

# Artificial intelligence in insurance companies

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**Abstract:** In this article given is the analysis of the development of artificial intelligence- AI in insurance companies, which has caused the execution of the following tasks: analysis of the role and significance of artificial intelligence in insurance; description of software tools in insurance; description of implementation of artificial intelligence in insurance industry. Based on the conducted analysis it is concluded that possibilities of artificial intelligence in insurance are almost infinite. Technology contributes to better clarified claims, helps insurance companies to identify fraud and automatically avoid losses. Due to all this, the insurance companies on the market improve their production cycle while clients are provided with better service and better rates. Artificial intelligence assists us in improving the business today and will do so in the future: increase competitiveness, enhance the engagement of clients, accelerate innovations, increase profitability and productivity of employees.

**Keywords:** artificial intelligence, types of artificial intelligence in insurance, personalisation, improved data protection, software for insurance.

## INTRODUCTION

As it is well known, with the development of information systems an objective overview can be obtained of the state of present and past conditions of information technologies in insurance companies, as the basis for their further development and use in that field. Hence, in this paper we will attempt to describe the application of artificial intelligence (AI) in insurance.

*The goal of the research is the analysis of development of AI in insurance companies, which requires the execution of the following tasks: analysis of the role and significance of AI in insurance; description of software tools in insurance; overview of use of AI in insurance (health insurance; car insurance; property insurance; interpretation of advantages and disadvantages of artificial intelligence in insurance).*

In this paper we used the methods for studying information technologies that is quantitative and qualitative approaches to analysis, such as: *descriptive method, comparative method of studying information systems (IS) in insurance, inductive and deductive approach to research of IS in insurance companies, abstraction and implementation of research of IS in insurance companies, methods of analysis and synthesis of information control systems in insurances.*

## ARTIFICIAL INTELLIGENCE (AI) IN INSURANCE

There are a few definitions of AI – Artificial Intelligence. In the paper by Dragan Botic and Zeljko Stanivukovic named *The role of artificial intelligence in optimization of field teams of telecom operators by using the software package CLICKSOFTWARE* given is the following definition of AI: 'Artificial intelligence represents the ability of artificial systems, most often computers, in other words hardware and software to execute certain functions in the manner containing some features of human thinking- human intelligence. One of the key aspects of AI is the capability to plan'. (1) In the aforementioned paper applied is the definition according to Jean-Louis Lauriere (2) and two other authors, Predrag Janic and Mladen Nikolic (3): AI is the concept which refers to the field of computer technology dealing with development of smart computers, which have a similar way of thinking to humans, function and react as humans. For creating AI there exist the following specialized program languages: Basic, Delphi, Object Pascal (the first of program languages for AI prvi programski jezici za veštačku inteligenciju), Lisp, Smalltalk, STRIPS, Planner, POP-11, C++, Haskell, Prolog, Python (Python is still widely used today se i danas široko koristi).

AI is present in the technologies as follows> sensible sensors, processing of program language, machine

learning, scientific papers, recognizing texts, speech and photos, business intelligence, intelligent information security system, automated/ mechanical translations and other technologies and development directions (4)

AI has also made insurance business faster, better and smarter. Insurance companies were among the first ones which started to use AI. Insurance industry began using machine learning quite early as it analysis large quantities of data and many repetitive activities. AI offers a great potential for improving value in insurance. It will also facilitate automating processes in insurance in order to obtain better client experience. Due to all that, preparing insurance policies and covering/ balancing losses are to become quicker and more efficient. (5) Giving the stimuli to data analysis, AI is also to provide much better understanding of their risks, both for clients and insurance companies and this, new solutions can be developed and those risks lowered (6). For example, analytics based on AI can assist companies to comprehend cyber risks better and improve protection. At the same time, technology is to help insurance companies to identify measurable risks<sup>1</sup>. Last but not least, AI is to change the way insurance companies interact with their clients, enabling for 24 hour service.

*The impact of AI on creating value in insurance* Ai is also to affect the value an insurance carries for clients. In other words, present technologies based on AI improve/ enhance the chain of values in insurance, making it more efficient in meeting the needs of clients and providing services, timely and on reduced tariffs. Such technologies increase the insurance performances by ensuring clients better values and more benefits.

