

Management Model 4.0 for Planning and Control of Production in the Cauca Liquor Industry (Ilc)

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Abstract

Industry 4.0 plays a crucial role in optimizing industrial processes, particularly in sectors with fluctuating demand and operational challenges (Jacobs et al., 2018). The Cauca Liquor Industry (ILC) faces significant difficulties in production planning and control due to inaccurate forecasts, lack of coordination between departments, and limited integration of digital technologies (Castro Zuluaga, 2020). Traditional forecasting methods, such as moving averages and linear regression, are no longer sufficient in a globalized market, leading to inefficiencies and cost overruns.

The adoption of emerging technologies, including machine learning and advanced analytics, has proven effective in improving forecast accuracy and optimizing decision-making processes (Rouhiainen, 2020; Ramasubramanian & Singh, 2019). These tools enable the processing of large data volumes, the identification of hidden demand patterns, and the reduction of operational uncertainty.

This article presents the design and implementation of an Industry 4.0 management model for the ILC, integrating advanced technologies to enhance production planning and control. The proposed approach involves a comprehensive process restructuring, from system characterization to resource optimization using machine learning algorithms. The goal is to position the ILC as a leader in innovation and efficiency within the alcoholic beverage sector, aligning its operations with digital transformation trends (Kaplan & Norton, 2008).

Keywords

Industry 4.0, Production planning, Production control, Demand forecasting, Resource optimization and Digital transformation.

Biographies

Jhon Leander Gómez Gómez is a student of the Industrial Engineering program at the Fundación Universitaria de Popayán, member of the TIPS 4.0 and PI research group.

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