AI in Inventory Management: A Study Concerning the Indian E-Commerce Companies

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ABSTRACT

At present, effective and efficient inventory management is a critical challenge for Indian E-Commerce companies. AI is being used in inventory management to control the flow of inventory, reduce cost and avoid supply chain descriptions. This study explores the application of AI in Indian E-Commerce companies for inventory management from various aspects. The findings suggest areas of improvement that must be taken into consideration, such as Data Privacy and safety, Standardization and regulations, etc.
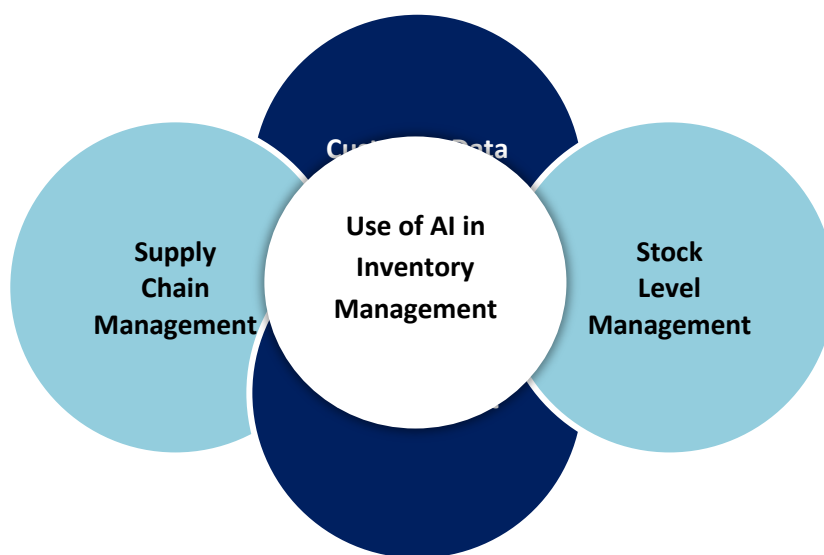
Key Words
artificial intelligence, inventory management, e-commerce, supply chain, quality control, stock levels, overstocking, stock out.

INTRODUCTION

Online shopping has become the most common practice for every household. India was the second-largest online market, with over 821 million users in 2023. However, it becomes very crucial for Indian E-Commerce giants to maintain their inventories effectively.

In recent years, AI has emerged as a tool for inventory management, analysing customer databases, forecasting demands, analysing different inventory levels, product quality control, etc. It also enables the company to reduce cost and supply chain management. This study focuses on adaptation and the use of AI in the Indian e-commerce industry for effective inventory management.

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Customer Data Collection and Satisfaction

AI helps to gather customer data from various sources such as mobile applications, social media, emails, and websites. Based on this data, E-Commerce companies can offer and suggest a variety of products according to customer needs. For this, AI can be used in the following manner,

- **Order history and targeted marketing**

AI identifies customers' order history to know buyers' motives and preferences. It also helps to formulate and improve advertisement strategies according to the customers.

- **Surfing analysis and product recommendation**

Customers' online search activities and product preferences can be tracked by AI-powered solutions to understand customers' interest in products.

- **Geographical suggestions**

AI itself suggests products to the customers according to the weather and geographical conditions by tracking their live locations.

- **Feedback analysis and improvement**

Chatbots and virtual assistants that are created by AI technology collect customers' feedback and suggest areas of improvement.

Stock Level Management

AI made it easy to maintain different types of stock levels without overstocking or stock out as compared to manual methods. For example, IoT sensors.

- **Real-time stock monitoring and tracking**

AI-assisted software tracks stock levels in real time, such as a minimum order level, maximum order level, EOQ level, buffer level, etc, which guides companies for any changes in stock level.

- **Stock replenishment**

With the help of AI programs, stock can be refilled automatically, ultimately reducing man-made errors.

- **Cost control**

E-commerce companies can adopt AI systems in inventory management to reduce costs.

Supplier Management

AI can analyse company's supplier data to identify the most cost-effective supplier, which benefits the companies to get the best deals. AI indicates different inventory levels, such as minimum and maximum order levels, reducing excess order costs, carrying cost, transportation charges, etc

Supply Chain Management

AI-generated data can be used to identify the most reliable interested supplier as well as to identify different levels of stock, such as stock out and stocking, which results in effective supply flow management without disruption.

AI algorithm interprets past sales data, customer preferences, recent market trends, and the ends and the most demanding products, enabling companies to maintain supply flow accordingly.

RESEARCH METHODOLOGY

Secondary Data

Secondary data are used for this research. It is gathered from the company's internal archives and websites, Research Journals, Magazines, and trade publications. It is to evaluate the current implications of AI for Inventory Management by Indian e-commerce businesses.

FINDINGS

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This study identifies some benefits of AI implication in inventory management by Indian E-Commerce companies, including inventory cost control, customers' buying motives and demands, improved flow of supply marketing strategies, and customer feedback.

However, AI also poses several challenges that businesses should address. Such as, data privacy, data quality, job displacement, customer trust, Lack of training to AI personnel, high implementation cost, and lack of regulations. By resolving these challenges, businesses can build trust with their customers and maximize profit.

SUGGESTIONS

- **Establishment of industry-wise standard**

The E-Commerce industry and the government should develop standards and regulations for the adaptation of AI in inventory management.

- **Technical advancement in cyber safety**

The company should develop more advanced customized solutions for inventory management and look after data privacy and safety

- **Training in development for AI personnel**

An E-commerce company must provide training in development for AI personnel for accurate use of AI and Data Analytics

COCLUSION

This study has emphasized the adoption and use of artificial intelligence (AI) in inventory management and its benefits in the Indian e-commerce industry. The findings suggest that companies should consider the establishment of industry-wide standards, cyber safety, training and development for AI personnel, job displacement, etc.

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