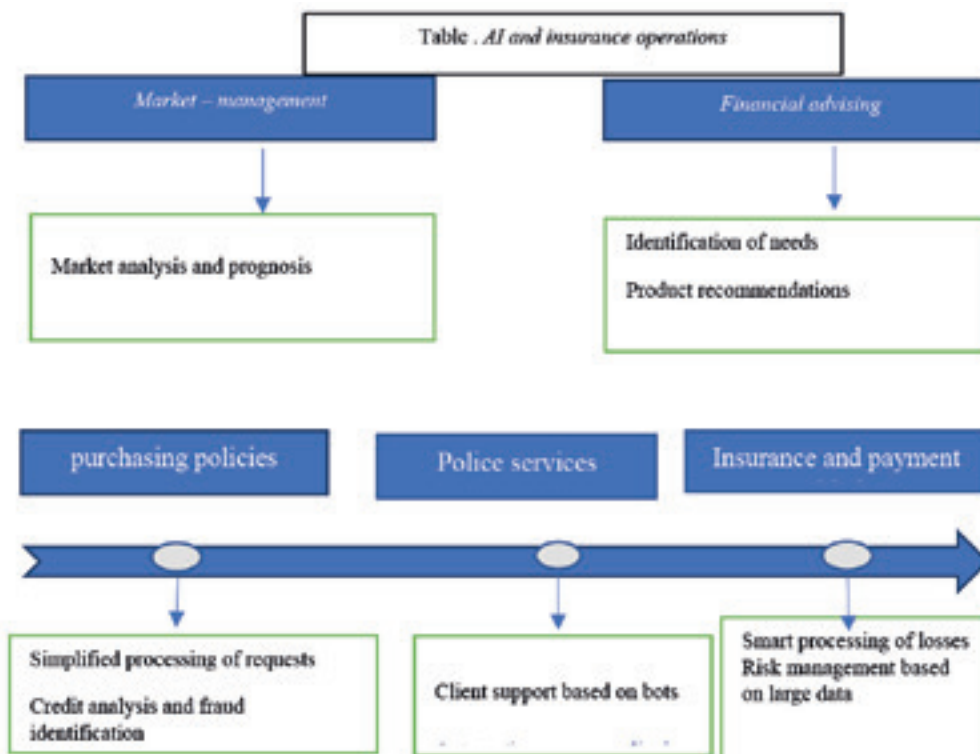
*Intelligent agents* In the future, AI is to offer support to insurance companies in analyzing data and risk assessment. There exist many areas/ fields such as reputation risks, cyber risks, risks in supply chain and also economic and climate risks when machine learning can assist companies to understand those risks better. For example, sensors on shipping containers already provide data on location and condition of the cargo/,which after analysis can activate to cover the insurance or measures to reduce the damage if goods are faulty (7). The results of the data analysis and analytics will asisst in moving the boundaries to transfer risk in the areas like termination of production without physical damage or ruined reputation. The way AI has an effect on operations in insurance is presented in the table below.

**Role of AI in market management and interacting with clients**

As opposed to other industries, insurance sector is characterized by relatively low frequency of client involvement as usually clients communicate with insurance companies when purchasing their product or claiming for compensation upon loss. Thus the possibility to use data on client to understand their preferences is of extreme importance. AI can also be useful in sorting and analyzing information on clients and providing accurate client profiles when designing successful individual marketing campaigns.

**Financial advising**

Technologies based on AI also facilitate recommending new products to potential clients. To specify,



when individual profiles and aims of clients match the available products, the process of advising becomes faster and more efficient. Considering the fact that insurance products are inherently complex, AI could provide adapted product illustrations and assist clients in identifying their needs of insurance, especially in regard to products containing multiple components, such as cumulative life insurance.

#### **Purchasing an insurance policy**

In the course of purchasing an insurance policy, that policy should be processed and analyzed. That process can last a few hours, even a few days if done manually. AI enable that processing to be automated by taking over different kinds of checks and facts, such as fraud identification and credit analysis. As a result, clients is awarded with a better experience in his dealing with a company.

#### **Maintaining a contract**

During the policy validity, chat bots can provide clients with 24 hour service.

What is more, adapting policies such as portfolio diversification and profiling risks can be done automatically using algorithms based on AI.

#### *Solving insurance cases*

Perhaps the most important issue in assessing the quality of work in an insurance company is organizing processes in solving insurance cases. At this stage most often dissatisfaction and complaints emerge and in the end that has a negative influence on reputation of insurance company. Negative emotions are not always connected to the amount of money to be compensated. Even those who agree with the decision of insurance company often give negative comments on the procedure for solving losses itself. To be more specific, organization of operational remote overview/ investigation of the scene using satellites, truths or photo/video shootings of scenes in the network with special applications will enable to avoid the intervention of authorities and/or experts. Insurance businesses are aware that wrong decisions on insurance can have fatal consequences on their profit or reputation. By integrating AI into their business, insurance industry invest in ways of automation<sup>1</sup> of components in operations of requesting/ claiming without affecting correctness<sup>1</sup>. Such insurance companies either buy or develop their own software which enables for adjusters to spend less time on assessing claims.

