

# Improving the Customer Profit Margin Forecast Based on the LRFMC Model in B2B Enterprise Setting

Yizhe Xu<sup>1</sup>, Daniel Hulme<sup>1</sup> and Ruby Khan<sup>2</sup>  
<sup>1</sup>University College London, <sup>2</sup>Air Partner

## Project Background

In the market environment with overcapacity and products homogeneity, enterprises must be able to compete in an invincible position, not only need efficient internal management, but also need to draw persona to help the team better understand the characteristics and behaviour of users, so as to accurately judge the problems they face and real pain points. When sales meet the specific needs of users, especially when making some emotional judgements, customer segmentation will remind us of real challenges of customers and the prediction of product acceptance.

## Data and Methods

The CJ dataset contains five different product data, with only 'cj-ad hoc' and 'Tour Ops' data used in the project. The study included 18,022 company-customer interaction data, revenue data, aircraft model, customer geography and company category statistics. The dataset extracted transaction information from 2014-04-01 to 2019-07-22 from the previous system, and there are a large number of duplicate and missing values. The data set contains a large number of zero values, not missing values, but affects the validation of machine learning model. These techniques are combined with machine learning tools like Logistic Regression, Random Forest, Support Vector Machines, Decision Trees and Adaboost to predict order margins. Figure 1 summarizes the method.

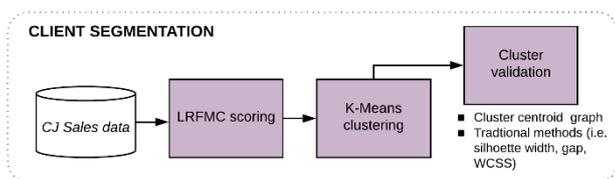


Figure 1: Flow diagram for the methodology

## Key Findings

An overview of the sales distribution shows an important 80/20 principle with an average customer profit of £48,194.06. LRFMC visualizations typically focus on exploiting the differences between marketing or other business-related purposes. Here, unsupervised learning k-means is used instead of a single LRFMC feature to visualize radar graph clustering. Through the following customer characteristics: sales can develop a more accurate marketing plan to meet

the needs and can be used as an effective training mode.

Figure 2 provides the classification results for the final ensemble model through testing data prediction. After exploratory analysis and data modeling, customer samples are classified into five categories based on the characteristics, and product acceptance for each industry type is counted in each market segment.

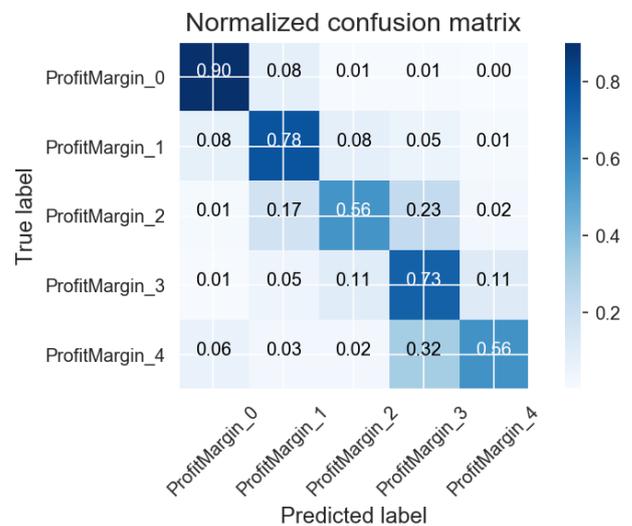


Figure 2: Confusion Matrix

## Value of the Research

The results of the study demonstrate the importance of the LRFMC model for quantifying user lifecycle value. If implemented by the aircraft leasing company, the classification model created in the project helps the business to improve the operational ad output value while providing business advice for sales more intuitively. In addition, through the analysis results, the enterprise can understand the difficulties customers faced behind the order customarily, and make plans for wider range of customers with similar behaviors.