ABSTRACT

In line with the development of globalization, the role of telecommunications is required to run quickly and stably. Technology and the internet are prestige and indicators of a country's progress. The increase in technological development is also proportional to the increase in internet use every day. The internet network quality in Indonesia is still low, with increasing network usage, which continues to increase, causing a higher possibility of network congestion. Network congestion happened to PT XYZ, one of Indonesia's largest telecommunication companies. The problem at PT XYZ is that high internet usage often causes network congestion. These problems can be overcome by making predictions with algorithms that can process large-scale data. The algorithm used in this study is Long Short-Term Memory (LSTM). The design of the implementation of the prediction model that will be carried out in this study uses the CRISP-DM method, a development method with a sequential system. There are several stages in designing the model: business understanding, data understanding, modeling, and testing & evaluation. The design and testing in this study also followed the company's business rules. After testing and evaluating the model and its parameters, the performance results for each LSTM model are obtained with a performance error value of MAE not more than 0.7, RSME not more than 1.5 and an average performance R2 score of 0.984 or 98.4%.

Keywords: ***Network congestion, Prediction, Deep Learning, CRISP-DM Long Short-Term Memory (LSTM)***