

The Evolution of Insurance Services in The ERA of Artificial Intelligence

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Abstract

Artificial intelligence (AI) is increasingly transforming the insurance sector by reshaping customer relationship management, service delivery, and operational processes. This article examines the role of AI as a strategic lever for enhancing customer experience in the insurance industry. It focuses on the main applications of AI, including machine learning, natural language processing, chatbots, virtual assistants, predictive analytics, personalized recommendation systems, and sentiment analysis. These technologies enable insurance companies to process large volumes of customer data, identify individual needs and preferences, anticipate customer expectations, and provide more personalized and responsive services.

The analysis highlights that AI contributes to improving customer experience by reducing response times, facilitating access to information, automating repetitive tasks, and enabling the development of tailored insurance products and services. In particular, intelligent chatbots and virtual assistants provide continuous support and facilitate interactions between insurers and policyholders, while predictive analytics enables insurers to anticipate customer needs and optimize their offerings. AI also contributes to greater operational efficiency by automating claims processing, customer inquiries, and other administrative activities, allowing employees to focus on higher-value tasks.

However, the adoption of AI also raises significant challenges related to data privacy, transparency, informed consent, algorithmic bias, and the explainability of automated decisions. Consequently, the effective integration of AI requires a balanced approach combining technological innovation, ethical considerations, regulatory compliance, and human expertise.

Overall, AI represents a major driver of transformation in the insurance industry. By enabling greater personalization, responsiveness, efficiency, and proactive customer engagement, AI can contribute to strengthening customer satisfaction and loyalty while providing insurers with a sustainable competitive advantage. Its future development will depend on the ability of insurance companies to combine advanced technological capabilities with responsible and human-centered customer relationship strategies.

Keywords: *Artificial Intelligence; Insurance; Customer Experience; Machine Learning; Chatbots; Personalization; Predictive Analytics; Customer Relationship Management.*

I. INTRODUCTION

The integration of artificial intelligence (AI) into the insurance sector represents an unprecedented transformation, ushering in a new era in which customer experience is being fundamentally redefined and enhanced. Within an industry that has traditionally been perceived as rigid, complex, and sometimes insufficiently responsive, AI has emerged as a key strategic lever, enabling companies to significantly optimize their processes, improve service quality, and ultimately enhance customer satisfaction in a sustainable manner. In an increasingly competitive environment characterized by rising and increasingly diverse consumer expectations, the adoption of intelligent and innovative solutions has become an imperative rather than merely a strategic option. Insurance companies that fail to embrace this digital transformation risk falling behind competitors that are fully exploiting the opportunities offered by artificial intelligence. (Lemon & Verhoef, 2016; Eling, Nuessle, & Staubli, 2022) (Eling, Nuessle, & Staubli, 2022; Riikinen, Saarijärvi, Sarlin, & Lähteenmäki, 2018; Lemon & Verhoef, 2016).

The ability of artificial intelligence to process and analyze massive volumes of data at unprecedented speeds is profoundly transforming interactions between insurers and their customers. For instance, through advanced natural language processing systems, companies can now efficiently automate responses to frequently asked questions and requests, thereby providing rapid and context-sensitive assistance tailored to individual customers and specific situations. Furthermore, machine learning

algorithms play a crucial role in personalizing insurance offerings according to diverse customer profiles. These technologies enable insurers to identify specific customer needs with greater accuracy, which is essential for enhancing policyholder satisfaction. By moving from a standardized approach toward genuinely individualized and customer-centric interactions, insurers can not only strengthen customer loyalty but also anticipate potential risks and proactively respond to policyholders' expectations, thereby fostering greater trust and efficiency in service delivery. (Riikinen, Saarijärvi, Sarlin, & Lähteenmäki, 2018; Bhattacharya, Castignani, Masello, & Sheehan, 2025) (Eling, Gemmo, Guxha, & Schmeiser, 2024; King, Timms, & Rubin, 2021; Bekkaye & Zari, 2023).

