

Enhancing Financial Risk Management through Predictive Analytics: Models, Methods, and Case Applications

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Abstract: *With data-driven decision making on the rise, financial institutions are under greater pressure than ever to manage risk more effectively. Predictive analytics — using past data, statistical techniques, and machine learning algorithms — has proven to be a powerful tool to identify some financial risks before they occur. As such, this paper discusses the role of predictive analytics in the cost-effective management of financial risks including credit risk, market risk, and operational risk. We compare traditional risk models with advanced techniques such as logistic regression, decision trees, random forests, and neural networks. Using a public dataset, a machine learning technique case study for predicting credit default highly outperformed older techniques. The case study also analyses the characteristic problems of model data, such as its quality, how the model will be obfuscated, and whether it will comply with regulations. This study suggests ways to apply mentorship modelling within the framework of predictive modelling for enterprise risk management.*

Keywords: decision making.

