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Developing Technology Foresight: Case Study of AI in InsurTech

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2022

Module 1: Introduction to Technology Foresight, Risk Management, and InsurTech

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Repository Citation

McShane, Michael; Pinto, C. Ariel; Tahami, Hesamoddin; and Fakhravar, Hengameh, "Module 1: Introduction to Technology Foresight, Risk Management, and InsurTech" (2022). *Developing Technology Foresight: Case Study of AI in InsurTech*. 1.
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Developing Technology Foresight: Case Study of Artificial Intelligence (AI) in InsurTech

Module 1
Introduction to Technology Foresight, Risk Management, and InsurTech

Acknowledgements

This material was made possible through a grant from the Spencer Educational Foundation. Students interested in pursuing a career in Risk Management and Insurance may be eligible to apply for a Spencer Scholarship. To learn more, visit: www.spencered.org.

Module 1 Objectives

1. Discuss Importance of Technology Foresight in the Insurance Industry
2. Understand The definition of AI and ML, their concepts, and application area
3. Discuss State-of-art in InsurTech and current problems

Module 1 Learning Outcomes:

Upon completion of Module 1, students will be able to explain key concepts of AI, the Insurance Industry, and summarize the current and future roles of AI in InsurTech. In particular:

1. Importance of Technology Foresight in the Insurance Industry
2. The definition of AI and ML, their concepts, and application area
3. State-of-art in InsurTech and current problems

Topics in Module 1

1. Fundamentals of Technology Foresight
2. Fundamentals of AI
3. Introduction to InsurTech

Ice breaker

What is your major?

If that wasn’t your major, what would your major be?

Besides graduating, what is your number one goal for your remaining time at college?

1.1. Fundamentals of Technology Foresight

- Introduction to principles of Technology Foresight

Technology foresight could be described *as readiness to deal with long-term issues in science, technology and innovation systems using new tools*

Technology foresight is defined today as a “process involved in systematically attempting to look into the longer-term future of science, technology, the economy, the environment and society with the aim of identifying the emerging generic technologies and the underpinning areas of strategic research likely to yield the greatest economic and social benefits”[3]

Introduction to principles of Technology Foresight

❖ There are five important aspects to this definition:

- Attempts to look into the future must be systematic to be called “foresight”. This distinguishes foresight from the endogenous scenario building that we are all engaged in when planning our everyday lives.

- Foresight must be concerned with the longer term, which is generally considered to be beyond normal planning horizons. Foresight time horizons therefore typically range between five and thirty years.

- Science/technology push should be balanced with market pull. Whilst this is a rather crude way to think about the innovation process, the point is that technology foresight should not be dominated by science and technology (S&T) alone. Attention also needs to be paid to socio-economic factors that are well known to shape innovations

Introduction to principles of Technology Foresight (cont.)

- Foresight concentrates on emerging generic technologies where there is a legitimate case for government support. This is because companies are often unwilling to fund the strategic research that underpins emerging generic technologies.

- Attention must be given to social impacts, not just those concerned with wealth creation. This has led to some recent foresight exercises to adopt more problem-oriented perspectives from the outset, for example, focusing upon issues such as crime prevention, education and skills, ageing societies, etc.

Is Foresight the same as Forecasting?

- *Forecasters* aspire for precision in their attempts to predict how the world might look at some point in the future.
- By contrast, foresight does not seek to predict instead, it is a process that seeks to create shared visions of the future, visions that stakeholders are willing to endorse by the actions they choose to take today.

Is Foresight the same as Forecasting?(cont.)

(Picture Focus on Technologies)

Why is it important to the insurance industry?

- Insurance is an information driven industry. New sources of information as well as processing technologies will take underwriting to an entirely new level and are enhancing insurers' ability to manage risk and offer more sophisticated and personalized policies.

- The insurance industry is viewed by many as being very conservative and certainly not agile and progressive. Many insurers are hindered by outdated and costly legacy IT systems which are entrenching inefficient back-office processes such as claims processing, invoicing and particularly workflow. Emerging technologies (Cloud-based IT solutions, application program interface(API)) provide many opportunities to revitalize back-office operations in the insurance industry.

Why is it important to the insurance industry? (cont.)

- Ensuring competitiveness for the future and sustainable innovation
- Differentiating the company for future competition
- Cultivating existing technology or knowledge areas
- Identifying new technology or knowledge areas (‘white spaces’)
- Not to miss or oversee new trends or ‘weak signals’
- Accompanying outsourcing or cooperation strategy
- Generating new businesses or new technological knowledge for the development of new businesses
- Anticipating technological discontinuities or global changes so that the firm is not outrun by new paradigms or new competitors

How can it be helpful in the future?

- Cyber security of data and information remains a very high priority for customers, government and the industry, including insurers and other financial institutions

- New types of data from IoT devices and social media, coupled with AI and analytics, enable insurers to develop much more sophisticated risk profiles of individuals, enabling personalized policies.

