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Master's Dissertation 2022

Cost-Effectiveness Analysis and Inventory Control Process in FMCG Beverage Industry

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Graduate School of System Design and Management,
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SUMMARY OF MASTER'S DISSERTATION

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Title

Cost-Effectiveness Analysis and Inventory Control Process in FMCG Beverage Industry

Abstract

The COVID-19 crisis has caused major supply chain disruptions, pushing most companies to review their expenditures to survive in the market. The aim of this study is to empirically investigate the impact of human-driven inventory loss in automatic replenishment programs and identify the potential benefits of improving this issue in the Fast-Moving Consumer Goods (FMCG) Beverage industry. The work has been designed as a case study, focusing on the replenishment process from raw material procurement to end customer service, among various stores and warehouses. Inventory loss metrics of products ordered through an automatic replenishment system are explored with the critical compositions of the system, which is located by utilizing the Model-Based Systems Engineering (MBSE) approach. This approach was chosen because it provides a comprehensive view of the system and its critical components, making it possible to identify areas for improvement. By contrasting the historical inventory loss data stored in the system and the result of longitudinal field research, the study was able to provide a more accurate picture of the impact of human-driven inventory loss. The study suggests that the impact of human-driven inventory losses and employees' misconduct at stores is often underestimated and can result in a considerable financial burden on a company's fiscal expenses. Furthermore, the study reveals that reducing the inventory waste rate positively affects a company's overall financial performance. In addition, the study indicates that improving the quality of information sharing across different sections and organizations in the supply chain is indispensable to better benefit from the automated system. These results have significant implications for middle-line managers and company decision-makers with similar situations in the industry. They provide a roadmap for quickly investigating internal performance and identifying the components and practices of supply chain management to focus on to improve organizational performance.

Keywords (5 words)

Automatic replenishment; Inventory waste; FMCG Beverage supply chain management; Organizational performance; Model-Based Systems Engineering (MBSE)