Decentralized Inventory Control for Enhanced Efficiency in a Luxury Automobile Agency

Maritza Viridiana Victoria Castro[1*], Anelisa Andrea Davila Ferreiro[1], Iván Pacheco Soto[1]

[1]Instituto Tecnológico y de Estudios Superiores de Monterrey, Culiacán, México

*Correo electrónico: A01741165@tec.mx

Abstract

Inventory management in luxury automobile agencies presents unique challenges due to the diverse product offerings, specialized parts, and the high expectations for exceptional customer service. Unlike standard car agencies, luxury car agencies maintain extensive inventories to cater to the various customization options and longer product lifecycles associated with premium vehicles. This study presents an implementation of a decentralized inventory control system, focusing on data processing, analysis techniques, and the integration of localized inventory management systems.

Conducted in a luxury automobile agency, this research addresses the issues of low inventory turnover, high overstock percentages, and a significant proportion of slow-moving inventory. Despite using a complex national inventory management system that reports key inventory indicators, the agency lacked the flexibility to tailor strategies to better suit local needs. To address these requirements, a customized Balanced Scorecard (BSC) was developed, providing a strategic framework for better inventory management.

To manage obsolete and slow-moving products, a revised ABC classification was designed to prioritize high-sales-value items. Recalculation of reorder points was analyzed to achieve an ideal balance between availability and efficiency. Advanced data analytics, including Python, were employed for this analysis. Additionally, a Excel template was created to manage the spare parts inventory, and a Power BI dashboard was developed to visualize key indicators for the decision-making process. The financial feasibility of this strategy is highlighted, noting the cost-effectiveness of using tools like Power tools with minimal additional investment required.

By shifting to a decentralized model, luxury automobile agencies can reduce their dependence on national inventory controls, leading to more efficient operations and better alignment with local market conditions. The expected outcomes of this decentralized approach include improved classification accuracy, optimized reorder points, and continuous integration of sales data into inventory management systems, fostering a culture of continuous improvement. By empowering local agencies with greater control and utilizing advanced analytical tools, luxury automobile agencies can achieve a more efficient and responsive inventory management system, ultimately enhancing their service quality and profitability.