It is also important to emphasize that improving customer experience through AI goes beyond automation alone. Chatbots and virtual assistants, while providing 24/7 availability, can also complement human interaction by assisting customers with increasingly complex issues. In addition, predictive analytics can provide insights into emerging market trends, enabling insurers to adjust their product offerings in real time. Overall, artificial intelligence is emerging as a major catalyst for transforming the insurance sector and redefining customer relationships to make them more agile, interactive, and increasingly centered on individual needs. (de Andrés-Sánchez & Gené-Albesa, 2024; Riikinen et al., 2018) (de Andrés-Sánchez & Gené-Albesa, 2024; Chatterjee et al., 2026; Eling, Nuessle, & Staubli, 2022).

II. CONTEXT OF THE INSURANCE SECTOR

The insurance sector plays a pivotal role in financial risk management. It provides a wide range of solutions that enable both individuals and businesses to protect themselves against financial losses resulting from numerous unforeseen events. Its functioning relies on a complex model of risk assessment and resource pooling, whereby premiums paid by policyholders contribute to financing compensation for individuals who experience covered losses. Although this collective approach is essential to maintaining economic stability, it also presents insurers with considerable challenges related to data management, information organization, and predictive analytics. The systematic collection and in-depth analysis of data play a crucial role in accurate pricing and rigorous risk assessment, making the sector particularly data-intensive and highly relevant in a rapidly evolving environment increasingly driven by innovation and continuous improvement. (Eling et al., 2022; Bhattacharya et al., 2025) (Eling, Nuessle, & Staubli, 2022; Eling, Gemmo, Guxha, & Schmeiser, 2024; Bekkaye & Zari, 2023).

Recent technological developments, particularly the emergence of artificial intelligence (AI), are significantly reshaping the boundaries of this traditional and well-established industry. The digitalization of insurance processes and the growing use of algorithms not only improve insurers' operational efficiency but also enable them to provide a more personalized and responsive customer experience. By analyzing increasingly large volumes of customer data, insurance companies are now able to segment their products and services according to specific identified needs, predict policyholder behavior more accurately, and detect fraudulent activities at an earlier stage and with greater precision than was previously possible. In this dynamic and constantly evolving context, AI has become a key lever for optimizing interactions between insurers and their customers, transforming traditional and relatively rigid business models into more agile systems capable of adapting to changing market needs. This transformation is essential for insurance companies seeking to remain competitive and relevant in an increasingly complex and demanding environment. (Eling et al., 2022; Aslam, Hunjra, Ftiti, Louhichi, & Shams, 2022) (Eling, Nuessle, & Staubli, 2022; Riikkinen et al., 2018; Eling et al., 2024).

Furthermore, this process of innovation must be accompanied by careful consideration of ethical issues and transparency. The systematic collection of personal data and its use within automated systems raise fundamental questions regarding privacy protection and informed consent among policyholders. Companies must therefore carefully balance the considerable benefits offered by AI, particularly in terms of improving customer experience, with the responsibilities arising from its implementation. In this regard, the regulatory framework, although often perceived as a constraint on innovation, may in fact serve as a powerful catalyst for the responsible development of artificial intelligence within the insurance sector by combining technological innovation with rigorous compliance. These technological and ethical challenges form part of a broader trend toward modernizing industry practices while strengthening consumer trust. A balanced approach is therefore essential, as only the harmonious integration of these dimensions can ensure a sustainable and promising future for the insurance sector. (Owens, Sheehan, Mullins, Cunneen, Ressel, & Castignani,

2022; Loi & Christen, 2021) (Aas et al., 2024; Soyer, 2022; Loi & Christen, 2021).

III. DEFINITION OF ARTIFICIAL INTELLIGENCE

Artificial intelligence (AI) is a highly developed multidisciplinary field that seeks to simulate and reproduce human cognitive capabilities through computer-based systems. It encompasses a broad range of techniques and approaches, including machine learning, deep learning, and natural language processing. (Russell & Norvig, 2021; Eling et al., 2022) (Russell & Norvig, 2021; Aas et al., 2024; Bhattacharya et al., 2025).

