

# Defaulter Prediction in the Fixed-line Telecommunication Sector Using Machine Learning

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In the modern connected era, the telecommunications sector plays a critical role in enabling efficient business operations across all industries. However, defaulting customers who fail to pay their dues after consuming services remain a significant challenge in the industry. Defaulters pose a risk to service providers, calling for measures to lessen both the probability of occurrence as well as its impact. Early identification of defaulters through prediction is a possible solution that enables proactive measures to mitigate the risk. However, the nature of the fixed-line product segment poses additional constraints in identifying defaulters, highlighting an existing knowledge gap. The research aims to evaluate the effectiveness of machine learning as a technique for the prediction of defaulters in the fixed-line telecommunication sector, and to develop an effective predictive model for the purpose. The success of machine learning techniques in analysis and prediction over traditional methods prompted its use in this study. The study followed the design science research methodology. An analysis was conducted based on past transaction data. Special consideration was given to the scenario of customers with little to no transaction history. Based on the analysis, a feature list for identifying defaulters was compiled, and multiple predictive models were developed and evaluated in comparison. The resulting predictive model, which uses the Random Forest technique, shows high performance in all considered aspects. The findings of the study demonstrate that machine learning techniques can effectively predict defaulters in the fixed-line telecommunication sector, with significant implications for mitigating the risk associated.

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