AI in the insurance sector

Artificial intelligence (AI) carries enormous transformational potential for industries and society. Within the insurance sector, insurers are already using AI to improve customer service, to increase efficiency and to fight against fraud more effectively.

Regulatory framework

As with any technological development, however, the use of AI also comes with challenges that need to be assessed and, where relevant, addressed by companies, policymakers and regulators. Ensuring that the right regulatory framework is in place is therefore key.

Insurance Europe welcomes the work done by the European Commission so far, in particular the development of a horizontal, proportionate and risk-based regulatory framework to encourage the ethical and responsible development of AI in the EU. This will help to ensure that it always remains clear for consumers whenever they are interacting with an AI system, while at the same time ensuring that those AI systems that are high-risk in nature and that may have a significant impact on the fundamental rights of individuals are subject to additional requirements.

It should also be noted that this proposed new framework is complemented by a wide body of existing EU legislation that addresses many of the potential risks and challenges associated with the development and use of AI, which is further complemented by national regulatory frameworks. The EU regulatory framework covers relevant areas such as fundamental rights, privacy and data protection, as well as product safety and liability.

Financial services legislation also ensures a robust regulatory framework in the insurance sector when it comes to AI use. The Solvency II framework, for example, contains provisions addressing the governance mechanisms put in place by insurers, while principles such as transparency, fairness and ethics are also addressed by rules on conduct of business and disclosure, such as the Insurance Distribution Directive (IDD). For example, IDD provisions on product oversight and governance regulate the design of new insurance products and ensure that all insurance products meet the needs of their specific target market, regardless of the techniques used in said products. And rules on advice apply wherever a personal recommendation is provided to a customer, regardless of whether that recommendation is provided by a human or AI actor.

Insurance Europe would also stress that monitoring the use of AI applications should continue to fall within the competence of the relevant sectoral supervisory or regulatory authorities, as they remain best placed to understand the market in question and the specific context of the AI application vis-à-vis the applicable regulatory framework. This is particularly important in the financial services sector, given the comprehensive body of existing rules.

In addition to having the right regulatory framework in place, Insurance Europe supports actions at EU level to promote and support the development and uptake of AI, as well as actions to facilitate access to and use of data, which is essential for the further development of AI systems. As part of its overall data strategy for the EU, the Commission is taking positive steps in this regard, such as by ensuring greater access to public sector datasets.

Report of the EIOPA expert group on digital ethics

The insurance industry welcomes the recent publication of the report from the EIOPA consultative expert group on digital ethics, setting out governance principles for ethical and trustworthy AI in the European insurance sector.

The report, which was the work of a wide range of stakeholders examining the opportunities and risks associated with the growing use of AI in insurance, aims to help insurance companies when putting in place risk-based and proportionate measures, providing guidance on how to implement key principles in practice throughout the lifecycle of an AI application. As the report notes, "the principles developed … take into account the specificities of the insurance sector and lay down the key governance pillars for ethical and trustworthy AI in insurance". The principles cover proportionality, transparency and explainability, fairness and non-discrimination, human oversight, data governance, and the robustness and performance of AI systems.

European insurers are committed to ensuring a sound AI governance framework and this report will not only complement the existing regulatory framework for insurance but will also offer a valuable tool to help insurance companies address the wider implications of their use of AI to ensure fairness and good consumer outcomes.

Insurers' use of data

The insurance industry has always made extensive use of data and algorithms, such as in the calculation of insurance premiums, with data analytics forming an integral part of the insurance business model. As noted in EIOPA's report, "mathematical and statistical methods have historically been used in insurance to process personal and non-personal data in order to underwrite risks and price insurance policies, to quantify losses and to pay customers' claims or to identify and prevent insurance fraud". These methods of analysis are long-established and already subject to strict supervision by financial regulators.

The development of AI tools can help insurers to improve underwriting as well as to better monitor and predict risk, and thereby advise policyholders on how to reduce risk, which can in turn help reduce the frequency and severity of losses over time. For example, AI can be used to help better serve motor insurance customers. AI solutions can be used to analyse customers' driving behaviour based on the data collected by smartphone apps or plug-in solutions. This allows insurers to offer a range of innovative insurance products better suited to user needs, such as "pay how you drive", which encourages and rewards responsible behaviour. Drivers who have developed bad habits will be able to benefit from personalised support (coaching) to help reduce the risk of accidents in the future. Access to data for insurers can also make a significant contribution to the common goal and public interest of improving vehicle reliability and road safety, in particular thanks to accident data and its detailed analysis (accidentology).

In the area of pricing and underwriting, the use of AI can lead to enhanced risk assessments by enabling insurers to combine traditional and new data sources more efficiently and to price policies that more accurately reflect the risk.

AI-driven fraud detection solutions can tackle the problem of fraud by analysing massive amounts of data from multiple sources in order to spot possibly fraudulent claims. These tools can enable insurers to identify and flag unusual patterns, potentially helping to reduce the huge costs associated with fraud (estimated to cost European insurers and their honest customers €13bn a year), as well as the level of customer premiums.