#### **Insurance and covering for losses**

Having in mind high quantities and relevance of data on economic, demographic, nature and market conditions there exists a great potential to assess risks more precisely. AI offers support in the process of interpreting data on risks, so that actuaries possess the latest models for efficient risk management. Investments of insur-

ance companies into AI have risen 8 times in 2017 (8). As a consequence, high qualified professional will devote more attention to important tasks and software is to provide routine work.<sup>1</sup> So, experts are to have more time and thus, their value on the employment market is to grow.

### **Types of AI in insurance companies**

#### **Personalization**

Surveying clients using AI makes it possible to obtain detailed information on physical world and thus contributes to detailed client analysis. Thanks to AI, insurance companies can access data using portable devices, sensors based on locations, sensors in different facilities due to geo-info systems. Insurance companies can apply AI to collect individual data and make more precise analysis in real time. Each individual cases can serve as the basis for contract, contributing to its accuracy and flexibility. In that manner, AI is to create a more favorable environment for clients.

#### **Clients' road to purchasing without delays**

Clients won't have to wait for long hours in call centers: new technologies with AI revolutionize the world of services for clients. In some typical cases, clients will have to go through just a few control points to find out about the premiums, for instance and to acquire the policy. The claiming process also is to become fast and with no problems. Usual claims with low amounts can at least partially be substituted with chat bot, in order to register application, check details, confirm it is not a fraud and forward it to bank for further processing.

#### **Enhanced safety**

Sometimes insurance agents save money for their personal needs, instead of sending that money to insurance company or they sell insurance policies without license to pay off claims<sup>1</sup>. AI in insurance business is to enable companies to recognize such false schemes and try to fight frauds. The more statements and data, the smarter that AI system is to be. In addition, analysis of data obtained from sensors in surveillance systems could open new possibilities for business insurance. With to goal to alleviate damage caused by breaching safety, a company may benefit from insurance covering a wide range of losses, starting from cyber risks then hacking and use of malware software. The designs of that insurance as for visualization serves as detailed use interfaces whose aim is to understand the core of cyber -attacks.

#### **Software tools in insurance**

It should be pointed out that in modern day insurance business the most popular software tools are: *Clicksoftware*, an application package to optimize work of field groups. *Standard ClickSoftware package in insurance com-*

panies consists of: *ClickSchedule*, *ClickMobile*, *ClickAnalyze*, *ClickContact* i *ClickLocate*.

Typical package in insurance companies contains the following modules: *ClickContact* module is an interactive tool that enables for automated notification to client using email, SMS or IVR, based on status and location in real time. *Click Locate* Module is in charge of locating positions of field workers within regions and districts of their responsibility and forwarding data on GPS, coordinates of their locations into *ClickSchedule* module in order to based on them support planning, distributing work tasks such as emergencies and late field outings. Dispatchers have the ability<sup>1</sup> to read those positions. Based on that data in contingencies decisions are made different from those which the system made in automated module.

By that in interactive module of functioning achieved is additional work optimization under extraordinary/ special circumstances. *ClickMobile* Module is HTML5 mobile platform with an application which supports business processes in the manner of checking up maps, provides an overview of information on allocated work tasks, location of field insurance agents, enables the status of work records<sup>1</sup> to be updated and also sending messages. Field insurance agents can use their tablets/ devices to look at the plan of their activities, history of work, data on clients, details of their work records and other information useful to accomplish the tasks.

*ClickAnalyze Reporting* is a module offering completely easy viewing<sup>1</sup> of KPI (*Key Performance Indicator*).

This module offers possibilities to notice opportunities to improve process or prevent the problem before it escalates<sup>1</sup>. The central module of this software system is *ClickSchedule*, module for making intelligent decisions in regard to planning and delegating work tasks for workers in installation and maintaining the service. The plan for engaging an insurance agent is made based on previously defined criteria- service policy and corporate company rules, *ClickSchedule* automatizes and optimizes the functioning of insurance companies and added<sup>1</sup> resources using the processes of planning activities in implementing work tasks. Work tasks<sup>1</sup> are generated in CRM, if they refer to starting up services<sup>1</sup> with new clients or EAM, an ERP system module if there is need to eliminate issues with services with existing clients.

For both types of tasks in charge are insurance companies, having territorial kind of jurisdictions, defined through regions and districts and those service jurisdictions determined by domain and level of competences.

