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## Predictive Analytics for Risk Management in

## Finance

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Abstract: Predictive analytics usage in financial sphere has revolutionized the customary risk management as it gives financial institutions the chance to anticipate, evaluate and thwart a broad range of risks. With machine learning, artificial intelligence, and statistical models, financial organizations have a chance to identify early warning signs about credit defaults, fraud, market volatility, and operational lapses. With some primary and secondary data, this work focuses on these applied scenarios: credit scoring, fraud detection, and market risk prediction. Such tools as logistic regression, decision tree, random forest, and neural network are compared regarding risk prediction. Real-life effectiveness is indicated in case studies of ICICI Bank and JPMorgan, as well as pilot projects. Also, the paper touches upon such essential problems as algorithmic explainability and transparency, data quality, and regulatory compliance. The study concludes that predictive analytics is becoming a powerful tool in terms of anticipating risk, operational responsiveness, and compliance preparedness. Yet, execution should be coupled with the governance frameworks, which offer interpretability of the models, data integrity, and responsible AI utilization.

**Keywords**: Predictive Analytics, Credit Scoring, Fraud Detection, Financial Risk, Machine Learning, Compliance, Big Data, Financial Forecasting



