

PREDICTIVE RISK MANAGEMENT

Harnessing artificial intelligence by embedding advanced analytics and modelling techniques into risk management processes.

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ABSTRACT

Purpose: This study examines the integration of analytics and modelling—complementary domains of artificial intelligence—into risk management to transform traditional frameworks into predictive systems. By embedding these artificial intelligence driven methodologies, the research aims to enhance real-time risk assessment and response capabilities, fostering a proactive rather than reactive approach. A key contribution lies in exploring advanced foresight tools and leveraging artificial intelligence techniques to construct a cohesive predictive risk management framework. This framework is designed as an aid to risk practitioners in identifying emerging risks early and formulating mitigation strategies that strengthen emergency preparedness within organizational contexts.

Research Questions: The key research question framing the study hypothesises the effects analytics and modelling, as complimentary fields of artificial intelligence, have on risk management.

Methodology: To draw a correlation between analytics, modelling and predictive risk management, a quantitative approach is used to conduct a hypothesis test that evaluates if embedding analytics and modelling into risk management results in predictability. For both the hypothesis test and the simulation modelling exercise, the study required primary data, which was collected via a survey comprising of forty-four questions, mostly multiple choice.

Implications: The evolution and advancements in technology, as well as the undeniable pace of development of artificial intelligence, continue to highlight the need for risk professionals to adopt predictive risk management frameworks and models within their own organisations that will not only identify emerging risks early but move to providing mitigation plans that ensure emergency preparedness.

Keywords: Predictive Risk Management, Artificial Intelligence, Monte Carlo Simulation, Analytics, Modelling, Quantitative Risk Register

Paper Type: Extended Abstract of a Doctoral Thesis

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SUPPLEMENTARY INFORMATION

The full paper, covering the literature review, methodology, analysis, findings and implications can be requested directly from the author or accessed here <https://doi.org/10.1111/rmir.70006>

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