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# *Legal Challenges of Artificial Intelligence Applications in the Insurance Industry and Remedies with an Emphasis on Marine Insurance*

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## Abstract

**Background and Theoretical Basis:** Artificial intelligence (AI) has a huge potential to transform industry and society. Its benefits are widely recognized, and it has become a tool of strategic importance for the European Union and a major driver of economic development. However, as with any technological development, it also comes with challenges that must be assessed and, if necessary, addressed by policymakers and businesses.

**Methods:**. In this research, using a descriptive analytical method, the legal challenges of artificial intelligence applications in the insurance industry and solutions to address them with an emphasis on marine insurance were examined. In addition the supply risks are first identified based on the opinion of experts in the National Iranian Oil Company, especially in the contracts department, and then weighted using the analytic hierarchy process (AHP) technique.

**Findings:** Artificial intelligence has been a big challenge for the insurance industry for decades and is creating fundamental changes in the way this industry operates but in the medium and long term, they can be used to increase the efficiency and effectiveness of insurance, especially marine insurance, as a very large commercial insurance.

**Conclusion:** The rules-based system components of AI are a "natural fit" for many transport businesses, particularly marine insurance. The application of artificial intelligence to eliminate repetitive tasks and improve efficiency is visible in the

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market of porter insurance and commercial insurance. On the contrary, the personalization of insurance through artificial intelligence is limited to personal lines and SME businesses. However, its application in commercial insurance including various marine levels will be widely involved soon. AI will likely have a broad impact on the insurance value chain, from underwriting and claims management to distribution and customer service to asset management. As a result, insurance executives should be familiar with the new technologies involved in this change and how artificial intelligence can help organizations produce innovative products, gather valuable insights from new sources, streamline processes, and improve customer service. The purpose of this article is to make interested people and people involved in the insurance matter familiar with the potential benefits related to artificial intelligence applications and to motivate academics to study controversial topics in this field.

***Keywords***: Artificial Intelligence, Marine Insurance, Insurance Technology, Blockchain.

## 1. Introduction

The insurance industry is generally notorious for its outdated processes and inability to take advantage of the new available technologies. Insurers benefit from automating routine tasks, but many have yet to even begin to review their processes, simply because their legacy systems are complex transaction platforms that are unable to integrate and leverage new technologies. There is evidence that marine insurance companies are beginning to embrace AI and make the necessary changes in their organizations to enable the use of AI-related technologies. These help fleet operators and marine insurers improve vessel reliability and reduce operating costs, while facilitating safe operations and ultimately reducing risk. Artificial intelligence is predicted to have a huge impact on all aspects of the marine insurance industry. Advanced technologies and data now influence distribution and underwriting, and policies are priced, purchased, and closed in real time.

The insurance industry is ripe for automation intervention as it revolves around data analysis and processing. Any shift toward automation should generate significant cost savings, as a significant portion of an insurer's cost structure is devoted to human resources. In addition, insurers can reduce their claim processing time from months to minutes or even seconds. Machine learning is often more accurate than humans. Thus, insurers can reduce the

number of denials that lead to appeals. AI can be used to quickly understand the potential impact of events around the world, as it can take unstructured data from sources such as social media, weather, real-time stock prices, and emails to analyze it in real-time for predictions. Scenarios and impact assessment e.g. claim from extreme weather events. AI also helps insurers in the costly and ongoing battle against fraud: it can sift through vast amounts of external and internal data to identify anomalies and fraud-related patterns such as duplicate claims, and every time an event results in a confirmed case or becomes incorrect, he learns.

Most marine insurers are "keenly" aware of the need for better data analytics, but struggle to find data with sufficient clarity and precision to use when selecting risks and pricing. Until recently, there was a lack of tools that would enable an insurer to select and monitor vessels and create a high-performing and diversified insurance portfolio. Artificial intelligence may represent a solution and therefore is likely to change the industry drastically – if it is embraced. There is evidence of strong interest from marine insurance companies in engaging with AI, along with interest from insurance technology investors who have identified marine as the focal point of the insurance technology revolution. This focus is due to the high value of the commercial marine insurance market, the emergence of a wealth of data in the industry (albeit currently sparse), and the fact that it is at the heart of global supply chain logistics. Commercial marine insurance companies have never had so much data at their disposal, but many of them do not have the tools or skills to use it (DWF , 2018).

With 90% of goods transported by sea around the world and a global value of $1.5 trillion, the maritime industry is a strategic economic sector. But it is also one of the most polluting activities. Artificial intelligence-based systems make changes and help the shipping business to be more efficient, reduce its environmental impact, and improve its profitability (Sinay, 2022).

The word "Insurance" is called in English (Insurance) and French (Assurance), and lexicologists believe that the Latin root of these English and French words (Securus) means assurance, provision, and guarantee (Irfani, 1992: 3). Of course, some believe that "Bimeh" is a Persian word from the root of "Bim" and means "fear and avoidance". Because, this word entered Persian for the first time during the time of Naser al-Din Shah Qajar and the conclusion of the contract with Russian Lazarpoliakov, and the

reason for this was the translation of "Estrokhane" from Russian to "Insurance Contract" in Persian, and as "Strakh" in the language Russian means "fear", insurance contract is also considered as a contract to avoid fear and "fear" (Ahmadi, 2003: 13).