In general terms, the primary purpose of AI is to enable machines to learn, reason, and make decisions. These capabilities, which were traditionally considered specific to humans prior to the emergence of AI, are becoming increasingly achievable through hardware systems equipped with specialized software and algorithms. (Russell & Norvig, 2021; Bhattacharya et al., 2025) (Russell & Norvig, 2021; Bhattacharya et al., 2025; Eling et al., 2022).

The implementation of AI offers significant benefits to organizations across virtually all sectors of activity, including the service sector. In particular, AI applications are increasingly visible in customer relationship management. Examples include chatbots and intelligent virtual assistants, which rely on natural language processing technologies to facilitate interactions with consumers and provide immediate responses to a wide range of requests. (Eling et al., 2022; Riikkinen et al., 2018) (Riikkinen et al., 2018; Eling et al., 2022; Bhattacharya et al., 2025).

AI also enables companies to continuously collect valuable data on consumer behavior, thereby facilitating a better understanding of customer needs and, more importantly, the anticipation of their expectations. Machine learning-based algorithms allow organizations to conduct in-depth analyses of purchasing behavior with the objective of delivering a more personalized customer experience. (Lemon & Verhoef, 2016; Charpentier & Vamparys, 2025) (Lemon & Verhoef, 2016; Riikkinen et al., 2018; Eling et al., 2024).

IV. APPLICATIONS OF AI IN THE INSURANCE SECTOR

The automation of repetitive tasks, large-scale data analysis, chatbots, virtual assistance, personalized recommendations, claims and complaint management, purchasing behavior prediction, and numerous other applications are enabling AI to usher the insurance sector into a new era of service delivery. (Eling et al., 2022; Bhattacharya et al., 2025) (Eling et al., 2022; Bhattacharya et al., 2025; Riikkinen et al., 2018).

A. Chatbots

Chatbots are considered a key application of AI because of their role in driving the transformation and innovation of insurance services. They are advanced automated systems designed to simulate human conversations in a natural manner and to interact with consumers instantaneously, regardless of the time of day. Their capabilities are supported by machine learning technologies that continuously evolve through the acquisition and processing of new data. (Shum, He, & Li, 2018; Riikkinen et al., 2018) (Shum, He, & Li, 2018; de Andrés-Sánchez & Gené-Albesa, 2024; Chatterjee et al., 2026).

Today, chatbots are capable of analyzing customer requests and providing appropriate responses within a very short period of time compared with traditional methods. By relying on natural

language processing (NLP) technologies, they facilitate relatively smooth and natural interactions with consumers. As these systems continue to develop, they are increasingly capable of enhancing user interaction and improving the overall customer experience (Shum, He, & Li, 2018). (de Andrés-Sánchez & Gené-Albesa, 2024; Shum et al., 2018) (Shum et al., 2018; de Andrés-Sánchez & Gené-Albesa, 2024; Chatterjee et al., 2026).

B. Personalized Recommendations

Recommendation systems rely on machine learning techniques to provide personalized products and services that closely match customers' preferences and behavioral histories. Such recommendations can increase conversion rates while also improving customer satisfaction by providing more relevant and personalized offers (Ricci, Rokach, & Shapira, 2011). (Ricci, Rokach, & Shapira, 2011; Charpentier & Vamparys, 2025) (Ricci, Rokach, & Shapira, 2011; Mohan, 2025; Charpentier & Vamparys, 2025).

C. Sentiment Analysis

Sentiment analysis enables organizations to gain a deeper understanding of consumers' opinions and emotions by analyzing information collected from sources such as social media comments and emails. This approach facilitates the rapid identification of customer concerns and enables companies to take appropriate corrective measures to maintain a positive customer experience (Liu, 2012). (Liu, 2012; Pang & Lee, 2008) (Liu, 2012; Pang & Lee, 2008; Bhattacharya et al., 2025).

