Methods of Using Artificial Intelligence in Insurance Companies and its Promising Directions

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A B S T R A C T

This article highlights and substantiates the methods of using artificial intelligence in the effective organization of the activities of insurance organizations and in order to reduce excessive costs, convenience and prospects of maintaining an insurance portfolio in electronic form.

In recent years, the use of large data processing technologies has become increasingly common in the insurance industry. These technologies help to improve the quality of the services provided, help insurance organizations reduce costs and increase the efficiency of activities.

Big data (from the Big Data System) is used by almost all major insurance organizations around the world, as well as consulting and technology companies that provide services in the financial sector.

With the help of such information, insurance organizations first of all have the opportunity to more reliably assess the benefits of insurance consumers, more accurately assess the risks in insurance services and products, improve the quality of fraud and obtain anti-fraud procedures.

Nevertheless, the use of Big Data (The Big Data System) can pose a number of risks, including systemic risks for the insurance market. Systemic risks can be associated with model risks that can lead to a mass misjudgement of the financial situation of borrowers, the risk of consumer discrimination (in addition to price and price), the risk of disrupting competition, the risk of critical concentration of data suppliers (including foreign), the risk of large dissemination of personal information. In this regard, in recent years, issues of program regulation of large data in the insurance sector of different countries of the world have been raised.

The term "big data" does not currently have a generally accepted definition. The term is applied to a system of large or complex data arrays and related technologies for their storage and processing (Big Data). These data arrays can be both structured form (external and internal databases) and unstructured (social networks, press and the like).

The most common definition of the term Big Data consists of the following.

Big data is a source of information that meets large criteria the amount of information that requires efficient, cost-effective and innovative forms of data processing and, as a result, allows you to improve data analysis, decision-making and Process Automation, the high speed of its processing and the diversity of information.

Machine learning - a subcategory of artificial intelligence-is the ability of computer systems to gain knowledge of data and use it to solve problems.

Artificial intelligence technologies are technologies based on the use of artificial intelligence, including computer vision, natural language processing, speech recognition and synthesis, intelligent decision support, and promising methods of artificial intelligence.

Big data and artificial intelligence are closely related. Big data is a source of information for analysis using artificial intelligence. Machine learning, based on technology neural network approaches, often allows you to get the most complete and fast result of large data processing. However, here are some risks associated with the transparency and interpretation of the respective models.

Today, the insurance industry, along with banks, is a leader in the implementation of large data among financial institutions. Many insurance companies are using artificial intelligence and big data to review fraud and ensure compliance with regulatory requirements.

In addition, among the insurance services, insurance of auto insurance and auto insurance liability is carried out in connection with Internet technologies. Telematics (black boxes), which, according to the main source of data on analytics, allow to determine the nature of Management in these types of insurance, make it possible to accurately assess the risks in the vehicle. Using Televizim devices, real-time data collected allows insurance companies to clarify the customer's risk, the customer's risk profile.

Insurance companies see big data as the basis of their upcoming business model and tariff policy. In France, a number of insurance groups began implementing multichannel (omnichannel strategies) strategies and used big data and artificial intelligence technology to analyze sales more efficiently, including forecasting the volume of sales of insurance products.

In the context of modern economics, data-driven management (data-driven) and the application of

machine learning (machine learning, ML) are modern megatendents resulting from the expansion of digitization of society and the economy. The main factor in the introduction of machine learning in all areas is the need to reduce costs. Today, the insurance industry is no exception, although in some ways it lags behind the "trend leaders".

The use of cognitive technology not only increases the speed of data processing and the process of making conscious decisions, but also allows you to identify such claims at the stage of initial analysis of information.

Since the benefits of insurance companies are determined by the cost of covering insurance events, the application of algorithms to detect anomalies inherent in fraudulent transactions can significantly reduce costs. Thus, the German insurance company Allianz SE reduced the risk of unjustified payments by 2 times due to an analytical system based on mo methods, selecting cases that check calculations before payment, with signs of deviations from patient management standards.

Customers of insurance companies are also interested in technological innovations, as they suit the needs of customers and facilitate interaction with insurers. This was mentioned in the Insurance Europe report about the European insurance industry's vision of artificial intelligence. Research conducted by the consulting company Accenture, which specializes in the introduction of Information Technology in business processes, has been hypothesized that the introduction of artificial intelligence technologies will be one of the main ways for the insurance business to combat low customer loyalty.

According to the forecasts of experts, machine learning algorithms are common in various sectors of the insurance industry, working to improve efficiency and improve the quality of Service. Currently, the main directions for the use of ML in world practice are the following directions:

➤ underwriting (underwriting) - risk assessment;

➤ optimization of tariffs" for the client";

➤ prevention of severe insurance cases;

➤ fraud detection and prevention (anti-fraud).