When the policyholder and insurer are less involved in purchasing insurance, the purchasing experience will be faster. With the help of artificial intelligence algorithms that show the risk situation, enough information about people's behavior will be available, so that the cycle of completing the purchase of a life, business, or car insurance policy will be reduced to a few minutes or even a few seconds (Wahdat Zarik, 2019: 6).

Now in the insurance branch, the entry of the technology monster called InsureTech is rapidly forming, growing, and developing. This innovation is happening as fast as possible and it is expected to see its more significant progress. In addition to these, InsureTech helps customers use insurance services outside of time and place limitations with the help of tools such as smartphones. Utilizing the Internet of Things, valuable information can be obtained from the devices that are connected to the insured assets. With the help of the Internet of Things, the era of paper games ends and the payment of insurance claims is done with high efficiency (Makhshaish, 2018: 16).

The digitization of the insurance industry has made significant progress and has gone beyond analog to digital information processing (Stokley et al., 2018: 63). Elling and Lehmann describe digitalization as "the integration of the analog world with new technologies that affect customer engagement, data access, and business processes." Digital transformations are also driven by insurance technologies (InsureTechs) that emerged in the last decade (Rikkinen et al., 2018: 2). New technologies affecting the insurance industry include cloud computing, telematics, Internet of Things (IoT), mobile, blockchain technology, and artificial intelligence (Kapil, 2020). Digitalization has already had a significant impact on the insurance value chain, and with the spread and advancement of new technologies, this impact will continue (Elling and Lehman, 2018).

Important changes include increased process efficiency, improvement of insurance policy issuance and product development, reshaping of customer interactions and distribution strategies, and new business models (Albrecher et al., 2019: 63). Bahnert et al. (Bahnert et al., 2019: 39) showed in their study that digitization activities have a significant positive impact on

the business performance of insurance companies. At the beginning of the digitization wave, the main focus was on digital distribution channels, and their impact on insurance agents, customers, and competition. In the following years, the widespread presence of mobile and connected devices has opened new opportunities for insurance companies to use innovative technologies to their advantage. For this reason, access to a large amount of customer information forms the basis of the final application of artificial intelligence and can be considered a prerequisite for the implementation of artificial intelligence in insurance companies.

Artificial intelligence is a term that includes many different components including big data, smart contracts, robotics, Chatbots, telematics, gamification, and the arrangement of algorithms to facilitate insurance practice, claims, and distribution processes. In the field of insurance, these technologies are usually gathered under the term insurance technology. What makes artificial intelligence different from the basic automated process is that artificial intelligence is autonomous, that is, it can make independent decisions based on its own choices and learn from its experiences.

Blockchain technology is often referred to as InsureTech. The primary purpose of this research is to discuss a: the arrangement of artificial intelligence common in the insurance industry and planning for the near future b: some challenges that the use of InsureTech raises for insurers and insurers and c: some legal challenges that arise from the use of intelligence artificial and possible challenges that affect insurance buyers and sellers.

Insurance technology is involved in two broad areas of insurance. Personalization of the insurance obligation and elimination of duplicate tasks and unnecessary delays. In essence, personalization includes the collection and use of very specific "source data" related to the insurer in question the analysis of this data in the context of the related data, and the application of algorithms to this data to provide a targeted and fast insurance proposal. These techniques also increase the insurer's ability to offer a variety of insurance products to insurers.

### *1.1. The use of artificial intelligence in the insurance sector*

The benefits that AI can bring to insurers, their customers, and society as a whole are many and varied, depending on the specific use case. According to the World Economic Forum, AI will help insurers more accurately predict risk, customize products, and use advanced foresight to rapidly deploy new

products in response to emerging risks. In its 2018 report, the World Economic Forum identifies several potential applications of artificial intelligence in the insurance sector in the coming years.

AI applications in the insurance sector are currently increasing productivity, helping to improve customer service providing greater insight into customer needs, and helping to prevent fraudulent transactions. Some of these benefits are further explored in the following sections.

### *1.2. Application-oriented insurance*

One of the major innovations introduced by insurance technology is utility-based insurance (UBI), which can be used to develop more personalized insurance products. The purpose of this process is to improve the provision of insurance to individuals and companies, including ship operators and cargo owners (Swier and Tottenburn, 2010: 62).

Pay-as-you-drive (PAYD) insurance is at the forefront of this process. New products have emerged to provide insurance to drivers who drive less than a certain amount of mileage, perhaps 7,000 miles per year. The sum insured is based on a fixed cost for fixed vehicle risk, such as fire and theft, and a flexible element.

Based on the number of miles driven each month, this information is collected through the use of telematics, which includes a "black box" in the car to transmit the information to the insurer in real-time. Drivers can see the cost of their insurance as incurred and can also get an advanced indication of the cost of a particular trip.

