
Literature Mapping of Artificial Intelligent Among Insurance Agents

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Abstract – Literature mapping is a visual representation of the structure and dynamics of scholarly knowledge. Artificial Intelligence (AI) in the insurance industry is a growing area of academic inquiry, particularly in its application to insurance agents. Using data from the Web of Science (WoS) and science mapping tools such as Bibliometrix and VOSviewer, this study explores trends, influential keywords, key authors, and sources in AI-related insurance research. The analysis reveals that publication output has increased significantly after 2018, with major keywords focusing on machine learning, digital transformation, and customer interaction. The study identifies the leading authors and institutions in this domain and highlights trending research topics that reflect both technological innovation and ethical concerns in the insurance industry.

Keywords: “Artificial Intelligence”, “Insurance Agents”, “Bibliometric Analysis”, “Literature Mapping”, “Digital Insurance”

1. Introduction

Literature mapping is a bibliometric technique for the visual and quantitative assessment of the development, structure, and emerging trends of a particular field of research (Aria & Cuccurullo, 2017). Artificial Intelligence (AI) has, in recent years, become a revolutionary force in the insurance industry, possessing the ability to automate, provide customized services, and generate predictive insights. Though AI use in insurance is well-documented, most existing research is biased toward organizational take-up, InsurTech infrastructure, or back-office functions (Pollmann et al., 2023). Nevertheless, there remains an essential shortage of understanding on the impact of AI on insurance agents the frontline personnel that mediate between technology and clients.

Insurance agents tend to use AI-powered tools such as chatbots, CRM software, automated underwriting systems, and virtual assistants to engage with customers, process claims, and generate leads (Acosta-Prado et al., 2024). Despite this technology, comparatively less is known about how writers have positioned the problem of AI adoption at the agent level how

it has addressed readiness, usability, trust, and ethical concerns (Nylund et al., 2022). This mapping study of literature covers that gap by examining scholarly literature on AI and insurance agents from a bibliometric perspective.

Using data from the Web of Science (WoS) database, Bibliometrix (R package) and VOSviewer in this study are used to identify research trends, thematic clusters, prominent authors, source publication, and leading issues. It is not to make hypotheses but to map the intellectual terrain and path of this research area from 1987 to 2025. Combining visual and statistical intelligence, the paper provides an integrative view to understanding how scholarly discourse on AI within insurance agent settings has developed. The findings will guide future research and policy initiatives towards enabling effective, responsible, and human-centered AI adoption in the insurance industry.

2. Literature Review

The application of Artificial Intelligence (AI) in the insurance industry has revolutionized traditional business and service models drastically. Initial studies focused on determining the manner in which AI platforms like robotic process automation (RPA) and machine learning could make back-end operations easier, reduce manual errors, and improve administrative efficiency. Over time, academic attention shifted to the extensive application of AI in delivering advanced services such as fraud detection, one-to-one marketing, risk analysis, and predictive analytics (Meshram et al., 2021; Dwivedi et al., 2019). These are a component of the broader FinTech revolution and digital-first approach embraced by many financial institutions.

Artificial intelligence increasingly benefits from recognizing the patterns of fraudulent activity data, customizing insurance products according to one's own behavior, and predicting the needs of customers and the probability of claims. Not only does this enhance the responsiveness and accuracy of insurance services but also customer satisfaction through faster and customized delivery of services.

Among the most directly impacted by AI integration are insurance agents, especially sales agents. Agents are middlemen whose role is to elucidate complex policies, offer product recommendations, and gain customers' trust. AI software such as chatbots, virtual assistants, and CRM systems have enhanced agents' capabilities in generating leads, researching client profiles, and offering custom services. While these technologies have heightened productivity and customer engagement, they also present challenges.

One of the greatest concerns is losing human trust with the replacement of human interaction by AI. Customers may not wish to place their trust in AI recommendations, particularly in sensitive areas such as financial planning. Many insurance agents also struggle with the technology of working with AI tools. Constant adjusting to evolving digital systems can be stressful and time-consuming, particularly without proper training and assistance. Ethics questions also seem to be most prominent in contemporary literature. Data privacy, algorithmic bias, and the transparency of AI decision-making processes are some of the most

discussed topics (Nylund et al., 2022). These are topics that emphasize responsible AI deployment.

Despite growing research on AI in insurance, most studies focus on organizational-level outcomes, often neglecting the lived experiences of agents. This bibliometric review aims to address that gap by mapping the literature related to AI's influence on insurance agent performance, offering insights into evolving roles, challenges, and opportunities in the digital age.

