

Assessing the Impact of Strategic Planning on Business Environmental Risks: A Machine Learning Approach Using Linear Regression and Predictor Importance Ranking

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ABSTRACT

Aim: This article aims to establish how strategic planning influences the management of business environmental risks in the supply chain industry.

Design/Method: This article uses quantitative and Python approaches to evaluate the supply chain dataset. The data contains variables such as the order status, the shipping time, per-customer sale, and delivery status. The 'Order Item Total' was taken as the dependent variable. Linear regression and Random Forest models have been used to examine the data.

Findings/Results: The findings suggest that sales per customer and shipping time, which are subcomponents of strategic planning, directly affect the total number of items ordered. The value obtained for the linear regression model was good; this shows the model's strength in explaining the proportion of total variance in the number of orders placed. The Random Forest model, in this case, pointed out which predictors were more important than the others, where notably, sales per customer and shipping time were considered most important. These conclusions specify the need for better supply chain management and precise customer-oriented activities to increase business outcomes.

Keywords: *Strategic Planning, Business Environmental Risks, Supply Chain, Linear Regression, Random Forest, Order Item Total.*