

# Chapter 15

## Predictive Analysis in Insurance

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### **ABSTRACT**

*With the Advent of the Insurance Tech Sector, the landscape of the insurance industry has changed dramatically. The commission based sales model has migrated to the online sales model. Most of the purchases and renewals and marketing and advertisements for the renewals have migrated into the online mode. the objective of this chapter is to understand from different studies, the emerging methods of forecasting in the literature especially in the AI driven world. Instead of laying out a hypothetical theoretical framework for the future studies, this chapter attempts to create an empirical framework or literature based model of intention of the forecasting methods prevalent in the insurance industry. with this objective 30 studies have been reviewed and their data, variables and statistical analysis have been analysed to trace the historical use of variables and tools and to suggest changes*

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## INTRODUCTION

The insurance industry is currently experiencing a major technological shift, with predictive analytics and AI transforming the way things have always been done. In the past, insurers depended on actuarial tables and broad risk assessments, but now, thanks to big data and machine learning, they can achieve remarkable accuracy in underwriting, pricing, and managing claims. This study takes a closer look at how predictive analytics is changing the game in insurance, exploring its various applications across different sectors and what it means for the industry's future. The emergence of InsurTech and the push for digital transformation have sped up the use of predictive models, moving the industry from a reactive stance to a more proactive approach. Take telematics in auto insurance, for instance; it allows for real-time tracking of driving habits. Meanwhile, wearable devices in health insurance offer insights into the lifestyles of policyholders, making it possible to adjust premiums dynamically. Likewise, geospatial analysis and climate modeling are shaking up property and disaster insurance by predicting risks with much greater accuracy. These innovations aren't just small improvements; they signify a major change in how insurers evaluate and manage risk. In this chapter, we review 30 key studies to trace the development of predictive analytics in insurance. The research covers various insurance fields and uses a range of methods, from logistic regression to cutting-edge machine learning techniques like neural networks and Bayesian networks. One of the standout findings is that machine learning models outperform traditional methods when it comes to dealing with complex, non-linear data relationships. For example, neural networks have shown great success in predicting high-cost liability claims, while decision trees are particularly good at breaking down risk profiles for tailored pricing.

The Indian insurance market is a fascinating example that mirrors larger global trends. Thanks to rapid economic growth, increased digital access, and regulatory changes, India's insurance sector is tapping into predictive analytics to tackle its unique challenges, like low insurance uptake and a wide range of demographics. Initiatives from the government, such as Ayushman Bharat and Pradhan Mantri Fasal Bima Yojana, highlight the promise of data-driven solutions in boosting financial inclusion and improving risk management. By bringing these insights together, this study seeks to create a thorough framework for grasping the current landscape and future direction of predictive analytics in insurance. The following sections will delve into the methodologies, findings, and implications of the literature reviewed, ultimately leading to practical recommendations for insurers as they navigate this data-driven age.

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