3. Methodology of Study

This research carefully maps the literature on artificial intelligence in the context of insurance agents using a rigorous bibliometric approach based on accepted academic practices. Finding significant topics, authors, and publishing trends is intended to direct future studies and real-world applications in the area.

Inferential and descriptive analysis are both included into the bibliometric study design. This design makes it easier to analyse trends in scholarly publications across time. The use of bibliometrics makes it possible to quantify scientific outputs and provides information on collaborative networks, trends, thematic areas of emphasis, and the field's general intellectual structure.

The Web of Science (WoS) database was chosen as the main source of data since it is compatible with bibliometric tools and has excellent indexing of peer-reviewed articles. Search terms including "artificial intelligence," "insurance agents," "AI in sales," "digital insurance," and "InsurTech" were developed. In the first search, more than 20 relevant articles from 1987 to 2024 were found. Important bibliographic data including article titles, author names, publication years, journal titles, affiliations of authors, keywords, abstracts, and citation counts were all contained in these records.

Microsoft Excel was used to preprocess the obtained data in order to guarantee consistency and eliminate duplicates. The data were downloaded in BibTeX and CSV formats. Two well-known bibliometric tools were then used: VOSviewer and Bibliometrix, a R package. Descriptive measures including productivity by author, average citations, publication growth, and h-index measurements were made easier to calculate using Bibliometrix. Visual maps for theme grouping, co-authorship networks, and keyword co-occurrence were the main uses for VOSviewer.

Annual scientific productivity, citation analysis, author cooperation networks, keyword frequency, and journal impact are among the important performance measures examined in this research. Predominant study topics including automation, consumer interaction, and AI ethics were made visible by keyword co-occurrence networks. Finding theme clusters and connections between various study fields was made possible by the visualisations that VOSviewer offered. Clusters centred around phrases such as "sales automation," "machine

learning," "chatbots," and "CRM systems," for instance, each denoting a specific area of interest in the literature.

A number of quality control procedures were put in place to increase the findings' dependability. As part of data normalisation, comparable keywords were combined, author name variations were fixed, and institutional affiliations were aligned. To preserve the dataset's integrity, outliers and articles that weren't relevant were eliminated. The network analysis were guaranteed to appropriately depict authentic scholarly contributions thanks to this preprocessing procedure.

There were no ethical issues with using human participants since this research only used secondary data from publically available bibliographic sources. Every piece of information utilised came from publicly available metadata entries.

In summary, a thorough mapping of the literature is ensured by the study's strong methodological approach, which includes meticulous data selection, preprocessing, and dual-tool analysis. It makes it possible to clearly see how insurance agent AI research has changed over the years and provides insightful information for academics, professionals, and legislators.

4. Findings and Discussion

This section discusses the findings of the bibliometric analysis conducted using data extracted from the Web of Science (WoS) database. Visualization tools such as Bibliometrix (R package) and VOSviewer were used to generate the figures and analyze the underlying patterns. As shown in Figure 1, annual scientific production on Artificial Intelligence (AI) in the insurance industry has experienced a significant increase, particularly after 2017. This surge reflects a growing academic interest in digital transformation within the financial and insurance sectors. According to Lee and Shin (2017) the rise of FinTech and InsurTech ecosystems has played a pivotal role in reshaping how financial services, including insurance, adopt emerging technologies. The development and integration of AI solutions such as chatbots, predictive analytics, and automated decision-making are becoming more widespread in insurance operations. These AI tools not only enhance operational efficiency but also improve customer engagement and drive innovation in insurance sales strategies.

