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Facultad de Ingeniería

Carrera de Ingeniería Industrial

USO DE APRENDIZAJE AUTOMÁTICO PARA PREDECIR LA UTILIDAD EN LA DISTRIBUCIÓN DEL GLP EN LIMA METROPOLITANA

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Uso de Aprendizaje Automático para predecir la utilidad en la distribución de GLP en Lima Metropolitana

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Abstract:

The present descriptive quantitative research tries to find out which machine learning model is the most efficient to predict the utility of a bulk liquefied petroleum gas trading company in Metropolitan Lima. To determine daily profit, which will be a variable dependent on the output model. This dependent parameter has 5 independent variables and the highest correlation coefficient values. Within the independent parameters are sale price, quantity sold, purchase cost, transportation cost and kilometers traveled.

There are several machine learning models, for this research the Artificial Neural Networks, Multiple Linear Regression and Random Forest models will be used, which estimated the utility through their own mathematical algorithms. To simulate the algorithms of the mentioned models, the Python program will be used. These models were trained for learning and validation of 70% and 30% of the database, that is, of the 235 data that were recruited, 165 data were used to calibrate and 70 data to validate. When making the comparison between the automatic learning models for the estimation of the daily utility of the trading company, the Random Forest model was obtained as the best option, obtaining an R^2 of 0,959 and also having the lowest statistical error rates with respect to the models. of Artificial Neural Networks and Multiple Linear Regression.

Keywords: Machine Learning, artificial neural networks, multiple linear regression, Random Forest and predictive models.

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