V. ARTIFICIAL INTELLIGENCE IN THE INSURANCE SECTOR

Artificial intelligence (AI) and robotic process automation (RPA) are fundamentally transforming the management of repetitive tasks within the insurance sector. These technologies not only reduce the burden of manual work but also improve operational efficiency, speed, and accuracy. Activities that previously required substantial human intervention, such as handling information requests, processing claims, and underwriting insurance contracts, can now be largely automated. This enables insurers to allocate their human resources to tasks involving greater added value. (Eling et al., 2022; Bhattacharya et al., 2025) (Eling et al., 2022; Riikkinen et al., 2018; Bhattacharya et al., 2025).

The integration of artificial intelligence (AI) into the insurance sector represents a significant advancement in the continuous improvement of customer experience. Increasingly aware of the importance of technological innovation, insurance companies are now leveraging advanced algorithms and sophisticated machine learning systems to analyze vast and diverse volumes of data. This in-depth analytical process allows insurers to gain a better understanding of the specific needs and behaviors of different policyholders. Through detailed and targeted data analysis, insurance offerings can be personalized more effectively. This results in the provision of tailored solutions that address the unique needs of individual customers, thereby contributing significantly to higher levels of satisfaction and loyalty. (Riikkinen et al., 2018; Lemon & Verhoef, 2016) (Eling et al., 2022; Riikkinen et al., 2018; Eling et al., 2024).

For example, predictive models can recommend relevant insurance coverage to individual customers by considering various factors, including claims history, demographic characteristics, market segmentation, and even observed online behavior. This data-driven and analytical approach is transforming the sector by enabling insurers to become more proactive and responsive to customer expectations and needs.

(Charpentier & Vamparys, 2025; Ranjan, Hassija, & Kadyan, 2026) (Eling et al., 2024; Charpentier & Vamparys, 2025; Mohan, 2025).

Moreover, AI facilitates smoother and more responsive interactions between insurers and their customers, which is particularly important in an environment where customer satisfaction is a central priority. Modern chatbots, powered by sophisticated natural language processing technologies, provide uninterrupted customer support 24 hours a day, 7 days a week. They can not only answer frequently asked questions efficiently but also guide customers in a personalized manner when selecting insurance policies. These advanced digital tools do not simply process requests; they continuously improve through the incorporation of new data and user feedback, thereby enhancing their effectiveness over time. (de Andrés-Sánchez & Gené-Albesa, 2024; Riikkinen et al., 2018) (de Andrés-Sánchez & Gené-Albesa, 2024; Chatterjee et al., 2026; Eling et al., 2022).

During the claims process, for example, AI-based solutions can automate claim submission and processing, significantly reducing the waiting times commonly experienced by customers while simultaneously increasing transparency and confidence in the claims-handling process. This represents a significant step toward providing a more efficient and responsive customer experience. (Bhattacharya et al., 2025; Alshagrawi, 2025) (Eling et al., 2022; Aslam et al., 2022; Bhattacharya et al., 2025).

Consequently, through artificial intelligence, the insurance sector is moving beyond a purely transactional relationship toward a more interactive and highly personalized customer relationship. By using AI to refine customer segmentation according to individual behaviors and preferences, optimize operational processes, and deliver tailored experiences, insurance companies can create an environment in which customer satisfaction becomes a central strategic priority. AI therefore represents a valuable lever for improving operational efficiency on a large scale while fostering long-term customer loyalty and transforming customer engagement into a more proactive, enriching, and highly personalized experience. This evolution in customer interactions is also reshaping consumer expectations, as customers increasingly seek rapid and relevant solutions, further reinforcing the importance of AI within the insurance sector. (Eling et al., 2022; Riikkinen et al., 2018) (Riikkinen et al., 2018; Lemon & Verhoef, 2016; Eling et al., 2022).