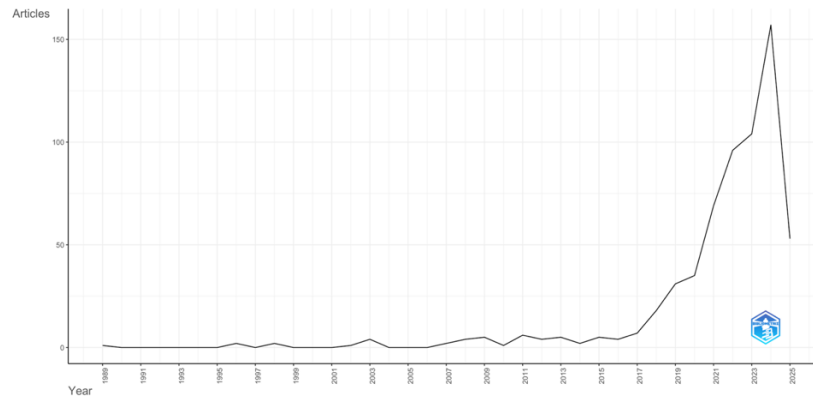


Figure 1: Annual Scientific Production

Figure 2 illustrates the average citations per year, which demonstrate a positive trend despite some fluctuations. The steady increase in citations, particularly for articles published after 2019, indicates the growing relevance and academic impact of this research area. It suggests that more recent studies are contributing valuable insights, especially in areas such as fraud detection, customer personalization, and AI-driven decision support systems. According to Meshram et al. (2021), artificial intelligence techniques such as machine learning and natural language processing are increasingly being used in the insurance industry to enhance decision-making, improve customer experiences, and detect fraudulent activities more effectively.

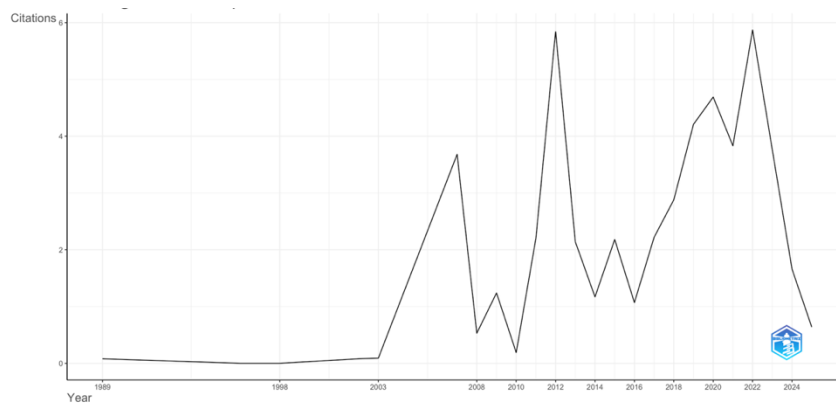


Figure 2: Average Citations Per Year

The co-occurrence network of keywords shows five distinct clusters, each representing a thematic concentration in the literature in Figure 3. The largest cluster includes terms like “artificial intelligence,” “machine learning,” and “automation,” indicating a strong technological foundation in this research area. Another cluster focuses on “insurance agents,” “customer relationship management,” and “sales,” underscoring the operational and human-centric aspects of AI deployment. Smaller clusters feature keywords such as “data privacy,” “digital transformation,” and “decision-making,” reflecting emerging discussions around ethical and organizational implications of AI. The connections between keywords suggest that the field is not only expanding but also becoming more integrated, with overlapping discussions on automation, service delivery, and regulatory compliance (Kumar et al., 2023).

In support of this, Yang et al. (2021) emphasize that as AI technologies evolve, there is an increasing shift toward hybrid systems that blend human decision-making with machine intelligence. Their findings highlight the growing academic and industry interest in how digital platforms, including those in the insurance sector, must adapt to manage both technical innovations and human-centered challenges effectively.

