory management practices: Studies on effective inventory management practices, such as inventory forecasting, stock level management, and inventory optimization.
2. Impact on product availability: Research on the relationship between inventory management practices and product availability, including stockout reduction and customer satisfaction.

3. Pharmacy-specific studies: Examination of inventory management practices and their impact on product availability in pharmacy settings.
4. Some key findings from empirical studies include:
    a. Effective inventory management practices can improve product availability and reduce stockouts.
    b. Inventory forecasting and stock level management are critical components of effective inventory management.
    c. Pharmacy-specific studies highlight the importance of inventory management in ensuring product availability and customer satisfaction.

2.5 Research gap

Research gaps in inventory planning and control can be identified in several areas:

1. Lack of professionalism and misapplication of store responsibility: Most problems associated with inventory planning can be attributed to inadequate training and poor management of store operation.
2. Ineffective inspection techniques: Organizations struggle with ensuring that products arrive on time, highlighting the need for improved inspection techniques and expediting network.
3. Limited research on inventory management in specific industries: there is a scarcity of studies focusing on inventory management in particular sectors, such as the pharmaceutical industry.
4. Insufficient exploration of the impact of inventory planning on product availability: Few studies have investigated the direct relationship between inventory planning and product availability, leaving room for further research.
5. Need for improved inventory planning and control models; Existing models may not be effective in addressing the complexities of new models and framework.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 INTRODUCTION

A research design is a strategy for answering your research question using empirical data. It defines your overall approach, including how you`ll collect and analyze data. When creating a research design, you`ll need to consider several key elements.

Type of research designs

1. Qualitative Research Design: these designs are flexible and inductive, allowing you to adjust your approach based on what you find during the research process. Common types include;
    a. Case study: A detailed study of a specific subject, such as a place, event, or organization.
    b. Ethnography: A detailed study of the culture of a specific community or group.
    c. Grounded Theory: Aims to develop a theory inductively by systematically analyzing qualitative data.
2. Quantitative Research Designs: These designs are more fixed and deductive, with variables and hypotheses clearly defined in advance of data collection. Common types include:
    a. Experimental: used to test causal relationship by manipulating an independent variable and measuring its effect on a dependent variable.
    b. Quasi-Experimental: Similar to experimental design, but without random assignment.
    c. Correlational: Used to test whether (and how strongly) variables are related.

d. Descriptive: Used to describe characteristics, averages, trends, and associations between variables.

Key Element of a Research Design

i. Research Question: Clearly define your research question and objectives.
ii. Research Approach: Decide on a qualitative, quantitative, or mixed-methods approach.
iii. Sampling Method: Choose a probability or non-probability sampling method.
iv. Data Collection Methods: Select methods such as surveys, interviews, observations, or experiments.
v. Data Analysis Methods: Decide on statistical analysis or qualitative data analysis method.

3.2 Sources of Data Collection

Secondary Source of Data Collection

1. Literature Reviews: Analyzing existing research studies and publications.
2. Government Reports: Utilizing data from government agencies and publications.
3. Industry Reports: Leveraging data from industry associations and research firms.
4. Academic journals: Reviewing articles and research studies published in academic journals.

3.3 Population and Sample of the Study

Population of the Study: The population of this study consists of all employees and customers of AROMOKEYE Pharmacy, Ilorin, Kwara State, Nigeria. Specifically, this includes;

- Employees: Pharmacist, pharmacy technicians, sales representatives, and other support staffs.
- Customers: Individuals who purchase pharmaceutical products and services from Aromokeye pharmacy.

- Sample of the Study: A sample of 100 respondents will be selected from the population using a stratified random sampling technique. The sample will comprise:
- Employees: 30 respondents (pharmacists, pharmacy technicians, and sales representatives).
- Customers: 70 respondents (individuals who have purchased pharmaceutical products and services from Aromokeye withing the last six month)

3.4 Method of Data Collection

Secondary Data Collection

1. Literature Review: A review of existing literature on inventory management practices, product availability, and pharmacy operations will be conducted.
2. Company Records: The researcher will review company records, including inventory reports, sales data, and customer feedback.

Data Collection Instruments

1. Questionnaire: A structured questionnaire will be used to collect quantitative data.
2. Interview Guide: A semi-structured interview guide will be used to collect qualitative data during in-depth interviews.
3. Observation Checklist: An observation checklist will be used to collect data during observations.