Underwriting's mission is perhaps the most promising system for applying ML technologies and analyzing large data. In the process of forming insurance tariffs, it is used to calculate the probability of an insurance event and assess the potential risk.

The application of machine learning technologies is optimal for this task, since insurance solutions are mainly related to the history of previous calls and rely on a large data set. Cognitive systems help curators effectively investigate cases, assess them more accurately, and make more informed decisions.

One of underwriter's most important tasks when considering an application is risk assessment. The analysis of large data and the involvement of complex ML algorithms that determine latent processes and uncertainty, of course, surpasses the possibilities of "classical" methods based only on statistical models.

One of the most relevant practical tasks is to predict high cost claimants (high-cost claimants - HiCCs) - a relatively small group of patients who make up an disproportionately large proportion of insurance claims. High medical costs for such patients often occur as part of emergency treatment, while there will be previous intervention options that reduce costs and prevent acute conditions. The potential of predictive models based on ml methods to solve the problem of identifying such patients has been studied in a number of serious scientific publications.

Researchers and modellers agree that the predictive effectiveness of risk assessment and identification of patients with specific (in the long run - high cost) needs is cost-effective. The conclusions of the scientific and analytical community were successfully confirmed in practice.

Thus Accolade Inc. positions its Maya Intelligence product as an ML-technique-based platform promoting conscious choice in health, for example by recommending an optimal insurance option (tailored to the customer's quality of life needs and at the same time reducing health care costs). The platform collects patient data (including medical statements, biometric data results, Risk Assessment, social data) and builds their profiles on which a health plan recommendation is developed. Accolade reports in his study that Temple University Health System was able to save $ 9.8 million for the second year he worked with the company. This was achieved mainly due to the fact that university employees initially ignored preventive visits from a doctor, and the referral system, carried out on the basis of analysis of patient profiles, allowed to choose the optimal strategy of medical examinations and corrective interventions.

An example of the successful introduction of methods based on big data analysis into health insurance is the American startup Insurtech Collective Health, which uses machine learning to identify risks and give participants the necessary medical recommendations. The machine learning-based model combines insurance claims, access to medical services and many other information into a holistic profile of each participant in the program. Based on this profile, the need for a certain type of medical services is assessed, for example, the organization of home care or consultation with specialized specialists.

Allianz SE of Germany uses machine learning models for its quotes from corporate clients. The accuracy of forecasting increases with an increase in the number of factors affecting the likelihood of an insurance event, which in turn determines the cost of the contract. In addition, the large data collected in the interpretation of the model results also revealed new signs and inaccuracies, which were an additional advantage of the company's product.

In general, as for domestic reality, we can safely assume that, despite the fact that insurance products lag behind global trends, in a few years there will be a high demand for machine learning in the insurance industry as a means of management and analytical decision-making.

The first products are now used by large companies. Thus, in 2020, the regulatory bodies of the control of insurance companies introduced the technology of automatic verification of accounts from medical institutions. The Mains Lab's decision was intended to seek medical care cases partially or completely without merit.

In conclusion, by introducing the latest decision support technologies in business processes, it can be noted that insurance companies that accept modern problems can achieve development in the future, both in terms of loyalty satisfied with the favorable conditions of customers and in terms of cost savings in solving insurance claims.

I would like to note that the insurance industry has a lot of accumulated statistics. World insurance practices according to experts, domestic insurers use no more than 15% of the available data. At the same time, world experience shows that the really important uncertainties present in data arrays have been missed in this way.

It is possible to assemble a Bank of depersonalized medical data on predictive analysis and risk management platforms, and using machine learning models and other approaches in the field of artificial intelligence, we can form personal profiles of patients and identify their risk groups, predict

possible health disorders and, ultimately, determine if the patient needs medical care. By forming such forecasts, the focus of the health system can be on the most dangerous patients so that preventive medical care can be provided to them. We see a certain prospect that such tools may be required by insurance companies, who, like no one else, are interested in avoiding serious health complications and related costs of the patient.

Thus, we can conclude that the implementation of digital solutions is an inevitable process. It is important to apply these innovations to different business processes at the same time, since if only one element of insurance activity is digitized, the effect of the transformation can be compensated for by an outdated approach to organizing other processes in the company. All processes in the insurance business are highly interconnected. Therefore, the complex introduction of digital innovations alone leads to a positive result that can be achieved.

Summarizing all of the above, it can be noted that when analyzing the opinion of the heads of domestic and World insurance companies, in general, the effectiveness of all initiatives carried out to change the business is positively assessed. This reaffirms the need for insurers to follow the trend of digitization to maintain their competitiveness. It can be assumed that due to the desire of insurance companies to increase the share of online sales, this trend will continue, and with the digital introduction of the number of companies, the implementation of active projects will develop technologies.

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