E-COMMERCE AND DIGITAL BUSINESS

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Chapter – 5

EXPLORING MANAGEMENT TOOLS IN PREDICTING EFFECTIVE SUPPLY CHAIN

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Abstract

Supply chain discipline being one of the robust industry have been using various analytics and management tools and have become more robust and resilient. Various analytics related tools like descriptive, predictive and prescriptive are used for future prediction and to know the customer patterns.

Keywords: *management tools, supply chain*

Introduction

Logistics and supply chain deals with flow of goods from manufacturers through retailers, distributors and third-party logistics to customers. Customers do play a vital role in determining the demand patterns and behavior in all the field. The world of supply chain is 60 years old. The power of supply chain grew from industrial revolution. The function supply chain has contributed to various disciplines. Supply chain discipline plays a vital role to business. This has helped to generate better returns to business and strategic partners.

The major objective of supply chain is to provide customer value. This helps to provide supply chain costs. This has developed supply chain surplus and profitable situation. As the years have evolved analytics have joined hands in contributing to the discipline. Analytics helps to provide a clear cut understanding of the profit-making is provided. It provides a better data visualization and strong statistical correlation among the variables responsible for successful supply chain. In this article, the various management tools responsible for predicting effective supply chain will be discussed.

Objectives of the study

To explore various management tools in predicting effective supply chain.

Review of Literature

The supply chain discipline has been experiencing uncertainty for long period of time. There are proactive analytical tools that helps to solve the problem as per the research (Dani, 2009). Artificial Intelligence is one of the significant tools that helps to understand the demands, forecast supply chain patters, optimize the inventory level and

increase the operational efficiency. AI helps to leverage the data and helps to balance the economic shifts that arises due to external factors.

Through the usage of AI-based tools, organizations can effectively predict demand patterns, minimize stockouts, optimize lower excess inventories, which ultimately enhances operation efficiency and customer satisfaction. AI-based systems utilize past data, market trends, and external inputs like economic changes according to the study by the authors Nweje, Uche and Taiwo, Moyosore (2025). As per the same study by the authors also reveals that data helps to bring the required transformation and helps to adopt necessary decision making.

Modern tools in Supply chain

Forecasting is one the most vital tool as to supply chain: They comprise of Time Series Analysis through which historical sales and demands can be predicted. Causal Models forecasting helps to Links demand to external factors like marketing campaigns, GDP growth, or weather. Machine Learning Forecasting helps to understand complex patterns.

Inventory Management Systems: comprise of economic order quantity which helps in optimizing inventory and order costs. ABC analysis is also used as one of the management tool which helps to categorize the products and have priority in inventory. Just in time is used in manufacturing and automobile industry as part of supply chain which helps to replenish the stock and reduce storage costs.

Supply Chain Analytics: Platforms uses Descriptive Analytics, Predictive Analytics and Prescriptive Analytics which helps to suggests optimal actions based on predictions.

Supplier Performance Monitoring Tools: another vital management tools comprise of Supplier Scorecards which Predicts potential supply issues based on past delivery performance. For predicting global political conditions or financial instability, Risk Management Tools is recommended.

Other vital tool like Blockchain integration for transparent, real-time data sharing, IoT sensors for real-time supply chain visibility and to make supply chain resilient.

Conclusion

In spite of various challenges existing in supply chain the listed management tools will help the organizations to march towards a modern decision making based on data that will help the industry to take appropriate decisions and make the industry more robust.

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