

KPI-Based Management Dashboard for Hotel Industry: A Case Study of Eland Park

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Abstract

The hotel industry has experienced increasing demand volatility and accelerated digital transformation, underscoring the imperative for data-driven management systems. Hotel operations generate substantial volumes of data, including room sales, revenue, and reservation patterns, which require integrated analysis for effective managerial decision-making. This study develops a KPI-based management support dashboard specialized for the hotel industry using operational data from Eland Park. It proposes a data-driven management framework integrating demand forecasting and standardized KPI. The system is conceptualized as a unified platform that combines KPI visualization and predictive analytics. Excel and CSV datasets were preprocessed using Python pandas, and key indicators were computed and visualized in a web-based dashboard supported by a Flask server. Interactive features such as hover, click, and drill-down allow hierarchical exploration of KPI components and underlying data. Furthermore, an ARIMA-based time series forecasting model was applied to anticipate hotel reservation demand. Based on prediction errors between forecasted and actual values, early warning thresholds were established to support proactive responses. The proposed system integrates data processing, KPI monitoring, and forecasting functions into a singular platform, enabling access to operational insights and supporting data-driven decision-making in hotel management.

Keywords

Data Analytics, Data Visualization, Demand Forecasting, Decision Support System, and Business Intelligence

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