ABSTRACT

IMPLEMENTATION OF DATA MINING FOR TELKOMSEL PRODUCT BUNDLING RECOMMENDER SYSTEM WITH COLLABORATIVE FILTERING METHOD

By

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The rapid development of technology in this modern era seems to require people to follow it, especially communication technology. One of the communication tools that almost everyone has is a cell phone. In Indonesia, mobile phone users continue to increase from year to year. This makes telecommunication service providers trying to provide products that support the needs of the community in using cell phones, one of them is Telkomsel Indonesia. To be able to maintain sales and remain competitive with competitors, one of the promising sales strategies is product bundling. Telkomsel offers a product bundling in the form of a SIM card that is sold together with a cellphone product in collaboration with the company and the cellphone company, which is called the Telkomsel Android United (TAU) package. The number of brands and types of cellphones that exist sometimes make it difficult for companies to determine what cellphone is good to make product bundling, because there are many considerations that need to be taken into account, such as products, buyers, and sales. For that, the solution offered is the design of a recommendation system for Telkomsel TAU product bundling. A recommendation system is a type of information filtering system that aims to predict user ratings or preferences on a given item. The recommendation system in this study was built using item-based collaborative filtering with the K-Nearest Neighbors algorithm. The data used are Telkomsel customer data on two different dates, 14 days apart. The research was conducted with the stages of selecting data, preprocessing data,

assigning roles to each selected column, separating training and testing data, implementing the K-Nearest Neighbors algorithm, then analyzing the testing results. The test is carried out by measuring the Area Under Curve (AUC), Normalized Discounted Cumulative Gain (NDCG), and Mean Average Precision (MAP) with the aim of measuring the quality of the recommended items provided to the user by the system. Tests were carried out with the conditions of k values of 10, 20, 30, 50, and 80. The best performance values were obtained when k was 10, with the results of the AUC value of 0.295, the NDCG value of 0.126, and the MAP value of 0.025.

Keyword: recommender system, product bundling, item-based collaborative filtering, K-Nearest Neighbor