

Role of Artificial Intelligence in Inventory and Supply Chain Schwing Stetter

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ABSTRACT: Artificial Intelligence (AI) is becoming an important factor in improving the process of managing inventory in modern organizations. Conventional methods used in managing inventories were often faced with the problem of forecasting and unbalanced inventory and inefficiencies. The current study seeks to find out the part played by AI in inventory management at Schwing Stetter India, which is a leading company in the manufacture of construction equipment. A mixed-methods approach was used in the data collection process, where primary and secondary data were collected. Primary data was collected through the use of questionnaires and opinions of workers. Secondary data was collected from journal articles and the firm itself. The data analysis involved the use of percentage analysis, tables, and graphs. The results showed that AI is very important in demand forecasting, lowering inventory costs, enhancing warehouse management, and supplier collaboration. Despite worker satisfaction with the AI systems, some issues that emerged include the lack of training among the workers and costly implementation. However, it brings about efficiency in the process.

KEYWORDS: Artificial Intelligence, Inventory Management, Supply Chain Management, Demand Forecasting, Operational Efficiency, Cost Reduction, Automation

I. OBJECTIVE OF THE STUDY

Primary Objective

To know the part that AI plays in the management of inventory.

Secondary Objectives

- To know the usage of AI in the management of inventory.
- To learn about the impact of AI on demand forecasting.
- To learn about the impact of AI on cost saving.
- To know about the challenges of applying AI.
- To know about the efficiency level of the supply chain.

REASON TO CONDUCT THIS STUDY

This study is necessitated by the issues emerging during the management of inventories and logistics. These issues include:

- Variable demand
- Excess and shortages in stock
- Expensive inventories
- Delayed procurement processes
- Errors in manual handling

By using AI, we can find solutions for the problems highlighted above.

II. SCOPE OF THE STUDY

Scope of this study pertains to AI applications in the following areas:

- Inventory Management
- Demand Forecasting
- Supplier/Procurement Management
- Warehouse Management
- Logistics/Distribution Management

The scope of this study includes only a few departments, without going into programming issues.

III. REVIEW LITERATURE

Sunil Chopra and Peter Meindl (2020) As per the authors' statement in their book on supply chain management, traditional inventory management relies heavily on manual interventions. As per the authors' findings, lack of coordination among departments and inaccuracy of information are the primary causes for inefficiencies in supply chain management. Incorporation of technology ensures increased coordination in supply chain management.

Stuart Russell and Peter Norvig (2021) According to the authors, Artificial Intelligence is a system that learns through experience. As per the authors' analysis, Artificial Intelligence enhances the ability of organizations to predict outcomes, automate operations, and solve problems. Predictive analytics enhance the accuracy of demand forecasting.

Martin Christopher (2016) The author has pointed out that logistics play a crucial role in integrating the supply chain. As per the author's findings, modern technologies have helped to minimize delays, maximize coordination, and ensure efficient business operations. Incorporation of technology ensures increased efficiency in supply chain management.

P. Sharma (2021) A researcher has investigated the impact of Artificial Intelligence on supply chain management. It is found that Artificial Intelligence helps in improving demand forecasting. Moreover, it reduces operational costs. Findings of this research prove the use of Artificial Intelligence in inventory management.

R. Kumar and A. Singh (2020) The authors have investigated the impact of Artificial Intelligence in inventory management. They have found that predictive analytics increases inventory accuracy. Moreover, it avoids stock out problems. In addition, the findings of this research prove the use of automation in inventory management.

Samuel Fosso Wamba et al. (2020) The researchers have explained that Artificial Intelligence along with big data analytics can improve transparency in supply chains. Furthermore, they help in improving efficiency. As per the findings of these researchers, real-time data helps in decision-making.

Dmitry Ivanov & Alexander Dolgui (2020) The authors talk about digital systems for supply chains. It was observed by the authors that using AI makes disruptions less frequent, improves planning, and makes the system more flexible.

Hokey Min (2019) The author talks about the use of AI technology in planning logistics operations. According to the author, optimization of routes leads to reductions in operational delays.

A. Gunasekaran et al. (2017) The authors talk about the use of big data and AI technology in order to increase productivity. Automation of operations reduces manual efforts according to the authors.

R. Dubey et al. (2019) From their research, it was concluded that AI technology can be utilized for improving supply chain operations and achieving competitive advantage for firms. However, their research also pointed out certain challenges of AI technology, including costs and training for employees.

IV. DATA ANALYSIS – EFFECT OF DIGITIZATION ON MANAGERIAL EFFECTIVENESS

- Most employees know about the use of AI systems
- There is an implementation of AI systems in supply chain management activities

- Prediction of demands became more accurate
- Minimization of inventory costs
- Improvement in delivery activities
- High level of satisfaction among employees
- Concerns related to training costs

V. CONCEPTUAL FRAMEWORK

This research will concentrate on:

- Independent variable: Artificial Intelligence (AI)
- Dependent variable: Managerial Effectiveness

Artificial Intelligence consists of:

- Demand forecasting
- Inventory optimization
- Automation
- Data analytics

Managerial Effectiveness consists of:

- Decision-making ability
- Planning Efficiency
- Communication
- Monitoring & Control

Artificial Intelligence boosts up managerial effectiveness through accurate data and support.

VI. CONCLUSION

The study has found that AI has a major part to play in helping manage the inventory or supply chain.

Another conclusion drawn from the study is that although the adoption of AI technology was faced with some difficulties, the adoption of AI technology has been quite beneficial for the performance of the employees.

VII. SUGGESTION

- Employee training programs regularly
- Adoption of latest technologies through AI
- Forecasting model improvement with AI
- Warehouse automation through AI
- Supplier integration improvement with AI
- Lowering costs through AI
- Data management improvement with AI
- Evaluation of systems regularly with AI
- Awareness of employees about AI

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