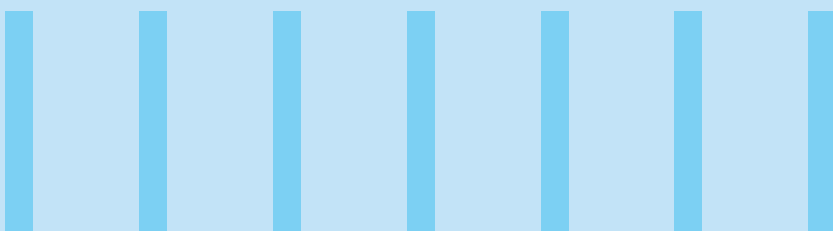# Property and Casualty Insurance Underwriting: Unlocking Generative AI's Potential
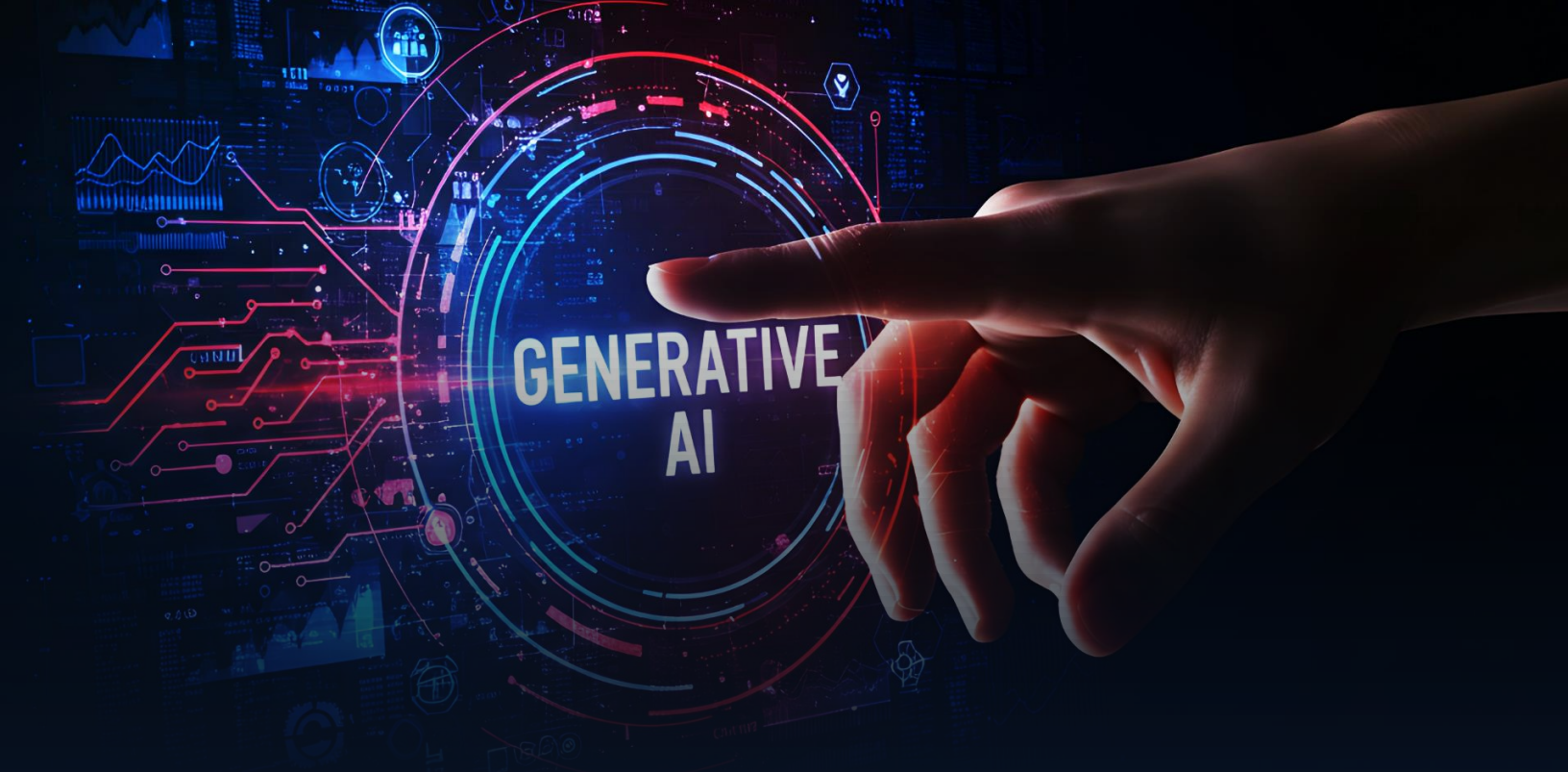
GLOBAL ECONOMIC RISKS NAVIGATOR