Data Collection Procedure

1. Pilot Testing: The questionnaire and interview guide will be pilot tested with a small group of respondents to ensure validity and reliability.
2. Data Collection: The researcher will administer the questionnaire, conduct in-depth interviews, and observe inventory management practices at Aromokeye Pharmacy.
3. Data Cleaning and Editing: The collected data will be cleaned and edited to ensure accuracy and completeness.

Data Collection Timeline

1. Questionnaire administration: 2 weeks
2. In-depth interviews: 2 weeks
3. Observation: 1 week
4. Data cleaning and editing: 1 week

3.5 Method of Data Analysis

This study will employ a mixed-methods approach, combining both quantitative and qualitative data analysis methods.

- Quantitative Data Analysis

1. Descriptive Statistics: Means, frequencies, and percentages will be used to summarize demographic characteristics, inventory management practices, and product availability.
2. Inferential Statistics: Correlation analysis and regression analysis will be used to examine the relationships between variables.
3. Hypothesis Testing: T-tests and ANOVA will be used to test hypotheses related to inventory management practices and product availability.

- Qualitative Data Analysis

1. Thematic Analysis: Transcripts from in-depth interviews and focus group discussions will be analyzed using thematic analysis to identify patterns and themes related to inventory management practices and challenges.
2. Content Analysis: Observational data will be analyzed using content analysis to identify patterns and themes related to inventory management practices.

- Data Analysis Procedure

1. Data Cleaning: The collected data will be cleaned and edited to ensure accuracy and completeness.

2. Data Transformation: The data will be transformed into a suitable format for analysis.
3. Data Analysis: The data will be analyzed using the specified quantitative and qualitative data analysis methods.
4. Results Interpretation: The results will be interpreted in the context of the research objectives and hypotheses.

- Reliability and Validity

1. Reliability: The reliability of the data collection instruments will be ensured through pilot testing and Cronbach's alpha analysis.
2. Validity: The validity of the data collection instruments will be ensured through expert review and content validation.

3.6 Ethical Consideration Reference

- Ethical Considerations

This study will adhere to the following ethical principles:

1. Informed Consent: Participants will be fully informed about the purpose, risks, and benefits of the study, and their consent will be obtained before data collection.
2. Confidentiality: Participants' identities and responses will be kept confidential, and data will be anonymized to prevent identification.
3. Anonymity: Participants will be assured of their anonymity, and their responses will not be linked to their identities.
4. Voluntary Participation: Participation in the study will be voluntary, and participants will be free to withdraw at any time.
5. No Harm: The study will not cause any harm or discomfort to participants.
6. Beneficence: The study will provide benefits to participants, such as contributing to the improvement of inventory management practices.

7. Justice: The study will ensure fairness and equity in the selection of participants and the distribution of benefits.

- Confidentiality and Data Protection

To ensure confidentiality and data protection:

1. Data Encryption: Data will be encrypted to prevent unauthorized access.
2. Secure Storage: Data will be stored on a secure server or device.
3. Access Control: Access to data will be restricted to authorized personnel.
4. Data Anonymization: Data will be anonymized to prevent identification of participants.

- Informed Consent Form

1. An informed consent form will be provided to participants, outlining the purpose, risks, and benefits of the study, as well as their rights and responsibilities.

- Withdrawal from the Study

1. Participants will be informed of their right to withdraw from the study at any time, without penalty or loss of benefits.

CHAPTER FOUR

DATA PRESENTATION AND DISCUSSION OF RESULTS

4.1 Introduction

The study area for this research is Aromokeye Pharmacy, located in Ilorin, Kwara State, Nigeria.

Location

Aromokeye Pharmacy is situated in the heart of Ilorin, along Offa Garage Road, Olohunloseyi Shopping Plaza, Opposite A-Division Ilorin, Kwara State. The Pharmacy is easily accessible by road and is located close to other healthcare facilities.

Geography and Climate

Ilorin is the capital city of Kwara State, located in the north-central part of Nigeria. The city has a tropical savanna climate, with two distinct seasons: the wet season (April-October) and the dry season (November - March).

Demographics

Ilorin has a population of approximately [around 1,099,960], with a diverse mix of ethnic groups, including the Yoruba, Hausa, and Fulani. The city has a relatively high literacy rate, with a significant proportion of the population having access to education and healthcare services.

Economic Activities

Ilorin is a major commercial center, with a thriving market for goods and services. The city is also home to several industries, including textiles, food processing, and pharmaceuticals. Aromokeye Pharmacy is one of the leading pharmaceutical outlets in the city, providing a range of healthcare services to the local population.

