CUSTOMER LIFETIME VALUE EVALUATION AND IMPROVEMENT RECOMMENDATION USING RFM MODEL AND DATA MINING TECHNIQUES : A CASE STUDY IN PT. XYZ

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Abstract
In the era of business nowadays, the companies put their customers as one of their important assets. The companies need to establish a good customer relationship management in order to retain their customers. The companies can begin their customer relationship management by evaluating the customer lifetime value (CLV), since the CLV can provide the basic information required to perform the marketing strategy with specific targets. Since the appropriate marketing strategy can be adopted to provide recommendations for the improvement of the companies’ CLV; therefore, an application for the CLV evaluation and its recommendation improvement needs to be realized.

The application of CLV evaluation and its improvement recommendation implemented in this final project is intended to be used as a supporting tool to determine customer segmentation, understand characteristics of customer RFM values, and prepare marketing strategies for customers. The CLV segmentation process begins with calculating the value of weighted RFM (Recency, Frequency, Monetary) for every customer using the analytical hierarchy process (AHP); which is then continued with the process of customers clustering using a fuzzy c-means (FCM) algorithm. The resulting customers segmentation that has
been rated using the TOPSIS method is then mapped into a marketing strategy based on RFM value of each segment. Each segment of customers is accompanied with a program recommendations and its associated marketing activities suggestions for improving the CLV of every customer using item-to-item collaborative filtering algorithms.

The application of CLV evaluation and its improvement recommendation that has been successfully implemented using R programming language is capable of classifying customers into four segments and maps their associated marketing strategies into three classes; i.e., enforced strategy (for customers having low value of recency, and high value of frequency and monetary), new customer strategy (for customers having low value of recency, frequency, and monetary), and let-go strategy (for customers having high value of recency, and low value of frequency and monetary). In addition to this, the application also provides a simple user-interface to enable the company to observe the position of a customer in its associated cluster and to determine the product recommendations that can be applied to support the implementation of its marketing.

**Keywords:** RFM analysis, customer lifetime value, fuzzy c-means, TOPSIS algorithm, marketing strategy