Abstract

Generative artificial intelligence (GenAI) is emerging as a transformative force within the property and casualty (P&C) insurance industry. Its impact is particularly strong in underwriting, where risk assessment, pricing, and coverage decisions are core to the value chain. As insurers navigate digital transformation, GenAI offers a powerful combination of data-driven insight, intelligent automation, and adaptability that can significantly enhance underwriting processes.

From synthesizing large volumes of structured and unstructured data to dynamically modeling risk and personalizing policies, GenAI streamlines decision making while boosting accuracy and efficiency. It also plays a crucial role during catastrophic events, where speed and precision are critical. Both insurers and insurtechs are actively deploying GenAI-powered tools to reduce manual overhead, enhance customer experience, and drive innovation across the underwriting lifecycle. This paper explores the growing influence of GenAI across P&C underwriting, examining its impact areas and real-world implementations by leading technology providers. It highlights the role of GenAI in regional catastrophe modeling and how it is redefining the future of insurance underwriting.

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Introduction: The Role of GenAI in Insurance

GenAI is reshaping the insurance industry by combining human creativity and imagination with machine learning (ML) capabilities. As a pioneering technology in content generation, it facilitates the development of innovative services, boosts productivity across the insurance value chain, and helps develop new business models.

GenAI is already being deployed in multiple insurance industry sectors, including P&C, life, health, reinsurance, commercial, and specialty insurance. By streamlining operations, enhancing customer experiences, and supporting better decision making, it helps insurers increase efficiency, improve customer satisfaction, reduce costs, and unlock new growth opportunities. A recent study indicates that 37% of insurance companies have already implemented or are in the process of deploying GenAI solutions, with adoption expected to grow as the technology matures[1].

Insurance companies face several challenges, including fragmented legacy systems and multiple policy administration systems (PAS) that are often the result of mergers and acquisitions (M&A). Without a single source of truth and with time-consuming data analysis processes, accurately assessing risk in a rapidly changing environment becomes increasingly difficult. GenAI addresses these issues by processing vast amounts of data to extract meaningful insights, improving underwriting efficiency. Figure 1 shows that the global market for GenAI in insurance is projected to reach an estimated US $4.8 billion by 2030, up from US $732 million in 2023[2].

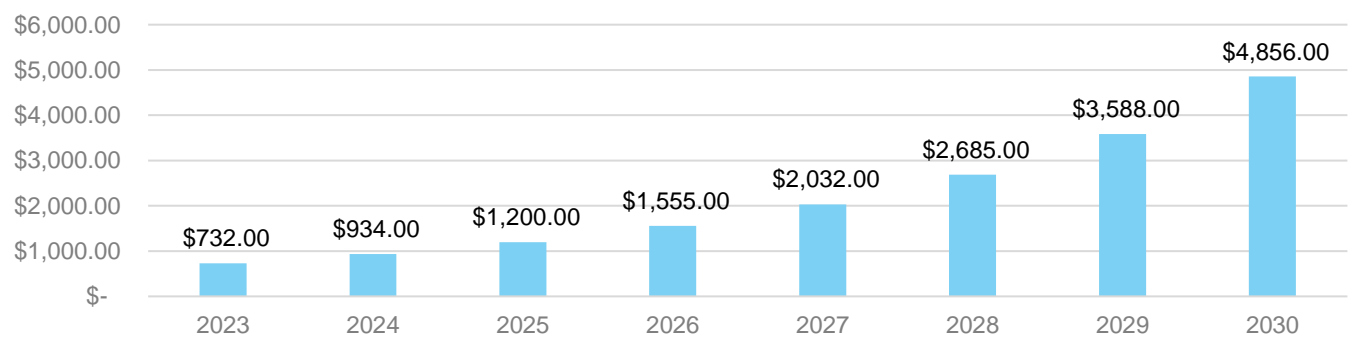**Generative AI in Insurance market size
2023-2030 (USD Million)**