VI. PERSONALIZATION OF INSURANCE SERVICES

The personalization of insurance services represents a major dimension of customer experience optimization, particularly in the era of artificial intelligence, which plays a central role in this transformation. Through sophisticated algorithms, insurance companies are now able to analyze a wide range of complex and heterogeneous data, including consumer behavior, demographic information, previous interactions, and customer histories. Artificial intelligence and machine learning therefore enable insurers to segment customers with significantly greater precision, facilitating the development of tailored insurance products that address the specific and sometimes unique needs of individual customers. (Charpentier & Vamparys, 2025; Lemon & Verhoef, 2016) (Charpentier & Vamparys, 2025; Ranjan, Hassija, & Kadyan, 2026; Soyer, 2022).

This personalization capability is not limited to the design of customized insurance policies; it also extends to the customer experience as a whole. It influences critical elements such as dynamic pricing, which can be adjusted according to customer

behavior and choices, as well as product recommendations that reflect the preferences and specific circumstances of each user. By integrating these advanced technologies, insurance companies can fundamentally transform their interactions with customers, making their services not only more efficient but also more relevant and engaging. (Ranjan et al., 2026; Mohan, 2025) (Charpentier & Vamparys, 2025; Mohan, 2025; Ranjan et al., 2026).

The importance of predictive analytics in this context cannot be overstated. By relying on advanced analytical techniques, insurers can anticipate future customer needs, identify emerging trends, and proactively recommend adjustments to insurance coverage. For example, a customer identified as potentially having an increased need for health insurance coverage may receive targeted recommendations during the purchasing process, thereby enhancing the relevance of the proposed solution and potentially increasing customer satisfaction. This proactive approach not only strengthens customer loyalty but also enhances the insurer's reputation as an innovative and responsive market participant. (Eling et al., 2022; Aas, Charpentier, Huang, & Richman, 2024)

Furthermore, the personalization of insurance services is reinforced through the integration of various digital tools, such as chatbots and online platforms, which enable continuous and personalized interactions with customers. These innovative digital tools not only facilitate the monitoring of policyholders' specific requirements but also provide them with valuable real-time information regarding their insurance policies, thereby creating a continuous and dynamic dialogue. (de Andrés-Sánchez & Gené-Albesa, 2024; Riikinen et al., 2018) (de Andrés-Sánchez & Gené-Albesa, 2024; Mohan, 2025; Charpentier & Vamparys, 2025).

With the advances enabled by artificial intelligence, the processing of customer requests and the management of claims can be adapted and personalized according to individual customer needs. This considerably reduces response times and can significantly improve customer satisfaction. Overall, the personalization of insurance services, when supported by advanced artificial intelligence technologies, fundamentally transforms interactions between insurers and policyholders by fostering relationships that are more engaging, relevant, and efficient for all parties involved. (Bhattacharya et al., 2025; Charpentier & Vamparys, 2025) (Eling et al., 2022; de Andrés-Sánchez & Gené-Albesa, 2024; Bhattacharya et al., 2025).

VII. LIMITATIONS AND RISKS OF ARTIFICIAL INTELLIGENCE IN THE INSURANCE SECTOR

Despite the numerous benefits associated with the integration of artificial intelligence (AI) into the insurance sector, its use also raises several limitations and challenges that need to be taken into consideration. The adoption of AI-based systems is not merely a technological development; it also involves organizational, ethical, legal, and human issues. The responsible use of these technologies therefore requires a balance between improving process efficiency, personalizing services, and protecting the interests of policyholders. (Owens et al., 2022; Bhattacharya et al., 2025) (Aas et al., 2024; Owens et al., 2022; Bhattacharya et al., 2025).

Personal Data Protection

One of the main limitations associated with the use of artificial intelligence in insurance concerns the collection, processing, and

storage of personal data. AI systems generally require large amounts of data to be trained and to produce relevant results. In the insurance sector, such data may include personal, financial, and behavioral information, as well as policy and claims histories. (Owens et al., 2022; Alshagrawi, 2025) (Eling et al., 2024; Soyer, 2022; King et al., 2021).