Performance-based insurance allows insurance to be adjusted based not only on the distance the insured drives but also on how the insured drives (known as "pay-as-you-go" or PHYD insurance). For this purpose, the use of telematics to monitor variables such as the insured's driving speed on all types of roads, the insured's strong acceleration, whether he takes breaks during long drives, the time he spends on highways, and where and when he drives are considered. Again, this information can be transferred from the black box inside the car to the insurer. It is then compared with relevant big data sources to determine the premium.

Much of this involves collecting and analyzing personal data from a large group of people and sources to see, for example, where a person travels and what times of the day and days of the year are most dangerous. This information can then be linked to places, times, and dates of increased crash

risk. In terms of data protection, there are obvious issues arising from this, but possibly also wider issues of privacy and consumer discretion and concerns about how much of their data could be misused or lost by large companies, for example after A cyber incident occurs.

Commercial drone insurance is another example of how this type of insurance works in practice. Insurers are teaming up with technology companies to identify and minimize the risk of drone flights. This is accomplished by collecting data including extreme local weather, population density, and proximity to high-risk areas (which in the case of drones includes airports). An algorithm can then analyze this and other data points to determine the risk level of a particular flight. We can see how this technology may be transferred to the marine sector (Cooper, 20019: 178).

### *1.3. Robotic process automation*

The introduction of robotic process automation (RPA) and the use of big data means that information can be collected, decisions can be turned into commitments and policy documents can be issued much faster than in the past. This is achieved by using RPA and Chatbots to interrogate the policyholder on key variables and process that information to make the necessary underwriting decisions. Most of us will be familiar with a similar process when it comes to purchasing motor or home insurance. However, the difference here is that the process can be fully automated using RPA, and big data analytics provide a much more accurate and sensitive basis for determining premiums for specific risks based on the source information provided by the insured. he does. This can have major benefits for the shipping industry and especially for cargo interests, by improving the speed and efficiency of underwriting and by reducing paperwork and thus costs. The important thing is that some of these facilities are available online 24 hours a day so that you can get insurance at any time.

### *1.4. Blockchain and data identification*

Many business transactions require confirmation of the existence of relevant insurance contracts. For example, cargo insurance may involve multiple stakeholders including owners, operators, cargo owners, lenders, and banks. According to the traditional structure, the sale of goods and their transfer abroad involves a significant amount of paperwork, including commercial invoices and bills of lading, which provide the basis on which the insurer issues insurance policies to the shipper and his banker. Then that banker must

transfer the documents to the bank in the receiving country and the recipient will pay the amount of the goods against those shipping documents. This transfer process can take up to a week, during which the goods may sit at the port and incur costs, causing congestion and freezing of assets. Insurance companies in Japan have developed a blockchain-based solution to this process that allows all parties to a transaction to view and verify paperwork in real time, thus streamlining the shipping process by eliminating the need to physically transfer documents between banks. Attention gives speed (OECD, 2020).

Similarly, marine hull insurance may include coverage for multiple movable assets in different regions around the world. Underwriting and insurance operations for these assets involve collecting and verifying a range of data, such as asset value, location, and history of losses, and making that data available to the various interests involved in the insurance process. This can be a lengthy process (with the risk of inaccuracy or uncertainty), but the use of blockchain technology can significantly simplify and speed up the process while providing the necessary level of transparency and reliability. Recently, a program for the introduction of these capabilities has been launched by a coalition of technology groups, insurance companies, and a "pilot" insured. Although the initial program was limited to compiling and "locking" asset records for one shipping company worldwide, the program is expected to expand to other markets. including global logistics, aviation, and energy. It is also likely to have a role in property insurance, particularly where it provides coverage in multiple jurisdictions and requires an accurate listing of property in multiple locations with clarity about the allocation of premiums among those different locations. Global captive programs are particularly suited to this type of technology and are currently expanding in that area. Using blockchain to verify the existence of insurance can also have other uses. For example, Marsh Brokers, together with IBM, has created a platform to simplify the process by which a company can verify that a contractor has the insurance it claims to have (OECD, 2019).

### *1.5. Reliance Insurance*

The use of artificial intelligence is not limited to insurance but is also used in the placement of reinsurance programs. Here, technology, and blockchain in particular, can be used to ensure the consistency of data available to all reinsurance parties while simultaneously improving the quality of that data.

Artificial intelligence can facilitate the ability of reinsurers to analyze their portfolio performance and identify areas for potential improvement. It also allows for more accurate and efficient analysis of contract terms to ensure that they are consistent, free of anomalies, and meet the needs of both parties. Finally, in the reinsurance sector, artificial intelligence is also being developed to better align reinsurers' risk appetite and reinsurance requirements at the pre-contract stage (OECD, 2017).

Along with reinsurance, joint insurance in which several insurance companies jointly insure a risk also has this benefit. This type of insurance is often used for severe and big risks, including fire and explosion in industrial companies. In this type of insurance, two or more insurance companies jointly insure an industrial company and each of them undertakes a share of compensation in case of damage. Of course, joint insurance does not fully provide compensation, and therefore, reinsurance is a kind of complement to joint insurance, and the existence of both together is beneficial to the industrial insurer (Najumi, 2017: 109).