Fig. 1: Projected growth of GenAI in the insurance market from 2023 to 2030

P&C Insurance Underwriting

Underwriting in P&C insurance involves risk assessment, pricing and acturial analysis, as well as coverage decisions[3]. This complex process requires evaluating the risks associated with insuring individuals and assets as well as establishing appropriate pricing for those risks. Underwriters analyze data from various sources, such as policy documents, location details, past claims history, and the policyholder's financial stability, to assess potential losses and liabilities. They also evaluate liability risks, including accidents and injuries that may occur on the policyholder's premises. Based on this assessment, underwriters determine which risks are acceptable for coverage and set premium rates accordingly. The primary goal of P&C underwriting is to manage risks effectively while providing coverage that safeguards against unforeseen events, such as weather-related damage or theft, ensuring financial security for policyholders.

Enhancing P&C Underwriting with GenAI

GenAI is revolutionizing the underwriting landscape in the P&C insurance value chain which is estimated at US $1,848 billion in 2023[4]. From streamlining operations to improving decision making, GenAI brings speed, intelligence, and adaptability to underwriting processes. Below is an overview of how GenAI is transforming the underwriting function across the P&C insurance value chain.

Risk assessment

Integrated data sources: By consolidating diverse data sources, such as claims history, financial records, and emerging signals like climate trends or social behavior, GenAI helps build comprehensive and up-to-date risk profiles.

Advanced risk modeling: GenAI can generate advanced and complex risk models that capture nuanced interactions, providing deeper insight than traditional methods.

Decision making

Automated risk scoring: With the ability to process vast amounts of data, GenAI generates detailed risk scores that help underwriters make faster and more accurate data-driven decisions.

Dynamic underwriting guidelines: GenAI continuously adapts to underwriting rules in real-time as new information becomes available, ensuring risk assessments stay relevant.

Personalization

Tailored policy options: By analyzing customer data and preferences, GenAI enables underwriters to design policy options that align more closely with individual needs.

Predictive customer insights: GenAI helps anticipate customer behavior and preferences, allowing insurers to offer more proactive and personalized coverage solutions.

Efficiency and automation

Streamlined application processing: GenAI automates key underwriting tasks such as document verification and data extraction, reducing manual workload and speeding up the review process.

Automated documentation: GenAI also generates essential documents, including policies, endorsements, amendments, and renewal notices, based on the data gathered during underwriting.

Fraud detection and prevention

Intelligent anomaly detection: GenAI models detect inconsistencies in application data that may indicate potential fraudulent activity, helping mitigate risks early in the process.

Historical pattern recognition: GenAI analyzes historical trends to identify patterns commonly associated with fraud or misrepresentation, improving detection.

Regulatory compliance

Automated compliance reviews: GenAI reviews underwriting practices and guidelines against current regulations and generates compliance reports to support governance.

Regulatory alignment checks: GenAI can flag mismatches between underwriter notes and compliance requirements, helping ensure alignment with evolving regulatory standards.

Knowledge generation and training

Insight-driven knowledge generation: By summarizing insights from industry research and past data, GenAI supports better-informed underwriting decisions and strategic thinking.

Simulated training scenarios: GenAI also powers realistic training simulations to help underwriters build experience in handling complex or rare cases.

Customer experience

Accelerated response times: With automated data processing and risk assessments, GenAI shrinks turnaround time, allowing for quicker quotes and policy issuance.

Transparent customer communication: GenAI generates clear explanations of underwriting decisions, along with real-time feedback and personalized recommendations to improve understanding and trust.

Impact of IT organization's Gen AI applications on P&C underwriting

According to a recent research, underwriters spend approximately 30% to 40% of their time on administrative and other non-core tasks[5]. To streamline this, several technology providers are developing GenAI applications to improve underwriting efficiency. As covered above, these solutions aim to enhance risk assessment, detect fraud, and improve operational efficiency across the insurance value chain.