AI use cases in the insurance sector

Below is an overview of some of the typical use cases of AI in the insurance sector, reflecting developments in different markets across Europe. The different use cases have been categorised under specific headings for ease of reference. This overview is not meant as an exhaustive list of all potential or theoretical AI use cases in the insurance sector but demonstrates that they focus mainly on the automation of internal processes and on improved customer service.

Conversational AI

One of the areas in which the insurance industry has already implemented AI solutions to a relatively large extent is conversational AI. Conversational AI is the set of technologies behind automated messaging and speech-enabled applications that offer human-like interactions between computers and humans. It is generally based on natural language processing (NLP) in which a computer can interpret human language — spoken and written — and respond accordingly.

The simplest example of a conversational AI application is chatbots or voicebots, which interact with the user in the form of a question-and-answer sequence. They rely on "speech-to-text" engines that use AI technologies to convert spoken language into text that can be processed further.

The advantage of chatbots and voice assistants is that they are available to customers around the clock and can respond to service requests faster, while maintaining a consistent quality of advice. Chatbots are not only effective at offering support to customers in answering their questions about insurance products and offerings, but they can also help them to take specific actions related to their individual engagement with the insurer, for instance at the customer's request to automatically login and view the distribution of investment funds for a specific insurance product.

The use of speech recognition technologies during insurance advisory meetings with customers involves solutions that can understand the meaning of the conversation and converts the words into text, thereby producing the required documentation automatically. The advisor does not need to manually prepare the meeting documentation.

A more advanced type of conversational AI are virtual customer assistants or virtual insurance agents. These are generally created to serve a specific purpose and are therefore more specialised in dialogue management.

Example

One European insurer has launched an advanced virtual insurance agent built on conversational AI technology, which specialises in automating customer interactions centred around travel and motor insurance. To date, it can answer over 500 questions, helping reduce the volume of traffic that human support staff need to contend with, freeing them up to assist with more complex customer queries. The purpose of developing the solution was to ensure its ability to assist the human agents, without losing any of the customer service quality. It can solve simple customer requests on a large scale, with the flexibility for the company to adapt and make further changes itself. When faced with complex travel insurance questions, it can identify, for example, whether or not a customer is covered when skiing. If not, the coverage can be instantaneously added to their insurance policy by the customer without needing to involve human support from the insurer.

Claims automation

The use of AI applications for claims handling makes the processing of claims more efficient and leads to a faster settlement of claims for customers. It can be used throughout the claims process, for instance in the motor vehicle sector from the submission of images of damage via a smartphone app to the repair of the vehicle or payment of the claim amount. It can also be used to categorise incoming cases for claims handling in order to significantly reduce the case handing lead time for the customer.

AI tools can be used to automatically read, interpret and process relevant documents and photographs, such as to extract the information needed from medical records or identity cards, to recognise vehicle types or licence plate numbers, or to evaluate whether the damage to a vehicle is a total loss.

By collecting large amounts of historical data, AI tools could be used to make a plausibility assessment for different types of injuries to ensure quality and uniformity in assessments. For example:

- compensation levels for different injuries or damages
- degree of disability for different types of injuries
- reason for rejection in similar claims
- other cases where the AI can gather information and demonstrate conclusions based on probability

Fraud detection

Another area in which AI solutions are commonly applied in the insurance sector is fraud detection and prevention. AI-driven fraud detection solutions can be used to analyse massive amounts of data from multiple sources, enabling insurers to spot and flag unusual patterns that a human might miss, thereby detecting possibly fraudulent claims.

For example, AI can be used to analyse documents and images related to a claim to find potential indications of fraud. Pattern recognition on vehicle damage data can be used to detect cases of fraud that would not be recognisable under previous systems. AI software can also detect manipulated images or other factors that might raise suspicion. This could include images from the internet indicating that the customer has sold the items prior to making a claim or data indicating that the photos provided for documentation were taken after the filing of the claim.

Content categorisation for unstructured data

This relates to the use of AI tools to read, interpret and categorise unstructured data in the form of incoming letters, emails, forms, excel sheets, etc to be converted into machine-readable formats and further processed. This allows companies to sort the huge amount of incoming correspondence received each day to ensure that it is quickly and correctly sorted. On the one hand, this allows incoming documents to be classified with the aim of assigning them to the correct follow-up process (eg, notice of termination, application, change of address, statement of displeasure). On the other hand, it can also allow relevant technical data to be extracted in order to facilitate subsequent processing, for example by prefilling certain individual data fields in forms or databases.

Pricing and underwriting

AI offers numerous possibilities in the pricing and product design of insurers. In combination with corresponding raw data, for example, new risk characteristics can be developed that can contribute to more accurate insurance cover. With the willingness and consent to share one's own data, products can be tailored more precisely to the customer.

Advances in risk assessment are also expanding the possibilities for providing insurance cover. This has been clearly demonstrated in the past, such as in the area of term life insurance for people with serious pre-existing conditions. For example, the increasing availability of data and the further development of analytical methods in combination with medical progress now makes it possible to offer insurance for carriers of the HIV virus under certain conditions.

Aside from medical data, other types of data can also be used to further improve risk assessments. One category of particular interest is public or open data, such as meteorological data.

In Germany, for example, the insurability of buildings against floods was also significantly increased by additional, more detailed data within the framework of the geo-information system for flood hazards of the insurance industry (ZÜRS).