**How AI is Transforming Risk Management in Banking and Finance**

Artificial Intelligence (AI) is one of the most rapidly advancing fields in today's world. AI is becoming increasingly relevant in the banking and finance sector and it is transforming risk management practices in banking and finance. Guerra & Castelli (2021) observed that there was 60% increase in use of ML/AI in the banking and finance sector. Risk management has always relied on human judgment and historical data, both of which are susceptible to subjectivity and processing power constraints. These companies leverage AI's new capabilities, such as real-time data processing, pattern recognition, and predictive analytics, to mitigate risks including fraud, credit default, and market volatility. Currently numerous AI techniques are being used to evaluate risk including logistic regression, decision trees, Clustering techniques etc. Machine learning and natural language processing technology have enabled institutions to detect irregularities and assess risks faster and more precisely than ever before. As stated by McKinsey & Company (2024) AI could potentially earn companies 200 to 340 million dollars more in profit which is around 2.8 to 4.7 percent more compared to what they might achieve without.

This topic is particularly important because, as AI tools become more integral to financial systems, they not only transform industry standards but they also might face several practical challenges. The rapid adoption of AI raises significant concerns, especially regarding transparency, biases in algorithms, and the doubts about relying on automated systems to make decisions. The misuse of AI and its functions for personal gains is a serious concern which should be regulated thoroughly. Also having little to no expertise in this field may lead to inaccurate predictions resulting in financial losses, damage to reputations, or even broader economic instability. “A survey of the top 1,000 firms in the US on AI implementation in their firms found that their biggest concern in the implementation of AI was the readiness and ability of staff to understand and work with these new solutions” (Aziz & Dowling, 2018). Therefore understanding the best practices and limitations of AI in risk management is critical for maintaining the financial system's fairness and stability.

This paper will focus on how AI is changing risk management in banking and finance. It will explore how AI techniques like machine learning and natural language processing help companies handle risks such as fraud and market volatility. This study will look at existing articles, industry reports and case studies from financial institutions that have adopted these AI tools, and discuss the benefits and challenges of using AI in risk management.

**Research Questions:**

* What specific risks in banking and finance can AI effectively address, and where are its limitations most pronounced?
* What specific AI techniques (e.g., machine learning, natural language processing) are most widely used in risk management, and what are their advantages and limitations?
* How does AI compare to previous risk management tools in terms of predictive accuracy, efficiency, and adaptability?
* What ethical and regulatory challenges arise from the use of AI in risk management, and how can they be mitigated?

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