Below are a few key IT organizations leveraging GenAI to transform P&C underwriting

Infosys developed an intelligent document review solution for a major P&C insurer, using AI to extract and validate data from policy applications and submission documents. This significantly reduced underwriting processing time and improved data accuracy, allowing underwriters to focus on more complex cases.

Guidewire integrates AI and predictive modeling into its underwriting platform, enabling data-driven risk assessment and better-informed decisions. Their platform also streamlines underwriting workflows and reduces cycle times[6].

Duck Creek offers a low-code AI platform that empowers insurers to build and deploy custom AI models tailored to their underwriting needs. Its strategic partnership with Microsoft further accelerates the adoption of GenAI in the P&C underwriting space, enhancing both speed and flexibility[7,8.]

Majesco leverages AI to automate manual underwriting processes and deliver predictive insights. With the enhanced capabilities of Majesco Copilot, an AI assistant powered by Microsoft, underwriters can focus more on high-value analysis and improve pricing accuracy through more precise risk assessment[9].

The Power of GenAI and Insurtech Innovations in Transforming P&C Underwriting

GenAI is making significant inroads in the insurance industry, particularly through its growing adoption by insurtech companies. These innovations are revolutionizing P&C underwriting processes, especially across the US and European markets.

Here are a few examples of insurtech companies leveraging AI-driven solutions to drive efficiency, accuracy, and customer-centric underwriting:

- **Lemonade**, a US-based global digital insurer, leverages GenAI and ML to analyze large datasets for policy customization, dynamic pricing, and real-time risk profiling. This enables the company to deliver highly personalized coverage and issue policies within minutes, dramatically reducing manual effort and turnaround times[10].

- **Cuvva**, a UK-based insurtech offering app-based flexible car insurance, uses AI to analyze driving behavior and vehicle usage patterns. This allows the company to deliver personalized insurance offers driven by real-time data[11] for underwriting decisions that are faster and more accurate.

- **Brolly**, an AI-powered UK startup acquired by Direct Line Group[12], creates detailed customer risk profiles using individual data inputs. This approach improves the accuracy of underwriting decisions and enables more tailored insurance recommendations.

- **Hippo**, an American insurtech focused on homeowners insurance, leverages AI to evaluate property risks using ML models[13]. By automating its underwriting and claims processes, Hippo is able to issue policies faster, improve pricing accuracy, and deliver a better customer experience.

The Role of GenAI in Catastrophe Modelling and Underwriting

The increasing frequency and severity of natural disasters, including hurricanes, floods, wildfires, and earthquakes, pose significant challenges for insurers.

Increasing catastrophes and their impact on insurance companies

Catastrophes and natural disasters result in significant global losses, with the insurance industry bearing a large share of the financial impact and facing immense pressure as a result. Traditional risk models struggle to account for the growing volatility of catastrophe exposure, making it difficult to price insurance products accurately. This has led to higher claims, greater uncertainty, and mounting pressure on insurers to remain profitable.

How Gen AI can help underwrite and price these risks better

GenAI is set to transform how the insurance industry addresses these challenges, particularly in catastrophe modelling and underwriting within P&C insurance. With natural disasters varying widely by region, the need for dynamic risk modelling is more critical than ever. By leveraging GenAI-powered tools to simulate events, analyze complex data patterns, and assess evolving risks in real time, insurers can build more accurate pricing models, reduce underwriting errors, and improve the reliability of coverage.

Table 1 highlights key catastrophe events by region, presents associated economic data, and outlines how GenAI is being applied to support underwriting and risk modeling in response to these events.

