

Abstract

This research explores the impact of real-time data analytics on decision-making in manufacturing, focusing on how instant access to data influences operational efficiency, production quality, and overall decision processes. In an increasingly competitive manufacturing environment, timely data is essential for making informed decisions that can reduce downtime, optimize resources, and improve product quality. By examining the role of real-time analytics, this study aims to determine how it can support manufacturers in making quick, data-driven decisions that enhance performance and reduce operational risks.

A mixed-methods approach is used to provide a thorough understanding of real-time data analytics' influence on decision-making in manufacturing. The quantitative phase involves analyzing production data, such as machine performance, cycle times, and defect rates, to evaluate how real-time insights impact decision-making efficiency and productivity. Statistical techniques are employed to determine the correlation between real-time analytics and key manufacturing metrics. The qualitative phase consists of interviews with manufacturing managers, operators, and data analysts to explore how real-time data is integrated into daily operations, the challenges encountered, and the perceived benefits of using analytics in decision-making.

The findings from this study highlight the critical role of real-time data analytics in enhancing decision-making processes within manufacturing environments. By combining both data-driven insights and expert perspectives, the research offers actionable recommendations for manufacturers looking to leverage real-time analytics to improve operational efficiency, reduce costs, and make more informed decisions.