Thesis Report on

"Inventory Management Practices in Supply Chain Optimization in Home Appliance Electrical and Electronic Sector in Bangladesh,

A Case Study on Gazi International"

Submitted by:

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ID: EMBA2403033012

Program: EMBA in Supply Chain Management

Major: Supply Chain Management

Department of Business Administration

Sonargaon University (SU)

Submitted to:

Department of Business Administration

Faculty of Business

Sonargaon University (SU)

Submitted for the partial fulfillment of the degree of EMBA in Supply Chain Management

Sonargaon University (SU)

147/1 Green Road, Panthapath, Tejgaon, Dhaka

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Letter of Transmittal

December 30, 2025

Dr. Md. Masud Rana

Professor & Head

Department of Business Administration

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Sonargaon University (SU)

Subject: Submission of thesis report titled "Inventory Management Practices in Supply Chain Optimization in Home Appliance Electrical and sector in Bangladesh.

Dear Sir,

"Inventory Management Practices in Supply Chain Optimization in Home Appliance Electrical and Sector in Bangladesh," my thesis, is being submitted in. which I had to do in order to receive my degree in EMBA SCM. This study was really interesting, useful, and helpful in my opinion. The entire research was based on my real-world experience. This thesis writing will be very helpful to me in my goals for the future.

My thesis work would not have been possible without your advice and assistance during the semester, which I sincerely respect. I would also be prepared to answer any other questions you may have requesting any further details.

Yours Sincerely

_____

Anwarul Haque Chowdhury

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Declaration of Student

This is to inform you that the "**Inventory Management practices in supply chain optimization in Bangladesh's Home Appliance Electrical and Electronic sector**" thesis paper has been completed.
I created "Practices on Home Appliance Sector: A Case Study on Gazi International" to complete the requirements for my dissertation. It is an essential component of my identity. submit a thesis to the SCM EMBA program. Dr. Masud Rana, a Professor in Sonargaon University's (SU) Department of Business Administration, further motivated and educated me. Additionally, I certify that I did not submit this report for credit toward a certificate or degree.

Yours Sincerely

_____

Anwarul Haque Chowdhury

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Letter of Authorization

I hereby authorize Sonargaon University to preserve and make available my thesis entitled **"Inventory Management Practices in Supply Chain Optimization in Home Appliance Electronic & Electrical Sector in Bangladesh"** for academic and research purposes.

I understand that the university may allow this thesis to be consulted, copied, or reproduced in part or in full for scholarly use, provided that proper acknowledgement is made to the author and that such use complies with the university's regulations.

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Dr. Md. Masud Rana

Professor & Head

Department of Business Administration

Faculty of Business

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Acknowledgment

I want to begin by offering my gratitude to Allah the Almighty for providing me the strength and ability to do the task.

I would like to thank Dr. Md. Masud Rana, a Professor & Head in Sonargaon University's (SU) Department of Business Administration, for being my academic supervisor and providing me with all the help I required to complete my report. I would want to sincerely thank her for being my counselor and assisting me in starting and completing my report.

With Gazi International, I had a great opportunity to advance my education and profession. I consider myself quite lucky to have been able to take part in it. I am also grateful for the chance to engage with so many wonderful people and professionals who helped me along the way.

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Abstract Summary

The present research examines inventory management techniques and how they support the optimization of supply chains in the Bangladeshi Home Equipment Electrical and Electronic industry. The study outlines major inventory management methods, the challenges organizations encounter, and how these strategies support cost reduction, competitive advantage, and responsiveness. Real data from secondary sources, industry surveys, and theoretical viewpoints are all included. The results show that supplier coordination, infrastructure issues, and forecasting accuracy persist with the increasing utilization of advanced inventory tactics by businesses, such as Just-in-Time JIT, ABC analysis, and ERP connection.

Table of Contents

Chapter-01
Introduction

1. Introduction

Inventory management in supply chain management is the process of overseeing the ordering, storing, and use of goods (raw materials, WIP, finished products) to meet customer demand efficiently, balancing adequate stock with minimal holding costs by forecasting needs, tracking flow, and optimizing levels across the entire supply chain from procurement to delivery, ensuring profitability and resilience. It prevents stockouts and overstocking, crucial for operational efficiency, cash flow, and customer satisfaction.

