

A Data-Driven Research on Optimizing Supply Chain Logistics for Manufacturing Companies: A Predictive Modeling Approach

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ABSTRACT

This research paper aims to explore the application of data-driven predictive modelling techniques to optimize supply chain logistics for manufacturing companies. The study focuses on harnessing the power of data analytics, machine learning, and artificial intelligence to develop accurate and efficient predictive models that enhance decision-making processes within the supply chain domain. By analyzing historical data and key performance indicators, this research seeks to identify factors influencing supply chain efficiency, such as demand forecasting, inventory management, transportation planning, and distribution network optimization. The paper emphasizes the importance of leveraging advanced analytics to improve the overall performance of manufacturing supply chains, reduce costs, minimize lead times, enhance customer service, and enable a competitive advantage in a dynamic and complex business environment. The proposed predictive model aims to bridge the gap between theory and practice, offering actionable insights to industry professionals and decision-makers, while also contributing to the body of knowledge in the field of supply chain management.

INTRODUCTION

As businesses continue to grow and expand so does the complexity of their supply chains. In order to remain competitive, it is crucial for companies to find ways to optimize their supply chain processes, reduce costs, and improve efficiency. One of the most promising technologies in supply chain management (SCM) is predictive analytics, which has been around for decades but has only recently become mainstream and affordable enough to be used by small and medium-sized businesses. With predictive analytics, companies can improve their supply chains in ways that were simply not possible before.

So, what exactly is predictive analytics? Simply put, it is a branch of statistics that uses past data to predict future events or behaviours. In the context of supply chain management, predictive analytics can be used to generate better demand forecasts, optimize inventory levels, and reduce costs by reducing waste. By analyzing historical data on factors such as shipment volume, weather patterns, and traffic conditions, companies can identify patterns and trends that can be used to make more accurate and proactive supply chain decisions.

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