### *1.6. Improving customer experience*

Many practical applications of AI depend on the availability of high-quality data or the use of machine learning or deep learning techniques to achieve results and improve performance over time. AI also enables the use of a variety of data sources (e.g. images, location data, sensor data) to enable real-time underwriting and immediate claims processing.

Consumers have embraced innovation in insurance, especially those that make it easier to interact and improve communication. They want new products and services that respond to their needs and greater convenience in interacting with their insurer when, how, and where they want, making it more of an everyday experience. For example, the use of consumer Chatbots is used by insurance companies across a range of different platforms. Chatbots are available 24/7 and can help simplify and speed up interactions between insurers and their customers and improve communication. In addition, the use of artificial intelligence in semantic text analysis can allow insurers to Extract relevance from conversations with customer service Chatbots to gain better insights and better understand their customers' needs, provided the customer has consented to such analysis. (OECD, 2020)

Robo-advice, or automated advice, is a term used when financial advice is provided to consumers and businesses with little or no human intervention,

with providers instead relying on computer-based algorithms and/or decision trees. The Robo-Advisor's front end often takes the form of a dashboard in the client's profile or an AI-powered Chatbot that asks questions about the client's financial situation, preferences, and choices. Depending on the type of technology used, the Robo-Advisor provides recommendations based on the answers provided by the user or using other types of data (e.g. banking data). As this technology further advances, artificial intelligence and machine learning will have a greater potential role in supporting consumers in decision-making. However, currently, these systems are still in their early stages and have not yet been widely used (OECD, 2020).

### *1.7. And - more effective fraud detection*

Insurance fraud undermines risk pooling by reducing the funds paid by honest customers, leaving them with higher premiums and less capacity for insurers to quickly address real claims. Detected and undetected fraud is estimated to cost European insurers and their honest customers €13 billion annually. Artificial intelligence-based fraud detection solutions can solve the problem of fraud by analyzing massive amounts of data from multiple sources to identify fraudulent claims. These tools can enable insurers to identify and flag unusual patterns that humans may miss, potentially helping to reduce these huge costs as well as the customer's premium level.

## 2. Risk monitoring and prevention

As the insurance industry focuses more on prevention, AI systems can be used to help monitor and predict risk, as well as provide advice to customers on how to reduce risk in the future. This, in turn, can help reduce the frequency and severity of casualties over time. AI applications can also provide an opportunity for lower premiums for customers.

For example, AI can be used to better serve car insurance customers. AI solutions can be used to monitor and analyze customer driving behavior based on data collected by smartphone apps or plug-in solutions. Customers can then receive discounts on their insurance premiums based on how they drive, and can also receive more information about their driving behavior to help them improve over time.

## 3. Application cases of artificial intelligence in the insurance industry

Use cases show that most applications in the insurance industry, from analyzing customer images to using algorithms to estimate contract terms for life insurance policies to optimizing fraud detection, aim to realize limited artificial intelligence because they are multitasking. They solve the specific. According to today's insurance markets, insurance companies are more interested in the applications of Artificial Intelligence than imitating human intelligence (strong AI). The impact of more human-like AI on the insurance industry remains unknown because the technology is not yet fully understood and developed. Currently, insurance companies must focus on implementing narrow AI while monitoring the advancements in AI technology. Most applications focus on specific areas of the value chain and are used for customer efficiency and operations: scenarios where the computational advantage, speed, and accuracy of artificial intelligence are mainly used.

Using artificial intelligence to create new insights or reveal previously unknown results is more difficult from a technological point of view. (Elling et al., 2021: 16-17)

The most prominent use cases in this category today are distance-based insurance contracts in the health, motor, and property and casualty sectors. For example, startups like Oscar29 use machine learning algorithms to analyze claims data and make inferences about the frequency of activities and procedures that doctors perform. Based on the results, Oscar can identify specialists and specialists in specific treatments to refer policyholders to the most appropriate hospital. As another example, Lemonade30 is changing several links in the traditional insurance value chain by replacing brokers, underwriting agents, service workers, and fraud detection experts with artificial intelligence systems.

**4. Legal challenges in marine insurance**

Artificial intelligence confronts the insurance industry with various legal issues, the most important of which is the attribution of responsibility. To properly issue insurance policies and enable them to settle claims and analyze their disclosures, insurers need to know who is responsible for damages caused by AI malfunctions. In cases where the errors of the artificial intelligence developer or producer can be considered the cause of artificial intelligence malfunction and responsibility that appears relatively clear at first glance. As the decisions made by artificial intelligence systems move further away from programming and become day-by-day based on the principles of machine learning, so this makes it is difficult to identify the exact cause of a particular decision of artificial intelligence and the origin of damages (Cooper, 2019: 188)

A system that learns from the received information, can act independently of its operator and in a way that its designers could not make the necessary predictions. Therefore, the question arises if the actions of artificial intelligence are unjustified, or cannot be attributed to human error, who is responsible? Different opinions have been presented in this regard. For example, it has been said that the corresponding rules for animals can be applied to artificial intelligence machines. Another opinion refers to the laws that have legal personality. Perhaps the alignment with this approach is that at the end of the day when the actions of the company can be attributed to a person or a group of persons or the company, it can only be held criminally

responsible, for example, if a person acts in the interest of the company, it can be identified. On the contrary, the application of artificial intelligence is not necessarily attributable to a person. (Cooper, 2019: 189)

