BIG DATA

A GAME CHANGER FOR INSURANCE INDUSTRY

EDITED BY

KIRAN SOOD • RAJESH KUMAR DHANARAJ • BALAMURUGAN BALUSAMY • SIMON GRIMA • R.UMA MAHESHWARI

Big Data

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Big Data: A Game Changer for Insurance Industry

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INVESTOR IN PEOPLE

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Ayesha Banu has 18 years of teaching experience and 11 years of research experience. She has been awarded with PhD (CSE) in 2019, Mtech (CSE) in 2009, and Msc (CS) in 2002. She published six papers in international journals and four papers in international conferences (Springer, ACM), a chapter title 'Artificial Intelligence for Sustainable Health Care Advancements' in the book *Artificial Intelligence, Machine Learning and Data Science Technologies* (Taylor & Francis), and two patents. She received two research grants from AICTE of Rs 1,00,000 for students club and Rs 93,000 for FDP. She also received National Innovative Educator 2020 award from I2OR. Currently, she is working as an Associate Professor in Department of Data Science at Vaagdevi College of Engineering.

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Preface

Insurance has always been a game of numbers. Keeping track of risks means knowing the numbers – the data. Increasingly sophisticated techniques were added over time to better calculate the odds. Three and a half centuries ago, 'knowing the numbers' was maturing into the mathematics of risk – actuarial science – one of the foundations of modern data analysis. It was only in the late 1960s and 1970s, more powerful machines and better software were coming into play. Online systems allowed workers to share information freely and conduct inquiries in real time. Investment in technology increased steadily. The insurance industry was on top of information technology (IT) trends in 1980, and the arrival of the Internet in the 1990s helped insurance data science. As a consequence, the amount of customer data being gathered and exchanged exploded. At the same time, the costs of data processing and storage were dropping rapidly. In lieu of the mass modelling of the past, insurers were gaining the capabilities (and the technical tools) to calculate risk on an individual level. The era of big data was just around the corner.

Big data is a relatively recent development in insurance industry because the size of the data sets previously made it impossible to analyse with traditional methods. But with advancements in artificial intelligence and machine learning, big data can be stored efficiently and analysed computationally. For insurance purposes, big data refers to unstructured and/or structured data being used to influence underwriting, rating, pricing, forms, marketing, and claims handling and incentivise risk reduction. With the global capacity to collect and store data growing and with the advancements in artificial intelligence (AI) and machine learning technology, insurers need to seriously evaluate their technology stacks to ensure they can remain competitive and respond to growing customer demand.

Insurers are sitting on a pile of data, but they are not able to use it to the maximum capacity. The reason is that not all data are digitised. Further, data that have been digitised is spread across different systems within the insurance companies, which may not be integrated. Lack of credible third-party data is also an issue. Several insurers have started implementing big data approach but only for their marketing campaigns. There is scope for efficient decisions based on big data not just in customer-facing functions like sales or claims servicing but across the insurance continuum like in areas of product development, pricing, risk assessment, fraud, and management. Where it was once difficult to gather data about potential risks, today's insurers have lots of data to work with, for example, telematics devices, smartphones, social media, CCTV footage, electoral

rolls, credit reports, website analytics, government statistics, and satellite data. Insurance aims to improve customer satisfaction, and it is employing big data to accomplish that. The more an insurer knows about its customers, the easier it is to keep them happy – and paying premiums.

The primary goal and main objective of this book is to provide good knowledge of big data concepts and their applications particularly in the field of life and non-life insurance. *Big Data and Analytics for Insurers* is the industry-specific guide to creating operational effectiveness, managing risk, improving financials, and retaining customers. In the advent of big data and analytics, this book fills the void with concrete information on using big data in the context of day-to-day insurance operations and strategy. This book fills a critical need in setting forth the role of modern risk analysis in managing catastrophe risk: storms, hurricanes, tornadoes, geomagnetic events, terrorism risk, earthquakes, floods, and COVID-19. There is no comparable reference work for this important subject area. It strikes a good balance between the technical aspects of the subject and the practical aspects of decision-making. From fraud analytics in claims management, to customer analytics, to risk analytics in solvency, comprehensive coverage presented makes this book an invaluable resource for any insurance professional.

The Editors

Foreword

Over the years, the insurance industry has diversified to meet the challenging and dynamic needs of the insured. Big data analytics plays vital role in transforming the insurance industry to the next level. Big data generated via telematics, smart phones, social media, credit reports, and web analytics is the key to exploiting and enhancing the current practices of the insurance industry. Thus, many established and new insurance companies have invested heavily in the automation of their insurance products.

In this book, the conceptual framework is defined for using big data for business intelligence in the insurance industry. The factors affecting the practices and standardization, and regulatory initiatives are discussed. The focus on using data science in formulating insurance product pricing, its optimization, claim prediction, and fraud detection is described. The role of big data in the growth of sustainable economics with a legal framework for trusted third parties, ethics, and government compliance are discussed. Later, the book focuses on the potential constraints of big data, its driving force, and the implementation of cyber security law for the insurance industry. Finally, the Digital Operational Resilience Act (DORA) for insurance, its legal framework, related business model, and distribution channel are provided.

Big Data: A Game Changer for Insurance Industry is indeed a commendable work by authors. The book covers all the aspects of the insurance industry and highlights valuable insights on why extracting and analyzing Big Data is essential for current practices and future trends.

I wish the readers great learning ahead!

Ms. Aradhana Galgotia
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