A STUDY ON INVENTORY MANAGEMENT PRACTICES AMONG ELECTRICAL AND HARDWARE RETAILERS

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ABSTRACT

Inventory management is a vital function in retail business operations, ensuring that the right products are available in the right quantity and at the right time. Effective practices minimize stockouts, reduce carrying costs, and enhance customer satisfaction. Conversely, poor inventory control can lead to excess stock, shortages, and reduced competitiveness. Electrical and hardware retailers face unique challenges because their inventory comprises both fast-moving products such as wires, switches, and bulbs, as well as slow-moving, specialized equipment. Managing this diverse product mix requires effective strategies to balance supply with fluctuating customer demand. The present study focuses on the inventory management practices adopted by electrical and hardware retailers in North Chennai, a region with a high concentration of small and medium enterprises.. The study employed a convenient sampling method and analysed data through percentage analysis and Friedman tests. The research examined socio-economic and business profiles of retailers, their current inventory practices, challenges faced, and strategies adopted to mitigate risks. Findings revealed that most respondents still rely on traditional, manual methods of inventory tracking, though some adoption of modern tools like inventory optimization software is emerging. Major challenges identified include inaccurate demand forecasting, lack of real-time visibility, and supplier delays. The study also found a significant preference for technology-driven solutions, such as inventory optimization software, compared to conventional methods like Just-in-Time (JIT).

Keywords: Inventory Management, Electrical and hardware retailers

INTRODUCTION

Inventory management is one of the most critical functions in retail business operations, as it ensures the right products are available at the right time and in the right quantity. Effective inventory practices help retailers balance customer demand with supply capabilities, reduce carrying costs, minimize stockouts, and improve customer satisfaction. In the absence of efficient systems, businesses often face issues such as excess inventory, stock shortages, increased operational expenses, and loss of competitiveness. Electrical and hardware retailers, in particular, face unique challenges in managing inventory due to the wide product variety, fluctuating demand, and dependency on suppliers. Their inventory often includes both fast-moving items such as switches, wires, and bulbs, as well as slow-

moving products like specialized tools and equipment. This dual nature makes inventory control both complex and essential. Retailers must constantly decide whether to rely on manual tracking, spreadsheets, or advanced methods such as Enterprise Resource Planning (ERP), inventory management software, or barcode/RFID systems.

In the Indian context, the retail sector has been growing rapidly, driven by urbanization, rising incomes, and infrastructural development. Within Chennai, the demand for electrical and hardware products is significantly increasing due to continuous construction activities, residential projects, and rising consumer needs. Retailers in this sector play a crucial role in connecting manufacturers and wholesalers with end-users, making inventory management a key determinant of their business success. However, many small and medium retailers still rely on traditional practices with limited adoption of modern technologies, which affects efficiency and profitability. Given this backdrop, it becomes necessary to study how inventory management practices are adopted and perceived by electrical and hardware retailers in Chennai. Understanding the methods used, their frequency of application, satisfaction levels, and effectiveness in aligning with customer demand will provide valuable insights. Such a study will not only highlight the current practices but also identify areas where improvements and modern strategies can enhance overall performance.

OBJECTIVE OF THE STUDY

- To study the socio-economic and business profile of electrical and hardware retailers
- To know the current inventory management methods
- To analyse the challenges faced by retailers in managing inventory
- To evaluate the effectiveness of inventory management practices

REVIEW OF LITERATURE

Immadisetty, A. (2025) The paper talks about how real-time inventory management might help avoid stockouts and overstocking, which are two big problems that have taken the most damage to stores. Retailers may use advanced technologies like RFID, IoT, and real-time analytics to keep track of their inventory, manage their supply chains, and make choices based on real data. This paper examines the causes and consequences of stockouts and overstocking, outlines best practices in real-time inventory management, and highlights the associated benefits, including enhanced operational efficiency, cost reduction, and an improved consumer experience. This article elucidates how real-time inventory systems enhance retailers' efficiency in meeting demand while minimizing stock wastage and lost sales opportunities, through diverse case studies and examples across numerous industries.

Pasupuleti, V. et.al (2024) The study employs sophisticated machine learning approaches to improve logistics and inventory management. Utilizing historical data from a multinational retail firm, encompassing sales, inventory levels, order fulfilment rates, and operational costs, we implemented various machine learning methods, including regression, classification, clustering, and time series analysis. The implementation of these machine learning models yielded substantial enhancements in critical operational domains. The method identified vulnerable shipments and facilitated client segmentation according to delivery preferences, resulting in more tailored service offerings.The findings illustrate the transformative capacity of machine learning in enhancing the responsiveness and data-driven nature of supply chain operations. The study highlights the necessity of implementing modern technologies to better decision-making, demonstrated in the business for the inventory.