Given these problems, it seems that some form of legislation would require a military determination of legal proportionality in cases of AI-induced damages. The European Union has emphasized this issue through the approval of the European Parliament and recommendations to the Commission in the 2017 Robotics Civil Rights Regulation. The document calls on the Commission to adopt two approaches to legal liability: a strict liability approach or a risk-based liability approach. Risk-based liability approach. A risk-based approach focuses on "people who can...minimize risks and deal with negative effects" (European Resolution 16 February 2017). In terms of insurance, the European Union has entered into the issue of compulsory insurance plans and "all possible responsibilities in the causal chain (ibid., paragraph 57)".

The development and use of artificial intelligence are currently covered by a broad body of existing EU legislation that addresses many potential risks and challenges, and this is complemented by national regulatory frameworks. The EU legal framework covers relevant areas such as fundamental rights, privacy, and data protection, as well as product safety and liability. A horizontal, proportionate, and principles-based framework that seeks to build on existing EU and national regulatory frameworks and address any potential gaps where necessary will help support the development and uptake of AI and avoid unnecessary burdens. In addition, policymakers should examine where existing laws may create barriers to the use or development of AI.

For example, the principle of data minimization under the General Data Protection Regulation (GDPR) conflicts with the realities of artificial intelligence development. To develop AI applications that are accurate, it is essential to have large amounts of quality data to train algorithms. This also helps reduce the risk of bias in AI program results. However, the GDPR imposes restrictions on the use of data, which do not take into account the need for the development of reliable AI and may hinder the Commission's goal of making Europe a world leader in the development and deployment of AI. Therefore, it is worth considering the recommendations of the

European Commission Expert Group on Regulatory Barriers to Financial Innovation (ROFIEG).

According to the above explanations, the challenges of artificial intelligence in the field of marine insurance can be divided as follows:

Navigation: real-time capture information is sent from the ship fleet to the shipping company's office and ports, where they are combined with satellite data (weather forecast, port restrictions in some shipping countries, or position in others...). Data analysis makes tracking easy and helps shipping lines optimize each ship's route.

**Safety**: Another project is designed to add image recognition to marine positioning systems and radars, thanks to sensor data from thermal and ultra-low light cameras in marine locations. The aim is to help ships avoid collisions in busy waterways, as we know that 75-95% of all accidents at sea are caused by human error.

**Cyber Security**: The AI-based system can monitor the digital flow of data 24/7 and automatically initiate appropriate action if an anomaly is detected.

Carbon Impact: Route optimization helps save fuel and energy for all ships, resulting in lower greenhouse gas emissions. This aspect is key to complying with environmental regulations and in the fight against climate change.

**5. Ensuring proper principles and risk-based framework for artificial intelligence**

The insurance industry supports the adoption and application of ethical, reliable, and human-centered artificial intelligence through a suitable and appropriate method. Appropriate principles-based framework as a starting point, it is important that policymakers carefully consider how some principles may already be reflected in the current regulatory and legal framework. This aspect is fundamental and has been carefully emphasized by the HLEG on AI in its policy recommendations for establishing an appropriate governance and regulatory framework for AI. Furthermore, such a framework should follow a risk-based approach, and use cases should be prioritized based on their potential and treated differently, whenever they cause harm, the scope should be restricted to only those AI applications. be limited, which creates significant effects (Alliance, 2014: 9).

Many existing supervisory or regulatory frameworks for the use of AI share a common set of high-level principles, many of which are not specific to AI and are addressed in other sectoral or horizontal legislation in the EU. For example, GDPR is at its core an ethical and principles-based regulation that includes core principles commonly found in existing AI ethical guidelines, such as transparency, fairness, and accountability.

In the context of financial services laws and insurance in particular, principles such as transparency, fairness, and ethics are also already addressed to some extent by commercial conduct and disclosure laws. In addition, the advice rules apply wherever personal advice is provided to a client, regardless of whether the advice is provided by a human or artificial intelligence actor.

**A- Transparency and explainability**

Transparency and explainability are key elements to facilitate public understanding and trust in the use and application of AI. Ensuring transparency about when and for what purpose AI is being used will not only help increase consumer confidence in the technology but also facilitate its overall industry adoption. Providing meaningful and comprehensible information also positively contributes to more informed choices for consumers. Transparency can have many meanings, but in the context of AI systems, it should be defined as a disclosure when AI is being used (e.g. to provide a recommendation) or if a consumer is directly interacting with an AI-based agent (e.g. a Chatbot). to be understood. Any disclosure must be proportionate to the significance of the interaction. More transparency means that people can understand how an AI system is developed and operates in the relevant application domain, for example, if and how AI is used in a decision-making process. However, it is also accepted that Strict transparency requirements may actually create confusion by making the AI system more vulnerable to attack, or even create risks to its security. The balance between these considerations is important in determining the appropriate level of transparency in the use of artificial intelligence (Insurance Europe, 2022).

