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## TECHNOLOGICAL INNOVATIONS IN INSURANCE INDUSTRY - AN OVERVIEW

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### Abstract:

The objective of this paper is to provide an overview and analysis of the technological innovations in the insurance industry. First of all, the driving factors of innovative development in the insurance industry and secondly, the innovation in the financial sector was described as an invention and as an adoption. The main part of the paper was based on an overview of the use of technological innovations (such as software, analytics) for the effective insurance value chain. At the end, a SWOT-analysis of the technological innovations was made.

Keywords: technological innovations, insurance industry, risks.

### 1. Introduction

Today, the insurance industry is considered among the most innovative industries in the world. This process is primarily driven by factors, such as the development of technologies that are being implemented at different stages of the provision of insurance services. The insurance company's growth of dependence on innovation in other industries requires elasticity in the strategic planning of its development. Innovations are becoming the main tool of competition in the market, which give an opportunity to add value to insurance products. Among the factors that determine changes in the insurance market are: increased risks, development of technology, asymmetry of information, a change in generations and their social norms (the Millennials or Y generations) - the future clients of insurance companies and other. Development of technologies (e.g. Big Data analytics, Internet of Things, Artificial Intelligence, autonomously controlled technical means (automobiles, drones), connected

sensors). The basis of insurance is the collection and processing of a large array of statistical indicators (Big Data) to construct models, which can stimulate the behaviour of events in terms of the probability theory.

For centuries, insurers have been the main collectors of such data. However, today, companies such as Google, Apple, Amazon, Facebook are capable of performing similar functions. Mobile devices (mobile apps) simplify and speed up the process of customer interaction with an insurance company. Innovation is the answer to the imperfection of existing interconnections in the insurance market, which prevents market participants (insurers, reinsurers) from reducing their risks and maximising their productivity. The lack of complete (sometimes reliable) information about the subject of insurance increases the company's underwriting risks, in particular, in assessing the risks of specific objects or health. As there are many works in contemporary scientific literature that consider innovations and their role for entrepreneurship in general terms, the aim of this paper is a theoretical research of the role of technological innovations in the insurance industry.

### 2. Objective

- To provide an overview and to conduct a SWORT analysis of innovations in insurance industry

### 3. Research Methodology

Study is descriptive in nature and secondary data is used for the analysis. Secondary data is collected from Books, Journals, and Newspapers etc.

### 4. Determinants of Innovations and their Functions for Entrepreneurship:

#### Basic Principles



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It is believed that the first scientific definition of innovations and their significance for entrepreneurship was given by J. Schumpeter. He characterised innovations as changes of the combinations of the factors of production that cannot be affected by infinitesimal steps or variations in the margin. It can be said that innovation is a change that has an economic and technological character. According to the most widespread definition proposed by the OECD, innovations include the introduction, combination and use of new knowledge and technology for products, services, production and administrative processes [OECD 1992]. It should be noted that every company has an individual criterion of defining "new", so it does not matter whether the innovation has already been introduced in other companies. That is innovation is characterised by four main features: usefulness, new methods, new results and uncertainty. The process of innovation is characterised by a high degree of uncertainty. Innovations can be effective not only as tools for lowering costs or optimising company funds, but also for bringing nonmonetary benefits to clients (e.g. to save time, provide more information, comfortable communication). Therefore, the use of value of an innovation for the company is subjective.

The existence of an innovation covers two stages: the process of invention (research, development) and diffusion (adoption), adaptation of a new product, service, or idea. The problem of clearly defining the criterion of innovation leads to the emergence of a large number of the so called "innovations", given the weak patenting mechanisms [Blach 2011, p. 22]. In addition, according to some authors, there is no pure diffusion, since each action for adaptation has a chance to create something new or requires some innovative action to adopt the new technology process of invention requires the adaptation of already existing (sometimes foreign) knowledge. Therefore, the division for radical and incremental innovations can be

considered relative. Clearly, the selection of criteria for the classification of innovations is problematic: the names of innovations in the insurance sector are often uninformative; innovations are characterised by both common and distinctive features (this is informative, but limits the possibilities of taxonomy). In the Figure 1, the main criteria and general types of innovations have been shown, which were marked in literature, and the specific of innovations will be presented in the following topic.

Almost every process in the insurance value chain is being revolutionised by technological innovations, but, first of all:

1. Client interaction and channels - personification of forms and channels for customer relationship. Insurance companies have the opportunity to expand their customer base by using new forms of marketing on the Internet. Connection also means real-time services for clients during the validity of the insurance policy. To realise this goal, insurers modernise their consumer-facing systems using Customer Relationship Management software.
2. Flexible and low-cost, error-free and fast claim processing and core policy management. This software is created for improving claims and billing processes, geographical reach and original propositions of insurance. In addition, some technological innovations have been focused on the efficiency of insurers' back-office operations in order to reduce costs.
3. Integrate, manage and analyse data from various sources, including the Internet of Things and telematics. The increasing number of connected devices, combined with analytical software, have allowed insurers to capture more information on



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policyholder's behaviour and is improving their understanding of individuals. But it must be admitted that insurers and technology firms need to implement adequate technical and organisational steps to support the security of personal data in their collection, its sharing, processing, correction and to prevent any cyber incidents, breaches or unintended use. Artificial Intelligence enables to forecast important changes in weather or health monitoring to make insurance more effective. In motor insurance, it allows insurers to supply products based on vehicle use or the behaviour of the driver (Pay as You Drive). In health insurance, the company can change the premium set based on vital signs (for example, Clover Health, Embroker). In property insurance. InsurTech devices help to control and monitor the situation with smoke or carbon monoxide meters.