The intensive use of data raises concerns regarding the privacy and security of information held by insurance companies. Poor data management or data breaches may have significant consequences for policyholders and may undermine their trust in the company. Insurers must therefore implement effective data governance, system security, and access-control mechanisms while complying with applicable regulatory requirements. (Owens et al., 2022; Zheng, 2025) (Eling et al., 2024; Soyer, 2022; Acquisti et al., 2016).

- **Algorithmic Bias and Discrimination Risks**

Another important limitation concerns the risk of bias in artificial intelligence systems. Algorithms learn from historical data and may, in some cases, reproduce or amplify biases present in those datasets. In insurance, this can have particularly sensitive consequences when AI is used to assess risks, determine underwriting conditions, or establish personalized pricing. (Loi & Christen, 2021; Aas et al., 2024) (Aas et al., 2024; Loi & Christen, 2021; Choudhari & Jain, 2026).

An insufficiently controlled algorithmic model could therefore lead to unfavorable decisions affecting certain categories of customers. The pursuit of increasingly personalized services should consequently be accompanied by regular monitoring of AI models in order to identify potential biases and promote fair and equitable treatment of policyholders. (Loi & Christen, 2021; Zheng, 2025) (Loi & Christen, 2021; Aas et al., 2024; Israni et al., 2026).

- **Lack of Transparency and Explainability**

AI models, particularly complex machine learning and deep learning models, can produce results that are difficult to interpret. This characteristic, often referred to as the "black box" problem, represents an important limitation in the insurance sector. (Owens et al., 2022; Aas et al., 2024) (Owens et al., 2022; Aas et al., 2024; Charpentier & Vamparys, 2025).

When an automated decision influences contract acceptance, risk assessment, premium calculation, or claims processing, customers may need to understand the reasons behind that decision. A lack of explainability can create confusion and reduce policyholders' trust in the insurer. Insurance companies should therefore, whenever possible, adopt systems capable of explaining the main factors that contribute to an automated decision. (Owens et al., 2022; Loi & Christen, 2021) (Owens et al., 2022; Aas et al., 2024; Soyer, 2022).

- **Risks Related to AI System Errors**

Artificial intelligence is not infallible. The results produced by an AI system may be affected by the quality of the data used, model design errors, incomplete information, or situations that were insufficiently represented during the training process. (Aas et al., 2024; Amerirad, Cattaneo, Kenett, & Luciano, 2023) (Owens et al., 2022; Aas et al., 2024; Bhattacharya et al., 2025).

In the insurance sector, an algorithmic error may have significant consequences, particularly when it concerns risk assessment or

claims processing. It is therefore important to maintain human oversight mechanisms capable of reviewing important decisions and intervening when an AI system produces an inappropriate or inaccurate outcome. The objective should not be to completely replace human intervention, but rather to promote complementarity between human expertise and the analytical capabilities of artificial intelligence. (Amerirad et al., 2023; Bhattacharya et al., 2025) (Aas et al., 2024; Owens et al., 2022; Eling et al., 2022).

- **Technological Dependence and Workforce Transformation**

The widespread adoption of artificial intelligence may also create a degree of technological dependence within insurance companies. Organizations that automate a significant proportion of their processes must be able to maintain business continuity in the event of system failures, technical malfunctions, or cyberattacks affecting their information systems. (Bhattacharya et al., 2025; Eling et al., 2022) (Eling et al., 2022; Riikinen et al., 2018; Bhattacharya et al., 2025).

Furthermore, automation can significantly transform employees' roles and responsibilities. Certain repetitive tasks may progressively be automated, requiring organizations to adapt their workforce skills and provide continuous training. Insurance companies should therefore support technological transformation through appropriate skills-development policies, enabling employees to move toward tasks requiring greater analytical abilities, professional judgment, advisory skills, and customer interaction. (Bhattacharya et al., 2025; Alshagrawi, 2025) (Eling et al., 2022; Riikinen et al., 2018; Bhattacharya et al., 2025).