Islam, M. K, et.al. (2024). This research compares quantitative and qualitative data from multiple nations to evaluate the adoption and integration of various technologies and their impact on supply chain optimization. The research process involves a thorough literature analysis using multiple databases and expert interviews within a particular timeframe. The study shows that AI and ML significantly improve efficiency, reduce expenses, and improve real-time data analytics and predictive maintenance. The article emphasizes the shift from theoretical to practical applications, emphasizing regulatory compliance and data integrity, indicating the industry's digital integration maturity. The study also examines the strategic significance of AI and ML in process design and the deployment of Industry 4.0 principles throughout the supply chain providing insights for future research and supply chain applications. The conclusion highlights the revolutionary potential of AI and ML, recommending their strategic application for supply chain resilience and adaptation.

RESEARCH METHODOLOGY

The present study adopts a descriptive research design to analyse the inventory management practices among electrical and hardware retailers in Chennai. The methodology followed is outlined below. The research was conducted in North Chennai, which is a prominent hub for electrical and hardware retail businesses. This region was selected as the study area due to the high concentration of small and medium retailers engaged in the sale of electrical and hardware products. The study is based on responses collected from 110 electrical and hardware retailers operating in North Chennai. (Perumbur, Purasavakkam, Sowcarpet ,Egmore,Kilpauk,AnnaNagar)The chosen sample size was considered adequate to draw meaningful insights into inventory management practices and business performance. The convenient sampling technique was employed to select respondents. Retailers were chosen based on accessibility and willingness to participate in the study. This non-probability sampling method was appropriate, given the practical challenges of reaching all retailers across the study area.Primary data was collected using a structured questionnaire, which included both closed-ended and

open-ended questions. The questionnaire covered aspects such as inventory control methods, stock replenishment practices, frequency of stockouts, technology adoption, and challenges faced in inventory management.

DATA ANALYSIS AND INTREPRETATION

Socio–Economic and Business Profile of the Respondents

The socio-economic and business profile of the respondents considered for the study are age, educational qualification, type of business, years of experience, scale of business and monthly income earned by the respondents in the electricals and hardware retail business.

Table 1

Socio–Economic Variables of the Respondents

Socio-Economic & Business Profile of Respondents	Sub-Categories	No of Respondents	Percentage
Age(years)	Below 25	10	9
	26 - 35	40	36
	36 – 45	30	28
	46 – 55	20	18
	More than 55	10	9
	Total	**110**	**100**
Educational Qualification	School Level	75	63
	Under Graduation	25	23
	Post Graduation	10	9
	Total	**110**	**100**
Type of Retail Business	Sole Trader	75	68
	Family-owned Business	10	9
	Partnership	25	23
	Total	**110**	**100**
Experience (Years)	Less than 5	10	9
	5 - 10	25	23
	11 - 15	50	45
	15 - 20	15	14
	More than 20	10	9
	Total	**110**	**100**
Scale of Retail Business	Small	55	50
	Medium	40	18
	Large	15	32

	Total	**110**	**100**
Monthly Income from Retail Business	Below ₹1,00,000	15	14
	₹1,00,001 - ₹1,50,000	25	23
	₹1,50,001 - ₹2,00,000	35	32
	₹2,00,001 - ₹2,50,000	20	18
	Above ₹2,50,000	15	13
	Total	**110**	**100**

Source: Primary Data

The table shows the highest number of 40 respondents ar from the age group of 26-35 years as there are the young generation who have started doing the business and few of them belong to the sole trading business where the risk and challenges are faced by themselves.10 respondents are young generation as they have just completed their education and know they are learning the strategies to do work. The 70 respondents have done their schooling in that few have just studied till 5th grade and these respondents belongs to the age group of above 55 years because in olden days education was not considered much important whereas 10 respondents have completed their PG, they give education more importance because they belong to family-owned business so they manage both business as well as studies

The sole trader in the business are with 68% as they hold the majority because they want to do all the works of their business by their own at the same they take the risk as well as the profit is owned by only them these respondents belong some 26-35 and few from above 55 years as they know exactly how to tackle with the situation. In case of experience the highest is 50 respondents having 15 years of experience among them belongs to the age group of 46-55 years where these respondents know how to run a business in profitable way. The respondents who has 5 years of experience are the young generation who has just now entered in the business and are learning thing.50% of respondents run a small scale business where the number of employees working are less than 5 as the business are few sole trade and few partnership in case of partnership already partners are there so they manage the work and few work left with the employees to do. The income are from ₹1,50,001 - ₹2,00,000 with 30 respondents as they know how make more profit so that they get good income from business

INVENTORY MANAGEMENT METHODS

The inventory management method predominantly adopted by the respondentsis examined using descriptive statistics. Based on the mean and standard deviation value, the most frequently used inventory management method by the respondents is identified.