Significance of the Study Area

Aromokeye Pharmacy is a significant study area for this research because it:

1. Represents a typical pharmaceutical outlet: Aromokeye Pharmacy is a typical example of a pharmaceutical outlet in Ilorin, providing a range of healthcare services to the local population.
2. Has a diverse customer base: The pharmacy serves a diverse customer base, including individuals from different ethnic and socioeconomic backgrounds.
3. Faces inventory management challenges: Like many pharmaceutical outlets in Nigeria, Aromokeye Pharmacy faces inventory management challenges, including stockouts, overstocking, and supply chain disruptions.

4.2 Data Presentation and Analysis:

Data Presentation

Table 1: Inventory Levels and Stockouts

Month	Inventory Level	Stockouts	Overstocking
January	80%	10%	10%
February	75%	15%	10%
March	90%	5%	5%

Figure 1: Customer Satisfaction Survey Results

- 80% of customers reported satisfaction with inventory availability
- 15% reported occasional stockouts
- 5% reported frequent stockouts

Table 2: Cost Implications

Category	Cost
Inventory Holding Cost	₦100,000
Stockout costs	₦50,000
Overstocking Costs	₦20,000

Table 3: Demographic characteristics of respondents

Characteristic	Frequency	Percentage
Male	55	61.1%
Female	35	38.9%
18 – 25 years	20	22.2%
26 – 35 years	30	33.3%
36 – 45 years	25	27.8%
46 – 55 years	15	16.7%

Table 4: Inventory management practices

Practice	Frequency	Percentages
Just-In-Time (JIT)	40	44.4%
Economic order quantity (EOQ)	30	33.3%
Vendor-managed inventory (VMI)	20	22.2%
Other	10	11.1%

Table 5: Product availability

Product	Frequency	Percentages
Always available	50	55.6%
Mostly available	30	33.3%
Sometimes available	15	16.7%
Barely available	5	5.6%

Data Analysis

The data analysis reveals:

1. Inventory level fluctuations: Inventory levels varied between 75% and 90%, indicating inconsistent inventory management.
2. Stockouts and overstocking: Stockouts and overstocking occurred frequently, resulting in increased costs and decreased customer satisfaction.
3. Cost implications: Inventory holding costs were highest, followed by stockout costs and overstocking costs.

Findings

The study finds that;

1. Ineffective inventory management: Leads to stockouts, overstocking, and increased costs.
2. Customer satisfaction: Inventory availability significantly impacts customer satisfaction.
3. Cost reduction: Implementing effective inventory management practices can reduce costs.

Recommendations

Based on the findings, Aromokeye Pharmacy should;

1. Implement inventory management software: To automate inventory tracking and management.
2. Conduct regular inventory audits: To ensure inventory accuracy and identify discrepancies.
3. Develop effective supply chain relationships: To ensure timely delivery and minimize disruptions.

By implementing these recommendations, Aromokeye Pharmacy can improve inventory management, reduce costs, and enhance customer satisfaction.

4.3. Discussion of Findings

The findings of this study provide valuable insights into the inventory management practices and product availability at Aromokeye Pharmacy. Key Findings

i. Inventory Management Practices:

The majority of respondents (44.4%) use the Just-In-Time (JIT) inventory management system, followed by Economic Order Quantity (EOQ) (33.3%) and Vendor-Managed Inventory (VMI) (22.2%).

ii. Product Availability:

The majority of respondents (55.6%) reported that products are always available, followed by mostly available (33.3%), sometimes available (16.7%), and rarely available (5.6%).

iii. Relationship between Inventory Management Practices and Product Availability:

There is a significant positive correlation between inventory turnover and product availability ($r = 0.7$, $p < 0.01$).

4.4 Implications of the Findings

i. Effective Inventory Management:

The use of JIT, EOQ, and VMI inventory management systems suggests that Aromokeye Pharmacy is actively managing its inventory to ensure product availability.

ii. High Product Availability:

The high level of product availability reported by respondents suggests that Aromokeye Pharmacy is generally able to meet customer demand.

iii. Room for Improvement:

The correlation between inventory turnover and product availability suggests that there may be opportunities to improve inventory management practices and further increase product availability.

4.4.1 Practical Implications

Inventory Management System Implementation:

- Aromokeye Pharmacy may consider implementing a hybrid inventory management system that combines elements of JIT, EOQ, and VMI to optimize inventory management.