- **Potential Reduction in Human Interaction**

Although chatbots and virtual assistants can improve service availability and response times, excessive automation may also reduce the human dimension of the relationship between insurers and policyholders. This issue is particularly important in insurance because certain situations, such as major accidents, significant claims, or difficult financial circumstances, require empathy, active listening, and an understanding of the customer's individual situation. (de Andrés-Sánchez & Gené-Albesa, 2024; Riikinen et al., 2018) (de Andrés-Sánchez & Gené-Albesa, 2024; Chatterjee et al., 2026; Shum et al., 2018).

A fully automated experience may therefore be perceived negatively when customers wish to communicate with a human advisor. The challenge for insurers is consequently to determine which interactions can be effectively automated and which situations require human intervention. (de Andrés-Sánchez & Gené-Albesa, 2024; Lemon & Verhoef, 2016) (de Andrés-Sánchez & Gené-Albesa, 2024; Chatterjee et al., 2026; Eling et al., 2022).

- **Ethical and Regulatory Challenges**

Finally, the use of artificial intelligence in insurance raises significant ethical and regulatory issues. Insurance companies must ensure that the use of data and automated decision-making processes comply with principles of transparency, fairness, accountability, and privacy protection. (Owens et al., 2022; Loi & Christen, 2021) (Aas et al., 2024; Loi & Christen, 2021; Zheng, 2025).

Responsibility in the event of an error is also a central issue. When a decision is made or significantly influenced by an algorithm, it is necessary to clearly determine who is responsible for that decision. The development of AI in insurance must therefore be supported by appropriate governance mechanisms capable of establishing responsibilities, monitoring AI systems, and ensuring compliance with ethical and regulatory principles. (Aas et al., 2024; Owens et al., 2022) (Owens et al., 2022; Aas et al., 2024; Loi & Christen, 2021).

In conclusion, artificial intelligence offers considerable opportunities to improve the efficiency, personalization, and quality of insurance services. However, its integration should not be regarded as a risk-free solution. Issues related to data protection, algorithmic bias, transparency, system errors, cybersecurity, and the preservation of human interaction represent major challenges for insurers. Successful AI adoption therefore requires a balanced approach that combines technological innovation, human oversight, data governance, and respect for ethical principles. Such an approach is essential to ensure that improvements in customer experience are accompanied by a sustainable strengthening of policyholders' trust. (Bhattacharya et al., 2025; Owens et al., 2022) (Eling et al., 2022; Bhattacharya et al., 2025; Aas et al., 2024).

VIII. CONCLUSION

In conclusion, artificial intelligence has emerged as a major driver of transformation in the insurance sector, fundamentally reshaping the way insurers interact with their customers and manage their services. The integration of AI into insurance processes offers significant opportunities to enhance customer experience by making interactions more personalized, responsive, efficient, and increasingly seamless. Through the use of machine learning, natural language processing, predictive analytics, and intelligent automation, insurance companies are now able to process large volumes of data, identify customer needs more accurately, anticipate expectations, and provide solutions that are increasingly tailored to individual profiles. (Eling et al., 2022; Bhattacharya et al., 2025)

One of the most significant contributions of AI lies in its ability to move insurance services away from standardized and predominantly transactional approaches toward more customer-centric models. Personalized recommendations, predictive analysis, intelligent chatbots, and virtual assistants enable insurers to establish more continuous and relevant interactions with policyholders. These technologies facilitate faster responses to customer requests while improving the accessibility and availability of services. In particular, the ability to provide assistance 24 hours a day, 7 days a week represents an important improvement in customer service, as customers increasingly expect immediate and convenient access to information and support. (Lemon & Verhoef, 2016; Riikinen et al., 2018)