1.1 Background of the Study

A vital part of supply chain operations is inventory management, particularly in sectors with high levels of product range, demand volatility, and fast innovation. In Bangladesh, organizations that distribute goods including Pumps & Motors, Gas Stove, Rice Cooker, Electric Cooker, Mixer grinder, Kitchen hood and other appliances make up the Home Appliance Electrical and Electronic (HAEE) market. In Bangladesh's developing economy, this sector makes an important contribution to employment, industrial expansion, and information distribution.

1.2 Problem Statement

Many HAEE businesses in Bangladesh have efficient inventory, which causes stockouts, extra holding costs, and supply chain problems despite the market's quick growth. Customer satisfaction, revenue growth, and efficiency in operation all depend on good inventory management.

1.3 Objectives of the Study

Inventory needs an important investment, particularly for manufacturing, wholesale, and retail traders. In some cases, the investment may exceed the sum spent on the company's other assets. Inventory accounts for about 90% of a company's working capital.

Maintaining inventory in a way that prevents overstocking or understocking is the primary objective of an inventory management system.

Understock work will cease and other manufacturing operations will be reduced due to the overstock issue.

1.4 Research Questions

Which techniques are currently used in inventory management?

What impact do such techniques have on the supply chain's performance?

What are the barriers to setting up the best inventory systems?

1.5 Limitations of the Study

This study has a number of limitations that should be noted, even if it offers important data on methods for inventory control and their place in supply chain optimization within Bangladesh's Home Appliance Electrical and Electronic sector.

User bias may have an impact on the study's core data, which is primarily collected through interviews and questionnaires. It's probable that managers and staff gave reasonable responses rather than true presentations of real inventory processes. This limitation can have an impact on the data' accuracy and reliability.

The study focuses on a small number of businesses, most of which exist in Bangladesh's major cities and industrial districts. Because of this, the results were unable to accurately represent small-scale producers or members of the informal industry who work in country or semi-urban locations. As a result, the implications to the whole sector remain restricted.

The study looks at methods for inventory management over a limited period of time, which rules out long-term fluctuations in supply and demand as well as economic shifts like price increases, currency change, and disruptions to the global supply chain. As a result, future changes to inventory processes could not be shown in the findings.

Chapter-02
Literature Review

2.1 Supply Chain and Inventory Management

Supply chain management (SCM) connects Assembling, distribution, inventory control, and purchasing to provide value to customers. Inventory, an important part of working capital, needs to balance holding costs and service level targets. Economic Order Quantity (EOQ), Safety Stock Models, and Order Point Systems are a few classic models; fresher methods include JIT, Vendor Managed Inventory (VMI), and technological products like ERP.

2.2 Best Practices and Inventory Techniques

ABC Analysis

A Items:

Since they are important for business operations, items in the "A" category may be further called important. typically, these are sold in quantity or are very valuable.

B Items:

The "B" classification bits are less important than the "A" and "C" sections. These typically occur in the middle of demand and inventory value.

C Items:

The entries in the "C" category are barely noticeable. They frequently possess low inventory values.

Just-in-Time (JIT)

JIT is more than just delivering goods at the right time and place. JIT is a method used in total quality management (TQM) for inventory control and production scheduling. By ensuring that all resources required for an assembly operation whether initial supplies, finished products, or everything in between are produced and available precisely when needed, this production management strategy aims to create value and reduce waste. Given how common undesired deletion is, JIT is an essential part of learning production.

Economic order quantity (EOQ)

The optimal quantity of an item that should be ordered at any particular moment in order to reduce the overall yearly cost of transporting and ordering that item is known as the economic order quantity, or EOQ. The ideal lot size is another name for EOQ.
To put it simply, how much stuff should you buy to keep your supply chain economical?

2.3 The Home Appliance Industry's Trends

Shorter product life cycles, complexity SKUs, and changeable consumer needs demand flexible inventory management systems for the HAEE industry globally.