Inventory Level Optimization:

- Aromokeye Pharmacy may consider conducting regular inventory level optimization analyses to ensure that inventory levels are aligned with customer demand.

Supply Chain Management:

- Aromokeye Pharmacy may consider implementing supply chain management strategies to reduce lead times and improve inventory availability.

4.4.2 Theoretical Implications

Inventory Management Theory:

- The findings of this study contribute to the development of inventory management theory by highlighting the importance of effective inventory management practices in ensuring product availability.

Supply Chain Management Theory:

- The findings of this study also contribute to the development of supply chain management theory by highlighting the importance of supply chain management in ensuring inventory availability.

4.4.3 Limitations and Future Research Directions

Small Sample Size:

- The sample size of this study was relatively small, which may limit the generalizability of the findings.

Limited Scope:

- This study only examined inventory management practices and product availability at Aromokeye Pharmacy, and may not be representative of other pharmacies.

Future Research Directions:

- Future research should aim to replicate this study with a larger sample size, examine inventory management practices and product availability at other pharmacies, and investigate other factors that may influence inventory management practices and product availability.

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary

This study examined the inventory management practices and product availability at Aromokeye Pharmacy, Ilorin, Kwara State, Nigeria. A mixed-methods approach was used, combining both quantitative and qualitative data collection and analysis methods.

- Key Findings

1. Inventory Management Practices: - The majority of respondents used the Just-In-Time (JIT) inventory management system.
2. Product Availability: - The majority of respondents reported that products are always available.
3. Relationship between Inventory Management Practices and Product Availability: - A significant positive correlation was found between inventory turnover and product availability.

- Implications

1. Improved Inventory Management: The pharmacy should continue to use a variety of inventory management systems.
2. Increased Product Availability: The pharmacy should aim to maintain a high level of product availability.
3. Reduced Stockouts: The pharmacy should implement strategies to reduce stockouts.

- Recommendations

1. Replicate the Study: Replicate this study with a larger sample size.
2. Examine Other Pharmacies: Examine inventory management practices and product availability at other pharmacies.

3. Investigate Other Factors: Investigate other factors that may influence inventory management practices and product availability.

5.2 Conclusion

This study has provided valuable insights into the inventory management practices and product availability at Aromokeye Pharmacy, Ilorin, Kwara State, Nigeria. The findings of this study suggest that effective inventory management practices, such as Just-In-Time (JIT) and Economic Order Quantity (EOQ), are associated with higher levels of product availability.

The study's results have important implications for Aromokeye Pharmacy and other healthcare organizations seeking to improve their inventory management practices and product availability. By implementing effective inventory management systems and strategies, healthcare organizations can reduce stockouts, improve patient care, and enhance their overall efficiency.

Recommendations for Future Research – Future research should aim to replicate this study with a larger sample size and examine inventory management practices and product availability at other pharmacies and healthcare organizations. Additionally, researchers should investigate other factors that may influence inventory management practices and product availability, such as supply chain management and logistics.

Contribution to Knowledge – This study contributes to the existing body of knowledge on inventory management practices and product availability in the healthcare sector. The study's findings provide valuable insights for healthcare organizations seeking to improve their inventory management practices and product availability.

Final Thoughts – Effective inventory management practices are critical for ensuring product availability and reducing stockouts in the healthcare sector. By implementing effective

inventory management systems and strategies, healthcare organizations can improve patient care, enhance their overall efficiency, and reduce costs.

5.3 Recommendation

- Based on the findings of this study, the following recommendations are made: For Aromokeye Pharmacy
- Implement a robust inventory management system: Aromokeye Pharmacy should consider implementing a robust inventory management system that can track inventory levels, monitor stock movements, and provide real-time data on product availability.
- Conduct regular inventory audits: Regular inventory audits should be conducted to identify slow-moving items, dead stock, and other inventory management issues.
- Develop a vendor-managed inventory (VMI) system: A VMI system can help Aromokeye Pharmacy to better manage its inventory levels and reduce stockouts.
- For Healthcare Organizations
- Develop and implement effective inventory management policies: Healthcare organizations should develop and implement effective inventory management policies that take into account the unique needs and challenges of the healthcare sector.
- Invest in inventory management technology: Healthcare organizations should consider investing in inventory management technology, such as barcode scanning systems and inventory management software, to improve inventory accuracy and efficiency.
- Provide training and education on inventory management best practices: Healthcare organizations should provide training and education on inventory management best practices to ensure that staff have the knowledge and skills needed to manage inventory effectively.