Table -2

Inventory Management Method

Sl. No.	Inventory Management Method	Mean	SD
1.	Manual tracking	1.69	0.967

2.	Spreadsheets	2.37	0.920
3.	Inventory management software	2.88	0.882

Source: Primary Data

From the above table, it is inferred that the mean values of inventory management methods used by the respondent's range between 1.69 and 2.88, showing a progression from traditional to moderately advanced systems. Among the methods, Inventory Management Software has the highest mean value (2.88), indicating that it is the most frequently adopted approach by the respondents. This is followed by Spreadsheets (2.37), suggesting that a considerable number of respondents still rely on semi-manual tools for inventory management. The lowest mean value is observed for Manual Tracking (1.69), which shows that only a few respondents continue to depend on this basic method. t is therefore revealed that respondents are moving away from manual practices and increasingly adopting technology-oriented methods, with a growing preference for dedicated inventory management software

Significant Difference in the Mean Rank of Challenges Faced by the Respondents in Managing Inventory

Null Hypothesis: There is no significant difference in the mean rank of challenges faced by the respondents in managing inventory.

Alternative Hypothesis: There is a significant difference in the mean rank of challenges faced by the respondents in managing inventory.

Table -3
Challenges in Managing Inventory

Challenges	Mean Rank	Chi-square value & P value
Inaccurate demand forecasting	1.65	4236.59 <0.001**
Supplier delivery issues	3.67	
Storage space limitations	5.53	
High carrying costs	4.32	
Lack of real-time inventory visibility	2.66	

Source: Primary Data

Note: ** Denotes significant at 1% level

From the above table, it can be inferred that the P value is less than 0.01, the null hypothesis is rejected at a 1 percent level of significance. Hence, it is concluded that there is a significant difference among the mean rank of challenges faced by the respondents in managing inventory.

Based on the mean rank value, Inaccurate demand forecasting (1.65) emerged as the most critical inventory challenge faced by respondents, followed by Lack of real-time inventory visibility

(2.66) and Supplier delivery issues (3.67). High carrying costs (4.32) are perceived as a moderately pressing concern, while Storage space limitations (5.53) ranked as the least challenging among the listed factors. Finally forecasting inaccuracies are the most pressing inventory challenge, reflecting a need for improved predictive analytics and demand planning systems. On the other end, issues related to physical space appear less severe, possibly indicating that respondents have developed better infrastructure or adaptive strategies to mitigate such constraints.

FINDINGS

- The highest number of 40 respondents is from the age group of 26-35 years as there are the young generation who have stared doing the business and few of them belong to the sole trading business.
- The 70 respondents have done their schooling in that few have just studied till 5th grade and these respondents belongs to the age group of above 55 years.
- The sole trader in the business is with 68% as they hold the majority because they want to do all the works of their business by their own.
- The respondents who have 5 years of experience are the young generation who has just now entered in the business and are learning thing.
- The income are from ₹1,50,001 - ₹2,00,000 with 30 respondents as they know how make more profit so that they get good income from business.
- Among the methods, Inventory Management Software has the highest mean value (2.88), indicating that it is the most frequently adopted approach by the respondents.
- Based on the mean rank value, Inaccurate demand forecasting (1.65) emerged as the most critical inventory challenge faced by respondents, followed by Lack of real-time inventory visibility (2.66) and Supplier delivery issues (3.67).

CONCLUSION

The findings reveal that while many retailers adopt conventional methods such as manual tracking, reorder level systems, and basic stock registers, the adoption of advanced technological tools like barcode systems, ERP software, or POS-based inventory tracking remains limited. This gap often leads to challenges such as overstocking, stockouts, capital blockage, and increased carrying costs. The analysis further emphasizes that inventory management is not merely a back-end function but a strategic necessity that determines overall operational effectiveness. Retailers who employ systematic practices, maintain safety stock, and align procurement with demand forecasting tend to achieve better performance outcomes. However, the challenges of fluctuating demand, supplier delays, and lack of professionalized practices still hinder optimal results. Effective inventory management practices significantly enhance retailers' ability to balance supply with demand, reduce wastage, improve service

levels, and ensure long-term competitiveness. Strengthening inventory systems with technology adoption, training, and better supplier collaboration will help electrical and hardware retailers in Chennai overcome existing challenges and achieve greater efficiency in their business operations.

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