Chapter-03
Research Methodology

3.1 Research Design

A mixed-methods approach is used in this study. The research project is split into two stages because supply chain optimization demands quantitative accuracy and a knowledge of organizational behavior

Quantitative Phase Models optimization strategies EOQ, Safety Stock levels using past inventory data.

Qualitative Phase Identify local barriers such lead-time unpredictability, power outages, and port delays through semi-structured interviews with supply chain management.

3.2 Population and Sampling

Bangladeshi businesses that produce and assemble electrical and electronic equipment are the target market (Gazi Group).

3.3 Data Collection Methods

Secondary Data

For mathematical optimization, a study will assemble a Nine years period of historical data, including yearly demand for a certain SKU. Cost related to making goods and keeping records.

Primary Data

Likert-scale surveys are used to gauge the uptake of ERP integration, ABC analysis, and Just-in-Time (JIT).

3.4 Inventory Classification

Production application	Number & Values	Demand type	Other
Raw materials	A items	Independent	Maintenance,
Components Work in progress CKD/SKD	B items	Dependent	repair and operating
Finished goods	C items		materials not embodied in the finished Product

Chapter-04 Inventory Management Practices

4.1 Current Practices Identified

Push and pull inventory comes from push and pull strategies.

A push strategy is used when products are produced in response to demand and expectations based on long-term projections but uncertainty endures. Push-based supply chains are associated with higher inventory levels and higher production and transportation costs because they must respond quickly to changing needs.

when pull-strategic items are produced in a specific order rather than as planned. As a result, demand is guaranteed and there is little to no inventory. Because the conversion regarding client desire is quickly sent to numerous supply chain partners, agility can be avoided.

Push-pull strategies in the supply chain are one of these.

Demand Forecasting techniques:

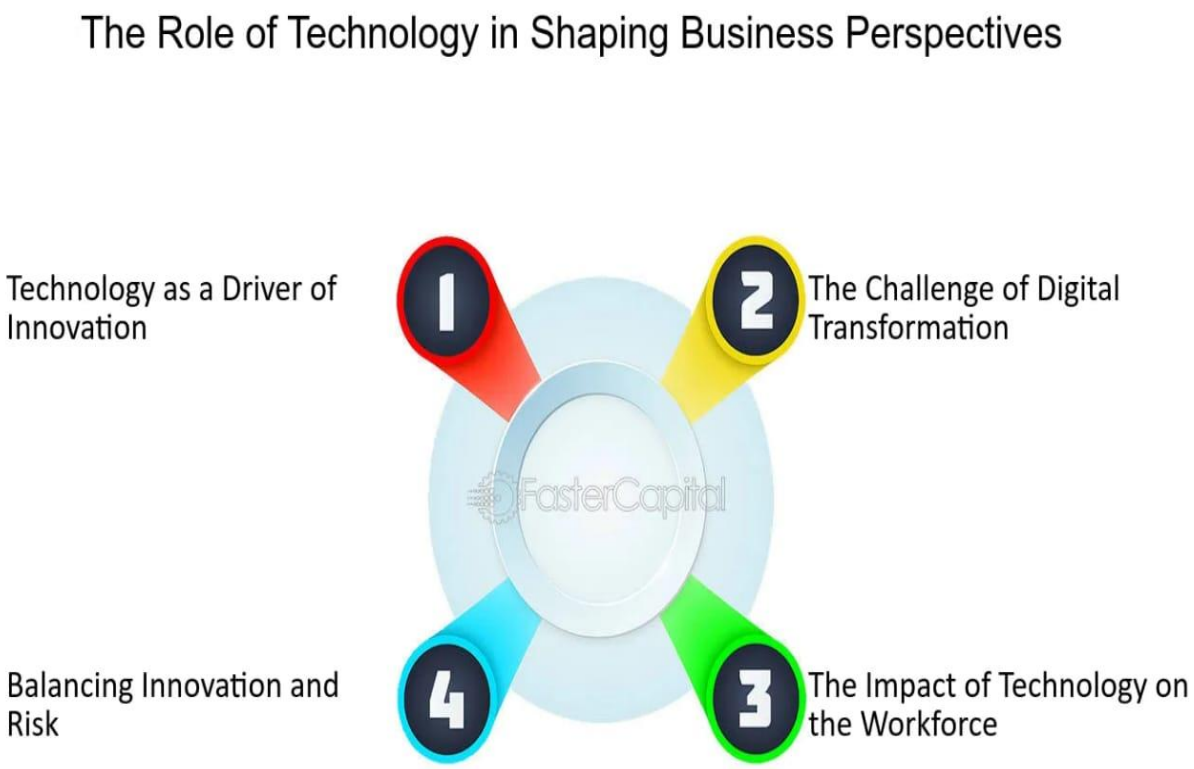
Fast Moving Product

Slow Moving Product

Non-Moving Product.

4.2 Role of Technology

Barcode, RFID tracking and software for ERP reduced human mistakes and increased stock accuracy. due to financial limitations, adoption is limited in medium-sized and small enterprises.



Chapter-05
Data Collection
&
Analysis

5.1 Impact on Financial Efficiency

Holding costs and obsolescence are reduced by effective inventory classification and models of optimization.

5.2 Response Time and Service to Customers

Improved delivery cycles and fewer shortages are two advantages of better inventory systems.

5.3 Collaboration with Customers

Supply chain agility is reduced by the lack of collaborative forecasting and replenishment procedures.

5.4 Flexibility of Demand

Forecasting is made challenging by changing customer demand for electrical and technological goods.

5.5 Challenges with Transportation

Timely distribution is restricted by poor cold-chain or storage spaces and poor supply chain infrastructure.

5.6 Technology Controls and Quality of Data

Advanced analytics are limited by incorrect real-time data and lack of Technology literacy.

5.7 Accuracy of Customers

Inventory planning is impacted by inconsistent supplier performance and delayed imports.

Chapter-06
Discussion

6.1 Logical Issues

Inventory optimization increases company productivity when supported by technology and information transfer, and this is in line with supply chain theory.

6.2 Challenges for Leadership

To improve inventory response, company must invest investments in forecasting tools, training, and cooperation supplier relationships.

Chapter-07
Recommendations

7.1 Applying Current Planning Technology

Support the utilization of forecasting driven with AI for better demand forecast.

7.2 Fostering Customer Relations

Set Collaboration Development, Prediction, and Recovery and VMI on actuality.

7.3 Development in Environment

Make investments with automatic warehouses and additional logistics devices.

7.4 Partnership between the government as well as Business

Companies are given permission by law to update their businesses and use advances in technology.

Chapter-08
Conclusion

Inventory control is a crucial component of the assembly system of Gazi Home Appliance Industries. Due to the large number of SKUs at Gazi International, inventory is crucial to maintaining the correct quantity in the current assembly of new parts, CKD SKD components, and Finnish products. According to research, inventory management affects delivery time, cost control, and assembly speed. Research has shown that a number of strategies, including ABC Analysis, must be used to control the stock. Safety of Economic Order Quantity Point of Stock Reorder the Gazi Home Appliance Industries can benefit from inventory software.

In the supply chain industry, inventory management is becoming more important due to the cheap cost of raw materials. To solve this problem, data analysis should be done using proper inventory planning and strategies. If the supply department manages the inventory by coordinating each level, the production risk is reduced, waste is reduced, challenges are avoided, and the customer will receive timely delivery of the product. Future business expansion and taxation will be ensured by efficient inventory management.

References:

- Chopra, S., & Mendel, P. (2016). Supply chain management: Strategy, planning, and operation (6th ed.). Pearson Education.
- Christopher, M. (2016). Logistics & supply chain management (5th ed.). FT Press.
- Hop, W. J., & Spearman, M. L. (2011). Factory physics (3rd ed.). Waveland Press.
- Rahman, M. M., & Ahmed, S. (2022). Inventory management practices in the electrical and electronics manufacturing sector of Bangladesh. International Journal of Supply Chain Management, 11(3), 45–58
- Bangladesh Bureau of Statistics Reports
- Industry Survey Data (2024)