Within one group/ set of competencies there exist different levels determined by level of knowledge and skills, The point of these levels is that in the course of making decisions in the process of allocating resources for more complex tasks planned is the involvement of servicemen with higher level of competencies from the field required and vice versa. With all the afore stated,

the system takes care also on the level of how overloaded certain insurance agents are, that is on implementation of KPI (9)

### Fields of where to apply AI

Main fields of insurance business actually are in line with technological advances. In order to provide for better accuracy and speed, solutions for detecting fraud based on AI and other applications using AI have already been integrated into insurance business chat boxes.

### Health care

Choosing the most efficiency health insurance package is of vital importance in the world where new health threats appear all the time and the premiums and complexity of health insurance are actually increasing. Basically, AI has an impact on efficiency as for costs and health insurance. Insurance companies provide their clients with new platforms which choose the most favorable<sup>1</sup> cover for the user whose goal is to promote a healthy lifestyle.

### Car insurance

Analyzing telemaths data on cars using algorithms of machine learning, services of insurance companies with AI create personalized risk profiles for drivers. Some insurance companies use the data collected in order to enable drivers some discounts if they use safe driving habits and punish some dangerous actions like speeding or sharp braking. Yet, the main advantage of car insurance when using AI is that in case of an accident those same data assist in assessing damage in real time using smart phone camera. The system of insurance using AI is capable of determining how serious the damage is, assess the costs of repair and analyze the impact of the accident on future premiums for the given driver.

### Property insurance

Market fragment of smart gadgets amounted to almost 17 billion US dollars in 2019 and it is expected to increase for almost 20% by 2023, as stated by statistics (10). As using AI software insurance companies can process large data bases with unbelievable speed, it is possible to obtain property insurance premium options in any time from 60 seconds to 15 minutes. Using the internet and AI, premium values can be calculated for each property separately. AI is one of the tools which can assist in that.

AI is already taking part in almost all business activities in insurance industry. Companies have been working on substituting part of their employees with program software using AI in a short period as those can work 24 hours a day without a stop and lunch break. Accumulated is a large quantity of data for analysis using AI software systems and that provides high chances for improving, speeding up and lowering costs of busi-

ness activities in insurance industry. Still it is not clear which human activities will be completely substituted by computer systems using AI as insurance industry is at the very beginning of the path of introducing those programs into automatization of business activities.

## CONCLUSION

1. Potentials of AI in insurance are almost infinite. Technology contributes to clearer claims, assists insurance companies in identifying frauds and automatically avoid losses. Insurance industry is one of the most conservative parts of financial market. Just a few years the 'trendiest' insurance companies started to introduce different solutions, such as InsurTech. That experiment was successful and now AI has steadily taken its place in various business activities in insurance companies.

2. Speaking robots of last generation sometimes cannot be differentiated from real speakers. Such assistants do not get tired or frustrated, do not require salaries for their work and if necessary, can cope with thousands of claims daily. Using machine learning, speaking robots are getting more and more perfect and the moment of them standing in for large and expensive teams in call centers is coming closer. This optimization will of course in the future affect the appeal of tariffs in insurance for clients.

3. AI really assists insurance companies in stages of scoring and onboarding. With that facilitation, insurance companies make decisions on accepting clients to be insured and determine a suitable tariff. Based on machine learning, insurance agents assess the probability of client making false claims at the time of acquiring policy and possible financial losses. Calculations are made considering all the data on clients.

4. Majority of insurance companies have implemented a system which enables them to quickly accept automated solutions for taking on complex risks with new clients in life insurance. The system actually learned to digitalize data from scanned medical records, photos, faxes, tables and other sources and that process was almost impossible in the past.

5. Robot is capable of solving certain insurance cases using algorithms which can determine some suspicious use of policy and provide instructions for further checks and supervision. A lot of companies are now introducing loss analysis based on clients' profiles and presence of false statements by witnesses in accidents about vehicles or occurring damage. It is considered that the participation of AI can minimize or even completely eliminate false claims and that will result in lowering tariffs for honest insurance clients. AI enables for insurance companies to reduce costs and depend on investigators. One of the tasks of AI is to identify the obvious or even those not so obvious dependencies between non profitability and hidden factors.

6. The number of processes in insurance industry in

which AI is used is constantly increasing. There appear all inclusive IT insurance platforms. Due to all that, insurance companies improve their production cycle on the market and clients are provided with better services and more favorable tariffs. Implementation of AI is seen as the greatest technological trend on insurance market, and that into different processes, digitalization, simplification of procedures for clients, including enhanced conveniences of process in the course of policy validity, communication using chat and voice mails, convergence of insurance policies and bank services using eco systems and mobile gadget application. In general, it can be concluded that AI is to facilitate business today and in the future, *increase competitiveness, raise client engagement, speed up innovation, increase profitability and employee productivity.*

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