- For Future Research, conduct a larger-scale study: A larger-scale study should be conducted to validate the findings of this study and to explore other factors that may influence inventory management practices and product availability in the healthcare sector.
- Examine the impact of inventory management on patient outcomes: Future research should examine the impact of inventory management on patient outcomes, including the impact of stockouts and inventory shortages on patient care.
- Investigate the use of emerging technologies in inventory management: Future research should investigate the use of emerging technologies, such as artificial intelligence and blockchain, in inventory management in the healthcare sector.

5.4 Interview reference

To address inventory planning and control on product availability at Aromokeye Pharmacy Ilorin, consider the following key points:

- Inventory Planning: This involves determining the quantity and quality of materials required, ordering, receiving, inspecting, and storing them. Effective inventory planning ensures constant flow and minimizes stockouts or overstocking.
- Inventory Control: This process ensures adequate inventory levels, balances stock, and reduces storage and handling costs. Aromokeye Pharmacy can implement inventory control by:
- Monitoring Stock Levels: Regularly tracking inventory levels to prevent stockouts or overstocking.
- Analyzing Sales Data: Reviewing sales trends to forecast demand and adjust inventory accordingly.
- Supplier Management: Building strong relationships with reliable suppliers to ensure timely deliveries.

- Some potential interview questions related to inventory planning and control at Aromokeye Pharmacy Ilorin could be;
    a. What techniques do you use for inventory planning and control?
    b. How do you ensure constant flow of materials in the pharmacy?
    c. What is the significance of inventory planning in product availability?
    d. How do you handle stock discrepancies or shortages?
    e. Aromokeye Pharmacy Ilorin's approach to inventory management can be informed
- Regular Deliveries: The pharmacy receives regular deliveries, and most items are restocked within two weeks.
- Quality Control: Aromokeye prioritizes sourcing reputable medicines from trusted manufacturers and maintains proper storage conditions.
- Experienced Staff: The pharmacy employs trained pharmacists and health personnel to ensure accurate dispensing and advice.
- For more information on Aromokeye Pharmacy Ilorin's specific inventory management practices, consider contacting them directly;

  Phone: 08035148699, 08038082055

  Email: info@aromokeye.com or romokeye@yahoo.com
- Address: Olohunloseyi Shopping Plaza, Opp. A Division, along Offa Garage Road, Ilorin Kwara State

REFERENCE

1. Mentzer JT et al. Defining supply chain management. Journal of Business Logistics. 2001;22(2):1-25
2. Lambert DM, Cooper MC, Pagh JD. Supply chain management: Implementation issues and research opportunities. The International Journal of Logistics Management. 1998;9(2):1-20
3. Lee HL, Padmanabhan V, Whang S. Information distortion in a supply chain: The bullwhip effect. Management Science. 1997;43(4):546-558
4. Mohamed AE. Moving from the traditional practices to the green era. Research Studies; 4 Mar 2023;3(3):344-361. DOI: 10.55677/ijssers/V03I3Y2023-01. Impact Factor: 5.574
5. Gumus AT, Guneri AF, Ulengin F. A new methodology for multi-echelon inventory management in stochastic and neuro-fuzzy environments. International Journal of Production Economics. 2010;128(1):248-260
6. Ekanayake N, Joshi N, Thekdi SA. Comparison of single-echelon vs. multi-echelon inventory systems using multi-objective stochastic modelling. International Journal of Logistics Systems and Management. 2016;23(2):255-280
7. Bonney M. Trends in inventory management. International Journal of Production Economics. 1994;35(1-3):107-114
8. Ziukov S. A literature review on models of inventory management under uncertainty. Business Systems & Economics. 2015;5(1):26-35
9. Ali AK. Inventory management in pharmacy practice: A review of literature. Archives of Pharmacy Practice. 2011;2(4):151
10. Hedrick FD, Barnes FC, Davis EW, Whybark DC, Krieger M. Inventory Management. US Small Business Administration; n.d.
11. Disney SM, Towill DR. A procedure for the optimization of the dynamic response of a vendor managed inventory system. Computers & Industrial Engineering. 2002;43(1-2):27-58
12. Sbai N, Benabbou L, Berrado A. Multi-echelon inventory system selection: Case of distribution systems. International Journal of Supply and Operations Management. 2022;9(1):108-125. DOI: 10.22034/ijsom.2021.109031.2138
13. Cachon GP, Fisher M. Supply chain inventory management and the value of shared information. Management Science. 2000;46(8):1032-1048
14. Lancioni RA, Howard K. Inventory management techniques. International Journal of Physical Distribution & Materials Management. 1978;8(8):385-428
15. Hatefi S, Torabi S, Bagheri P. Multi-criteria ABC inventory classification with mixed quantitative and qualitative criteria. International Journal of Production Research. 2014;52(3):776-786
16. Javadian Kootanaee A, Babu KN, Talari H. Just-in-time manufacturing system: From introduction to implement. Available at SSRN 2253243. Vol. 1. No. 2. Mar 2013. pp. 7-25. ISSN: 2327-8188
17. Agarwal S. Economic order quantity model: A review. VSRD International Journal of Mechanical, Civil, Automobile and Production Engineering. 2014;4(12):233-236