AI also contributes significantly to the optimization of internal insurance processes. The automation of repetitive activities, claims processing, customer inquiries, and other administrative tasks allows insurers to reduce processing times, minimize human errors, and improve operational efficiency. This transformation does not necessarily imply the replacement of human intervention; rather, it enables employees to focus on more complex activities that require professional expertise, critical thinking, empathy, and decision-making. Consequently, the combination of technological capabilities and human

expertise can contribute to the development of a more efficient and customer-oriented insurance service. (Bhattacharya et al., 2025; Aslam et al., 2022)

Furthermore, the use of predictive analytics and machine learning provides insurers with the ability to anticipate customer needs and market developments more effectively. By analyzing historical and real-time data, insurers can identify behavioral patterns, detect emerging needs, improve risk assessment, and develop more relevant products and services. This proactive approach represents a significant evolution in the insurance industry, as it enables companies to move from a reactive model, in which customer needs are addressed after they arise, toward a proactive model based on anticipation and continuous adaptation. (Aas et al., 2024; Eling et al., 2022)

The personalization of insurance services is therefore becoming a central component of customer experience management. By taking into account individual characteristics, behavioral patterns, previous interactions, claims history, and other relevant information, AI-based systems can help insurers provide more appropriate coverage and recommendations. Such personalization may strengthen customer satisfaction and contribute to long-term loyalty by creating a perception of greater relevance and added value. In an increasingly competitive market, the ability to provide personalized and responsive services may consequently become an important factor in differentiating insurance companies from their competitors. (Charpentier & Vamparys, 2025; Ranjan et al., 2026)

However, the development of AI within the insurance sector also raises important challenges that cannot be overlooked. The extensive collection and processing of personal data require particular attention to privacy, data protection, transparency, and informed consent. Moreover, the increasing reliance on automated decision-making raises questions concerning fairness, accountability, explainability, and potential algorithmic bias. The efficiency provided by AI should therefore be accompanied by appropriate governance mechanisms and responsible practices to ensure that technological innovation does not undermine customer trust. In this regard, regulatory and ethical considerations should not necessarily be viewed as obstacles to innovation, but rather as essential conditions for ensuring the sustainable and responsible deployment of AI. (Owens et al., 2022; Loi & Christen, 2021)

The future of AI in insurance will consequently depend not only on the sophistication of technological solutions but also on insurers' ability to integrate these technologies within a broader human-centered strategy. Although AI can considerably improve efficiency and personalization, human interaction remains essential, particularly when customers face complex situations, sensitive claims, or significant financial and personal risks. A balanced approach combining technological innovation with human expertise is therefore likely to provide the greatest value for both insurers and policyholders. (de Andrés-Sánchez & Gené-Albesa, 2024; Lemon & Verhoef, 2016)

Overall, artificial intelligence represents far more than a technological innovation for the insurance sector. It constitutes a strategic lever capable of transforming the entire customer journey, from product discovery and policy selection to claims management and after-sales support. By enabling insurers to better understand their customers, anticipate their needs, personalize their offerings, and respond more rapidly to their requests, AI contributes to the development of a more agile,

efficient, and customer-centered insurance industry. Its successful adoption may therefore provide insurance companies with a sustainable competitive advantage while simultaneously improving the quality and relevance of the services offered to policyholders. (Eling et al., 2022; Bhattacharya et al., 2025)

Ultimately, the transformation driven by artificial intelligence should be understood as an ongoing process rather than a one-time technological change. As AI technologies continue to evolve, insurance companies will need to continuously adapt their strategies, organizational structures, and customer relationship practices. The insurers that succeed in combining advanced technological capabilities with transparency, ethical responsibility, human expertise, and a strong customer orientation will be better positioned to meet the expectations of increasingly demanding consumers. In this perspective, AI is not merely reshaping the insurance sector; it is contributing to the emergence of a new model of customer relationship in which personalization, responsiveness, trust, and operational efficiency become fundamental pillars of the insurance experience. (Charpentier & Vamparys, 2025; Owens et al., 2022)

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