Region	Key calamities	Recent events and economic data[14, 15, 16]	GenAI applications
North America	Wildfires, hurricanes, tornadoes, floods	• Hurricane Idalia (2024), Florida, US: US $15 billion in damages • Hurricane Hilary (2023), California, US: US $8 billion in damages • Wildfires (2023), Canada: US $9 billion in losses; 7.4 million acres burned (2021 to 2023) • Hurricane Ian (2022), US: US $113 billion in damages	• Risk pattern identification using large datasets • Catastrophe forecasting using AI models • Risk modeling and prediction • Claims prediction • Catastrophe bond pricing
Europe	Floods, storms, heatwaves	• Flooding (2024), Greece: €3.5 billion in damages • Flooding (2022), Italy: €1.5 billion in damages • Heatwaves (2022), Europe: More than 61,000 deaths	• Flood risk assessment • Event simulation • Climate change adaptation
Asia-Pacific	Typhoons, earthquakes, floods	• Flooding (2024), India: US $4.5 billion in damages • Earthquake (2024), Nepal: US $1.2 billion • Cyclone Mocha (2023), Myanmar and Bangladesh: US $2 billion in losses • Typhoon Haiyan (2013), Philippines: US $12 billion in damages	• Seismic risk assessment • Typhoon damage prediction • Disaster preparedness
Latin America	Hurricanes, floods, landslides	• Flooding (2024), Argentina: US $1.8 billion • Hurricane Fiona (2022), Caribbean Islands and Canada: US $10 billion in damages • Multiple region-wide landslides with significant economic losses	• Hazard mapping • Coverage customization • Disaster impact analysis
Middle East and Africa	Cyclones, droughts, floods, extreme heat	• Cyclone (2024), Oman: US $500 million in damages • Flooding (2023), Libya: US $1.8 billion in damages • Droughts and extreme heat, region-wide: US $5 billion in economic losses	• Drought risk management • Heatwave prediction • Resource allocation

Table 1: GenAI applications in catastrophe risk modelling and underwriting

Conclusion

Underwriting in the P&C insurance sector has traditionally been a complex balancing act between risk, coverage, and pricing. However, the integration of GenAI is poised to transform this crucial function, offering a more data-driven, responsive, and personalized approach. As outlined in this paper, GenAI empowers underwriters by automating manual tasks, extracting deeper insights from diverse data sources, and supporting faster as well as more informed decision making.

By enabling dynamic risk modeling, streamlining compliance, enhancing fraud detection, and improving customer experience, GenAI can significantly improve underwriting outcomes for insurers. Its role in catastrophe risk management is critical today as we tackle extreme climate events, where natural disasters are increasing in frequency and severity. Real-world examples from technology providers and insurtech innovators further illustrate GenAI's practical benefits and commercial viability. In sum, GenAI is not merely a technological upgrade. It represents a strategic imperative for insurers aiming to remain competitive and resilient in an evolving risk landscape. When responsibly adopted, GenAI holds the potential to create a more agile, efficient, and customer-centric underwriting process that benefits both insurers and policyholders.

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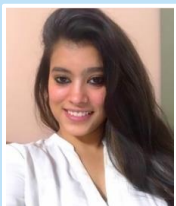Manager, Client Services, Infosys Insurance
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Sindhura has over 20 years of experience in insurance, reinsurance, and financial services, working with clients across the US and Europe. Her expertise spans business development, account management, sales, delivery, and digital transformation. She has a strong track record of leading award-winning initiatives, particularly in helping clients modernize operations to enhance efficiency, customer experience, and overall performance. Sindhura has facilated co-innovation workshops, championed women's leadership programs, and built high-performing global teams.

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Maitreyee brings over 16 years of experience with a strong focus on managing large-scale IT deals and new account openings (NAOs) across global markets. She specializes in end-to-end proposal response development, pricing and master service agreements (MSAs) for multimillion-dollar strategic pursuits in insurance, banking and financial services. Her expertise includes working on deals from ITO services, vendor consolidation, application management services (AMS), transformation and modernization, global capability centers (GCCs), and build-operate-transfer (BOT) models.

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With over a decade of experience in IT services, Kalpi brings a strong management background and a proven track record across diverse roles. Currently, she leads the Strategy initiative execution office for Insurance segment, partnering with sales leadership to drive high-impact strategic initiatives. Kalpi also plays a key role in supporting Insurance IT deals, contributing her insights to shape transformational outcomes. Her expertise spans building and leading high-performing teams, driving process improvements, ensuring regulatory compliance, and system enhancements to boost operational efficiency and accuracy.

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