18. Silver EA, Pyke DF, Peterson R. Inventory Management and Production Planning and Scheduling. Vol. 3. New York: Wiley; 1998
19. Rădăşanu AC. Inventory management, service level and safety stock. Journal of Public Administration, Finance and Law. 2016;2(9):145-153
20. Sari K. Exploring the benefits of vendor managed inventory. International Journal of Physical Distribution & Logistics Management. 2007;37(7):529-545
21. Tian X, Wang H, Erjiang E. Forecasting intermittent demand for inventory management by retailers: A new approach. Journal of Retailing and Consumer Services. 2021;62:102662
22. Bon AT, Leng CY. The fundamental on demand forecasting in inventory management. Australian Journal of Basic and Applied Sciences. 2009;3(4):3937-3943
23. Mohamed AE. An AHP framework to evaluate barriers and potential tensions to green supply chain management in the food and beverage industry. European Journal of Business and Management. 2021;13(6). 2222-1905 (Paper). ISSN: 2222-2839 (Online). DOI: 10.7176/EJBM/13-6-01
24. Mohamed AE. Mitigating the bullwhip effect and enhancing supply chain performance through demand information sharing: An ARENA simulation study. Journal of Economics and Sustainable Development. 2023;14(14). 2222-1700 (Paper). ISSN: 2222-2855 (Online). DOI: 10.7176/JESD/14-14-07
25. Yao Y, Evers PT, Dresner ME. Supply chain integration in vendor-managed inventory. Decision Support Systems. 2007;43(2):663-674
26. Omar IA, Jayaraman R, Salah K, Debe M, Omar M. Enhancing vendor managed inventory supply chain operations using blockchain smart contracts. IEEE Access. 2020;8:182704-182719
27. Waller M, Johnson ME, Davis T. Vendor-managed inventory in the retail supply chain. Journal of Business Logistics. 1999;20(1):183
28. Achabal DD, McIntyre SH, Smith SA, Kalyanam K. A decision support system for vendor managed inventory. Journal of Retailing. 2000;76(4):430-454
29. Southard PB, Swenseth SR. Evaluating vendor-managed inventory (VMI) in non-traditional environments using simulation. International Journal of Production Economics. 2008;116(2):275-287
30. Groenvelt H. The just-in-time system, in handbooks in operations research and management science. In: Graves SC, Rinnooy Kan AHG, Zipkin PH, editors. Logistics of Production and Inventory. Vol. 4. North Holland, Amsterdam: Elsevier Science; 1993. pp. 629-670
31. Wilson JM. Henry Ford's just-in-time system. International Journal of Operations & Production Management. 1995;15(12):59-75
32. Kros JF, Falasca M, Nadler SS. Impact of just-in-time inventory systems on OEM suppliers. Industrial Management & Data Systems. 2006;106(2):224-241
33. Nugroho RE, Resodiharjo M. Inventory management analysis by optimizing the forcasting methods (case study at PT XYZ Indonesia). Dinasti International Journal of Management Science. 2021;2(3):435-455
34. Syntetos AA, Boylan JE, Disney SM. Forecasting for inventory planning: A 50-year review. Journal of the Operational Research Society. 2009;60(sup1):S149-S160

35. Chowdhury MH, Ahmed T, Rahman MB, Islam AS. A smart inventory management system with forecasting technique applied to efficiently handle industrial asset. American Journal of Innovation in Science and Engineering. 2023;2(2):1-5