1.2. Fundamentals of AI

Introduction to Artificial Intelligence

Artificial Intelligence teaches the computer to solve problems by looking at hundreds or thousands of examples, learning from them, and then using that experience to solve the same problem in new situations.

Artificial Intelligence is a general field with a broad scope including: Computer Vision, Language Processing, Creativity, and Summarization.

Introducing Machine Learning

- Machine Learning is the branch of AI that covers the statistical part of artificial intelligence.
- Machine learning is the subfield of computer science that gives computers the ability to learn without being explicitly programmed.

Natural Language Processing (NLP) overview

Natural language processing (NLP) combines linguistics and artificial intelligence (AI) to enable computers to understand human or natural language input. The business value of NLP is probably obvious. NLP can make sense of the unstructured data that is produced by social data sources and help to organize it into a more structured model to support SQL-based queries

Introduction to InsurTech

Here is a look at some of the biggest challenges facing the insurance industry,

1. Digitizing small commercial
2. Commoditization
3. Improving quality of analytical data
4. Using data to improve experiences
5. Cybersecurity

1. Digitizing small commercial

- A niche but profitable market within the insurance industry is small business insurance, otherwise known as small commercial. While this section of the market had been relatively insulated from outside pressure to modernize and get on board with digital technologies, that is no longer the case. Larger, more aggressive insurers understand the value of small commercials and are making a push to move into this market and update it. This is forcing carriers who already offer small commercials to significantly invest in new digital technologies to keep up with their competitors.
- A report from PricewaterhouseCoopers (PwC) recommended three steps these insurers could take to stay relevant in the small commercial market:

- Improve customer experience with digital interactions
- Digitize underwriting and claims
- Invest in employees/talent

2. Commoditization

Insurers are constantly trying to one-up their competitors to win over new customers and retain their current ones. And while low rates are an excellent way to do that, another equally important factor for the modern consumer is how they are treated by the companies they work with commoditization, the process of treating someone like they are a mere commodity, is a fast way to lose customers. They want to feel valued and important, not like just another number.

To achieve this, insurers have been deploying solutions such as artificial intelligence (AI) and automated processes to deliver personalized yet fast, customer experiences. Digital insurance technologies also help insurers create unique products quickly with low-code tools, as well as use complex data sets to improve risk pricing and offer better, more personalized rates.

3. Improving quality of analytical data

- Data is constantly being generated and leveraged in the insurance industry. But as we know, quantity doesn’t always equate to quality. To get the most out of user, operational and marketing data, insurers need to have robust data management plans in place. With these plans, they can improve the overall quality of analytical data and gain more meaningful insights to improve customer experiences.
- Insurance industry experts at PwC make three operational recommendations to maximize data analytics practices:
- Clearly define a) the customer segments and interactions that are top priorities and b) the insights needed to drive the experiences that result in new business and better customer retention.

3. Improving quality of analytical data (cont.)

- Take a holistic approach to data-driven decision making and push it out to the edges of the organization so everyone can make better, faster decisions. To facilitate this process, insurers can develop pilot programs that allow them to test what works and what doesn't. In this environment, insurers can gain practical and practicable insights, as well as help develop a culture that understands the power of data.
- Modernize the data analytics foundation to make it agile, flexible and reusable. To do this, determine the type of architecture that will work in the near- and long-term future, as well as a data governance strategy that promotes data quality and usefulness.

4. Using data to improve experiences

- While using data to improve offerings and, ultimately, customer experience is not a new phenomenon in the insurance industry, doing it well and consistently is still a challenge for many. There are outside factors at play here as well, as insurers grapple with market instability and increasing competition.
- To meet this challenge and maximize data in pursuit of better customer experiences, companies must leverage the digital insurance solutions at their disposal. With agile cloud systems, data analytics capabilities, and more, insurers can meet the demands of today's consumers with important features such as:
- Chatbots
- Mobile applications
- Omnichannel claims capabilities
- AI-generated quotes

5. Cybersecurity

- Because so much of the world has gone digital, there is now an ever-present concern about cybersecurity threats. This presents a unique opportunity for insurers, as individuals and businesses alike seek out protection for their own data and privacy.
- For individuals and businesses wary of identity theft or a data breach, insurers can cover the costs associated with cybersecurity issues, which can include contacting authorities, notifying individuals, settlement costs, fines, costs of discovering the cause, loss of business, loss of customers, loss of reputation and cyber extortion. Providing this coverage can be a cost-effective, low-risk investment that shows insurers are forward-thinking and looking out for the best interests of their customers.

Module 1- Highlights

- Insurance is an information driven industry. New sources of information as well as processing technologies will take underwriting to an entirely new level and are enhancing insurers' ability to manage risk and offer more sophisticated and personalized policies.

Module 1 Review Questions

1. Describe Importance of Technology Foresight in the Insurance Industry
2. Explain The definition of AI and ML, their concepts, and application area
3. Define the State-of-art in InsurTech and current problems