Explainability means ensuring that companies can explain how they use AI in their business processes and, if necessary, explain how these applications work. It also involves enabling people affected by the outcome of an AI decision-making process to understand how it was arrived at. This

requires providing easy-to-understand information that also enables anyone who may be adversely affected to challenge the outcome where reasonable and appropriate.

However, explainability may not always be appropriate in all cases. The degree to which clarification is required depends strongly on the context (i.e., the importance of the result) and the severity of the consequences if a wrong or incorrect result is reached. In some cases, the need for clarification may affect the accuracy and performance of the AI system or create privacy or security implications. For example, the Monetary Authority of Singapore (MAS) acknowledges in its guidelines that a company using artificial intelligence for fraud detection purposes should be able to decide not to share information or an explanation of the model it uses, given concerns. not to manipulate the model or provide explanations about the model it uses (Fleisch, Yang, 2018: 9).

It should be noted that the GDPR requires that data subjects receive information about the existence of automated decision-making as well as meaningful information about the logic involved and its significance and implications for the data subject. Therefore, data subjects may seek clear explanations about the data used in any AI decision-making process and how this data affects the outcome. However, clear descriptions do not or need not imply disclosure of intellectual property or publication of proprietary material.

Source codes and clear explanations of the use of artificial intelligence should instead focus on facilitating the data subject's understanding of how and when the company uses such technology. Therefore, the focus of any principle on transparency and explainability should be on providing meaningful information and clarity about the AI system and its decisions or recommendations. It should not include the disclosure of source code or other proprietary code, which is too technically complex to be useful or to help the customer understand the result. It may also be subject to intellectual property rights, including trade or business secrets. Therefore, the goal should be to facilitate public understanding of algorithmic results, not to seek disclosure or transparency of the algorithm itself (Baffin, 2018: 12).

**B- Fairness**

To increase trust and confidence in the use of AI, it is important that AI programs are considered fair and do not discriminate against certain groups

of customers. Fairness can be considered in AI program design concerning the selection of input parameters used to eliminate potential sources of bias. However, this does not mean that there cannot be differences in behavior between different groups of customers based on relevant risk factors, which is a central aspect of the insurance business model. Trade insurance is based on risk assessment and pricing policies. Distinguishing between groups that represent higher risks and groups that represent lower risks in a risk pool is central to how insurance works. When discussing fairness in the field of insurance, we must be careful not to confuse differentiation with discrimination. Differentiation means treating comparable situations in the same way and different situations differently. Unlike discrimination which treats comparable situations differently – leading to poor customer outcomes. It should also be emphasized that many companies that employ AI programs already have review processes in place to identify and minimize unintentional bias ((Insurance Europe, 2022)).

In common law, the trustee is a creature of the rule of fairness, so it is necessary to prevent additional payment to the policyholder to prevent him from being unduly rich so that the policyholder cannot unfairly acquire additional funds (Kozobovska, 2010: 22). This concept entered the common law at the end of the 18th century and the courts accepted it in different opinions and different issues, including insurance claims (Gen, 2000: 610). And in a way, it is a fair way of compensation that was recognized by the courts of equity. Lord "Mansfield" stated in 1782: "Every day insurers are put in the place of their insured. Common law can apply fair principles by considering the right of subrogation as a condition of the insurance contract. The right of subrogation is based on the fact that insurance contracts are compensation contracts in nature. Therefore, the insurer, for the amount he pays to the policyholder, while another person is primarily responsible for such payment, has the right to obtain the right of the insurer to file a lawsuit against those persons." (Johnhird, 2001: 306)

**C- Responsibility**

In the field of ethics and artificial intelligence, accountability is a term generally used to refer to expectations from companies for the proper functioning of their artificial intelligence systems. If an AI program does not perform as intended or leads to an incorrect result, it can also involve taking action to ensure that the result is improved in the future. As such,

accountability also provides a mechanism that Facilitates trust and confidence in artificial intelligence systems. As part of this framework, companies must also ensure that data subjects are provided with appropriate channels to query, submit requests, and request reviews of AI-based decisions that affect them. Outsourcing requirements also ensure that insurers are held accountable when they outsource certain tasks to third parties (Insurance Europe, 2022).

Europe underpins the work done at the EU level by the European Commission HLEG on Artificial Intelligence and its recommendations for Trusted Artificial Intelligence, which provide relevant ethical principles to ensure the development, deployment, and use of artificial intelligence systems in a trustworthy manner. Determines, welcomes.

As the use and application of artificial intelligence systems become more widespread, companies must ensure that the results of these systems do not violate their ethical standards, values, and codes of conduct. Customers should be able to trust that they will not be mistreated or harmed because of a company's use of AI and that any AI-based decision will meet the ethical standards of human decision-making.