A new form of insurance is On Demand insurance, which allows to cover risks that one faces at a certain moment: of pay-per-use or period based products. It could enable the cross selling of product insurance directly at the point of sale in e-commerce (for example, Simpleurance GmbH). One of the new phenomena in the market is the "digitally bom" insurance companies, which are created in the form of start-ups. According to experts, this gives the opportunity to reduce the insurance rate by 20%. In some cases, individual start-ups are focusing on improving specific aspects of the insurance processes, but in the case of peer-to-peer business models (a form of individuals' self-organised pool of risks and capitals), they could squeeze out insurers. In addition, peer-to-peer insurance could also function on blockchain transactions. That is, all business processes that are typical for a traditional insurance company are completely transferred to the network.

## 4.1 SWOT- Analysis for Digital Insurance

Strength	Weakness
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<ul style="list-style-type: none"> <li>-creative brand:</li> <li>-real-time risk management (in terms of places and time):</li> <li>- high level of privacy for clients;</li> <li>-effective risk underwriting:</li> <li>- fast pay offs (P2P, P2C); - reduced operational costs;</li> <li>-improved internal communication</li> </ul>	<ul style="list-style-type: none"> <li>- the quality of service depends of the quality of devices and connections;</li> <li>- necessary technical support (call centres, live chats);</li> <li>- exclusions of potential no-devised clients:</li> <li>- strong integration with other branches;</li> <li>- smaller risk pools in the same types of insurance:</li> <li>- uncontrolled operating systems, handsets and network operators.</li> </ul>
Opportunities	Threats
<ul style="list-style-type: none"> <li>- creation of new products and fulfilment of customers' needs:</li> <li>- possibility to include young people;</li> <li>- increase of selling possibilities (omnichannel);</li> <li>- management of claims process more effectively,</li> <li>- higher degree of customer trust;</li> <li>- improving company service;</li> <li>- granular risk categorisation;</li> <li>-cost-effective processes.</li> </ul>	<ul style="list-style-type: none"> <li>- loss of data:</li> <li>- cyber-attacks;</li> <li>- dishonest market competition;</li> <li>- offers of insurance by other industries or in other ways (e.g. crowdfunding):</li> <li>- possibility of high losses in case of failed disruptive models:</li> <li>- disruption of the conventional risk pooling.</li> </ul>

To analyse digital innovations in insurance, we use the SWOT-analysis. This method will allow us to evaluate the qualities, strengths, weaknesses, opportunities and threats of innovativeness in the insurance activity. During the twentieth century, the main problem in the insurance market was the lack of or limited information and statistical data. Mainly, this



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was relevant for actuaries, underwriters, and liquidators of losses, since their activity was based on accurate calculations and had an important impact on the effectiveness of the insurance business. With the introduction of computer technologies and the ability to quickly process a large array of data, the quality of work on the specified areas has increased. Modern digitalisation tools make it possible to track changes of the indicators of the insured object in real life and automatically adjust insurance rates as well as take steps to prevent or reduce insurance loss. The obtained data arrays provide the possibility of a qualitative simulation of threats (risk simulation). The asymmetry of information has caused one more problem - a weak boundary between the "fair" distribution of rates among clients from different risk groups and solidary distribution of cumulative insurance risk among clients. This question is increasingly becoming a cornerstone in assessing the factors of demand for insurance. Customers decide on the expediency of insurance coverage based on two indicators: the value of the insurance rate and the possibility of obtaining insurance reimbursement.

## Conclusions

Based on the research presented in the article, the following conclusions can be drawn: Insurance is one of the most innovative industries in the world, but it will increase its dependence on other industries. As shown in the article, this will have both positive and negative effects: the possibilities of providing insurance services are expanding, but at the same time, the risks associated with the security of personal data in its collection, sharing, processing, correction and prevention of any cyber incidents, breaches or unintended use. The main factors that determine the emergence and adaptation of new technologies in the insurance sector include the asymmetry of information, the increase in competition, the change of generations and their social norms, the growth of technical and computer capabilities, the economic crisis and the decline of insurance premiums. The main instruments in digitalisation in

the insurance industry are: Digital platforms; Internet of Things; Telematics and Telemetry; Big Data and Data Analytics; Comparators and Robo advisers, algorithm based product comparison and advice; Machine Learning and Artificial Intelligence. The main in the insurance value chain that were being revolutionised by technological innovations processes are: customer relationship (e.g. client interaction and channels), product development, distribution, pricing (underwriting), claim managements and the activity of the back office.

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