7. Operation Research and Analysis

PROPOSED IMPROVEMENT INVENTORY SYSTEM TO REDUCE CIGARETTE STOCKOUT AT CV AJISATA

FINAL PROJECT

Submitted in Partial Fulfilment of the Requirements for the Degree of Bachelor of Engineering in Industrial Engineering

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I hereby declare that my final project with the title "Proposed Improvement Inventory System To Reduce Stockout At CV Ajisata" is the result of my research in the 2023/2024 Academic Year which is original and does not contain plagiarism from any work. If in the future there is a discrepancy with this statement, then I am willing to be prosecuted and processed in accordance with applicable regulations including revoking the bachelor degree that has been given at Universitas Atma Jaya Yogyakarta to me.

Yogyakarta, November 27, 2023

Carlo Febriano W. E. Junior

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ABSTRACT

Indonesia, a nation with a thriving cigarette industry, plays a vital role in the national economy, providing employment to approximately 6.1 million people. With the country ranking third globally in active smokers, the 2021 Global Adult Tobacco Survey reveals a notable increase in adult smokers, reaching 68.1 million, and an average monthly cigarette expenditure of IDR 382,091.72. Cigarette production, as reported by the Directorate General of Customs and Excise, spiked to 27.79 billion cigarettes in July 2023, a 14.22% rise from the previous month and an 8.64% increase from the previous year.

In this context, many retail stores engage in the buying and selling of cigarettes, including CV Ajisata, located in Mertoyudan, Magelang. Offering four distinct products—Tani Madjoe, CK, Asshika Habbat, and Asshika Gold—the store faces challenges in its manual sales system, lacking data analysis for supplier orders and a historical goods data recording system. Relying on manual stock checks and personal opinions for ordering has led to human errors and frequent delays in ordering, resulting in stockouts. This thesis employs the non-linear design thinking process to propose improvements at CV Ajisata. Using methods such as the Min-Max and perpetual inventory systems, the study develops a digital simulation system in Microsoft Excel.

Results demonstrate a substantial reduction in stockouts: Gold (-20%), Habbat's (-64%), CK (-40%), and Tani Madjoe (-27%). The background underscores the critical role of inventory management for retail sustainability. CV Ajisata's transition from a manual to a digital system not only significantly minimizes stockouts but also aligns with national trends in the cigarette industry. The findings provide valuable insights for businesses grappling with inventory challenges in the dynamic landscape of the Indonesian tobacco market.

Keywords: Retail, Stockout, Min-Max, Inventory, Management