In addition to these moral and ethical considerations, the GDPR now includes relevant principles in this area: (1) legality, fairness, and transparency, (2) purpose limitation, (3) data minimization, (4) accuracy, (5) storage limitation, (6) honesty and confidentiality and (7) accountability. Sharing the experiences of insurers in compliance with the principles contained in GDPR can be a useful practice to evaluate the ethical use of artificial intelligence in the insurance sector from the point of view of compliance ((Insurance Europe, 2022)).

The dangers of artificial intelligence

While the opportunities for AI applications are almost endless, various risks have been identified.

Validation process: Testing autonomous systems on a ship is difficult due to complex access and unexpected situations that may occur at sea or in port. In addition, higher costs are involved and an incident may have significant consequences.

Data integration: AI cannot work without data. Therefore, companies looking to develop AI technology should have as much data as possible. But when multiple parties are involved in a project, it can be difficult to get them

all to share their data. And even if they do, interface consistency makes data integration difficult.

Human and financial resources: Since AI projects require several months and significant resources (skills, investment), SMEs must rely on third parties such as research and financial institutions to help them achieve their goal.

Regulatory and regulatory constraints: While advances in technology can sometimes happen very quickly, regulatory changes take time. Therefore, project owners struggle with compliance issues.

Cyber Security: Digitization and online data exchange is associated with a high risk of cyber-attacks, making IT security measures critical at every stage.

People management: If artificial intelligence is introduced in the company, employees are afraid of losing their jobs. This fear may lead to reluctance to get involved in the project use new tools or even sabotage. Efforts to raise awareness among people are vital. They need to understand how this technology can make their day-to-day work easier and allow them to stay in control of the complex networked world. This is the only way our globalized economy will continue to function.

Not all countries, regions, and companies are at the same stage. While some solutions are already on the market, some programs are still in the early stages of development, mostly in the testing phase.

## Conclusion

The introduction of robotic process automation (RPA) and the use of big data means that information can be collected, decisions can be turned into commitments and policy documents can be issued much faster than in the past. This is achieved using RPA and Chatbots to interrogate policyholders on key variables and process that information to make the necessary underwriting decisions. Most of us will be familiar with a similar process when purchasing motor or home insurance. However, the difference here is that the process can be fully automated using RPA, and big data analytics provide a much more accurate and sensitive basis for determining premiums for specific risks based on the source information provided by the insured. he does. This can have major benefits for the shipping industry and especially for cargo interests, by improving the speed and efficiency of

underwriting and by reducing paperwork and thus costs. The important thing is that some of these facilities are available online 24 hours a day so that you can get insurance at any time.

Insurance plays a vital role in the adoption and regulation process of emerging technologies such as artificial intelligence. It provides a hedging tool to deal with many of the risks associated with artificial intelligence and reduces them to a manageable scope. In doing so, insurance facilitates the adoption of AI in our commercial marketplace. Due to the unknown potential risks that AI entities may pose to their users and third parties, the insurance premiums offered to creators who purchase liability insurance are bound to be high. However, as these AI entities become safer, and their actions become more explainable and predictable, or at least once enough data is collected for actuarial calculations, premiums should decrease. This means that insurance policies may not be available to everyone, companies or users, at first, but as with other emerging technologies, anyone willing can eventually protect their participation in the AI market.

This paper argues that the assessment of risks posed by various AI entities will evolve and that the current insurance infrastructure is a solid starting point for managing activities that were once performed by humans and are now performed by AI entities. In addition, the vast majority of activities carried out by humans are associated with the possibility of catastrophic risk. Insurers still offer policies for the majority of these activities and can choose to exclude certain AI frameworks, such as the use of AI in warfare and terrorism. These cases create challenges for the insurer, but they are far from the commercial context that is the focus of this article.

As with other life-threatening activities that society continues to engage in as a matter of policy and for the assumed mass positive social good, the use of AI entities is predicted to dominate and these entities will slowly but surely integrate into our technological ecosystem. This will inevitably lead to various and sometimes novel types of injuries. While insurance has its shortcomings as a regulatory tool, it has nevertheless proven to be a valuable tool for facilitating emerging technologies.

Offers

Expectations around artificial intelligence are high. If we want to examine this field further, despite the uncertainty surrounding it, 1- the insurability of artificial intelligence should be encouraged and promoted. 2- Specific

elements of AI insurance policies (e.g., caps, deductibles, exclusions, etc.) should be left up to insurance companies.

Finally, insurers have a profitable incentive to provide policies to a growing industry that is expected to be an integral part of our lives for the foreseeable future. Elevating the discussion on insurance for AI allows various stakeholders to further empower society with the power and potential of AI.

## References

Ahmadi, Mahmoud, 2003, Insurance Principles (Summary and Application with Full Questions and Answers), Tehran, Mohaghegh Publications, first spring edition.

Allianz SE (2014), Allianz and Deutsche Telekom enter into a digital alliance, https://www.allianz.com/en/press/news/financials/stakes_investments/news-2014-06-06.html (accessed on 18 March 2019).

Anyoha, R. (2017), The History of Artificial Intelligence, Harvard Science in the News, http://sitn.hms.harvard.edu/flash/2017/history-artificial-intelligence/ (accessed on 23 August 2018).

BaFin (2018), Big Data meets artificial intelligence– Challenges and implications for the supervision and regulation of financial services, https://www.bafin.de/SharedDocs /Downloads/EN/dl_bdai_studie_en.html (accessed on 20 January 2020).

Bakshaish, Azadeh, 2017, Development of Insurance Industry with the Help of Artificial Intelligence and Internet of Things, published in the 25th National Conference on Insurance and Development in the year

Balasubramanian, R., A. Libarikian and D. McElhaney (2018), Insurance 2030-The impact of AI on the future of insurance, https://www.mckinsey.com/~/media/McKinsey/Industries The-impact-of-ai-on-the-future-of-insurance.ashx (accessed on 23 August 2018).

Bossmann, J. (2016), Top 9 Ethical Issues in Artificial Intelligence | World Economic Forum, WEF, https://www.weforum.org/agenda/2016/10/top-10-ethical-issues-in-artificial-intelligence/ (accessed on 29 August 2018).

Bostrom, N. and E. Yudkowsky (2018), "The Ethics of Artificial Intelligence", in Artificial Intelligence Safety and Security, https://intelligence.org/files/EthicsofAI.pdf (accessed on 29 August 2018).

Deloitte Digital (2017), Artificial intelligence: From mystery to mastery (AI in insurance whitepaper), https://www2.deloitte.com/de/de/pages/innovation/contents/artificial-intelligenceinsurance-industry.html (accessed on 23 August 2018).

Erfani, Tawfiq, 1992, Insurance Contract in Islamic Law and Iran, Volume 1, Tehran, Kayhan.

European Commission (2018), A European approach to Artificial Intelligence, MEMO, https://europa.eu/rapid/press-release_MEMO-18-3363_en.pdf.

Fliche, O. and S. Yang (2018), "Artificial intelligence: challenges to the financial sector", ACPR, Banque de France, https://acpr.banquefrance.fr/sites/default /files/medias/documents/ 2018_12_20_intelligence_artificielle_en.pdf (accessed on 17 September 2019).

John- Hird Birds, Norma-Birds, Modern Insurance Law, 5th edition, Sweet & Maxwell Limited, London, 2001, p. 304.

Kozubovska, dorota, Subrogation in Insurance: Theoretical and Practical aspects, Master thesis, Vilnius, 2010, p. 14.

Mahmoud Salehi, Jan Ali, 1988, Glossary of Insurance and Business Terms, "Export Company", National Industries Organization of Iran, first edition.

Mahmoud Salehi, Jan Ali, 2002, Insurance Laws, Tehran, Central Insurance of Iran, first edition.

Martin Eling · Davide Nuessle · Julian Staubli|(2021), The impact of artificial intelligence along the insurance value chain and on the insurability of risks,(https://doi.org/10.1057/s41288-020-00201-7.

McCarthy, J. 2007. What is artificial intelligence? Stanford: Stanford University. Accessed 28 August 2020. http://wwwformal.stanford.edu/jmc/whatisai.pdf.

Najoomi, Abdul Azim, 2017, A New Perspective on Insurance Rights, Majd Publishing House, Tehran, second edition.

OECD (2017), Enhancing the Role of Insurance in Cyber Risk Management, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264282148-en. (accessed on 28 August 2020).

OECD (2019), Measuring the Digital Transformation: A Roadmap for the Future, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264311992-en. (accessed on 28 August 2020).

OECD (2020), The Impact of Big Data and Artificial Intelligence (AI) in the Insurance Sector, www.oecd.org/finance/Impact-Big-Data-AI-in-the-Insurance-Sector.htm(Accessed on 10/12/2020).

Principles to Promote Fairness, Ethics, Accountability, and Transparency (FEAT) in the Use of Artificial Intelligence and Data Analytics in Singapore's Financial Sector

Tibshraeny, J. (2018), State and AMI home insurance policyholders in parts of the country deemed risky to receive premium increases of around $91 a year under IAG's new pricing model | interest.co.nz, Interest.co.nz, https://www.interest.co.nz/insurance/94931/state-andami-home-insurance-olicyholders-parts-country-deemed-risky-receive (accessed on 18 March 2019).

Vahdat Zirak, Maryam, 2019 Insurance in 2030 AD - The impact of artificial intelligence on the future of the insurance industry, Insurance Research Institute.

Wright, R. (2019), Workplace automation: how AI is coming for your job | Financial Times, Financial Times, https://www.ft.com/content/c4bf787a-d4a0-11e9-a0bd-ab8ec6435630 (accessed on 30 September 2019).

Zhen Jing, The confusion Between Subrogation and Assignment in insurance law, J.B.L. Nov. 2000, P. 609.

DWF . (2018, August 29). Will AI revolutionise marine insurance? Retrieved from dwfgroup: https://dwfgroup.com/en/news-and-insights/insights/2018/8/will-ai-revolutionise-marine-insurance

Sinay. (2022, March 30). Making Maritime Industries more Sustainable Using Artificial Intelligence Algorithms. Retrieved from Sinay.ai: https://sinay.ai/en/making-maritime-industries-more-sustainable-using-artificial-intelligence-algorithms/