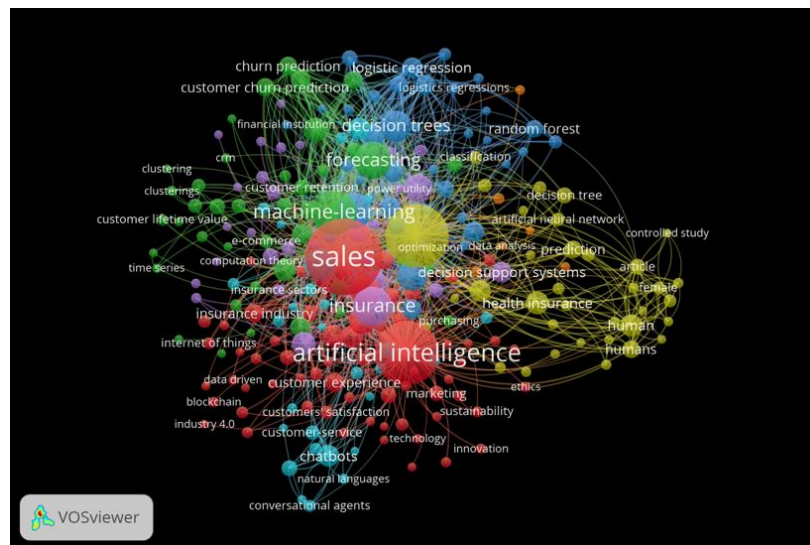


Figure 3: Co-Occurrence Network of Keyword



Figure 4: Word Tree-Map of Keywords

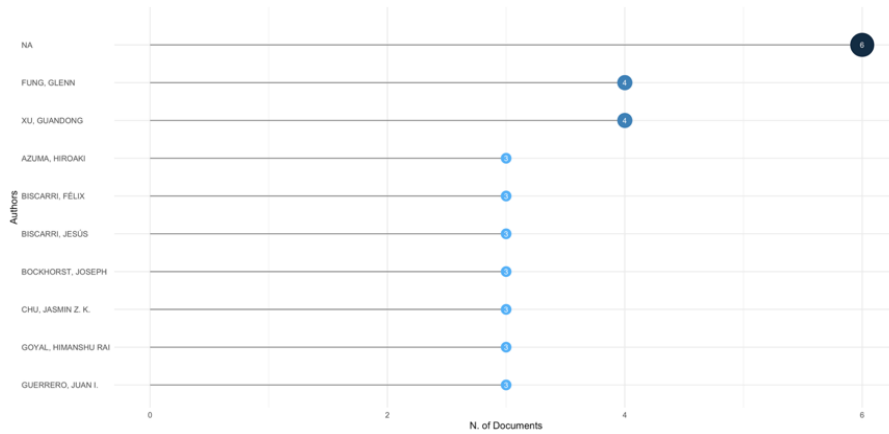


Figure 5: Most Relevant Authors

Figure 4 illustrates a word tree-map that highlights the most frequently used keywords in the literature on AI adoption in the insurance industry. Dominant terms include “sales” (13%), “artificial intelligence” (9%), “machine learning” (9%), and “insurance” (4%), which reflect a significant focus on how AI technologies are being deployed to improve insurance sales processes and strategies. Supporting this view, Ellili et al. (2023) emphasized that the growing integration of AI into sales functions is reshaping how insurance agents interact with clients and generate leads. The frequent appearance of additional terms such as “forecasting,” “decision making,” “chatbots,” and “data mining” further suggests the literature’s broad attention to both operational and experiential aspects of AI applications. Dwivedi et al. (2019) also noted that AI’s role in business decision-making and customer management continues to expand across sectors, particularly in data-rich environments like insurance. Furthermore, emerging but less dominant keywords like “ethics,” “trust,” and “public relations” indicate a developing discourse around the responsible and ethical use of AI.

Figure 5 showcases the most influential authors contributing to the field of AI in insurance sales, based on the number of documents published. Notable names such as Glenn Fung and Guangdong Xu, each with four documents, point to their active involvement in research related to AI algorithms and data-driven decision-making within the insurance domain. These scholars are typically affiliated with institutions that emphasize innovation in business analytics and information systems. Wamba-Taguimdje et al. (2020) further supported this trend, asserting that AI-driven transformation projects significantly enhance firm performance and are increasingly a strategic priority across industries, including insurance.

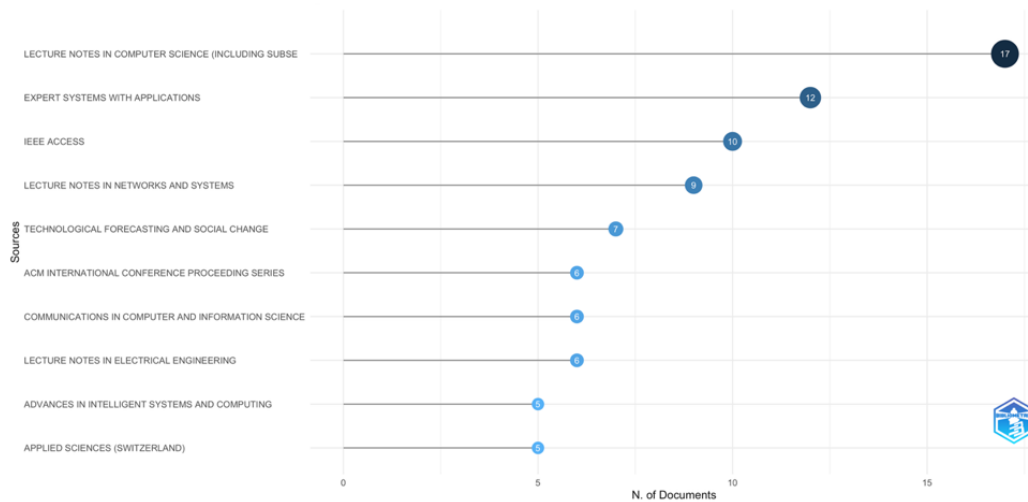


Figure 6: Most Relevant Sources

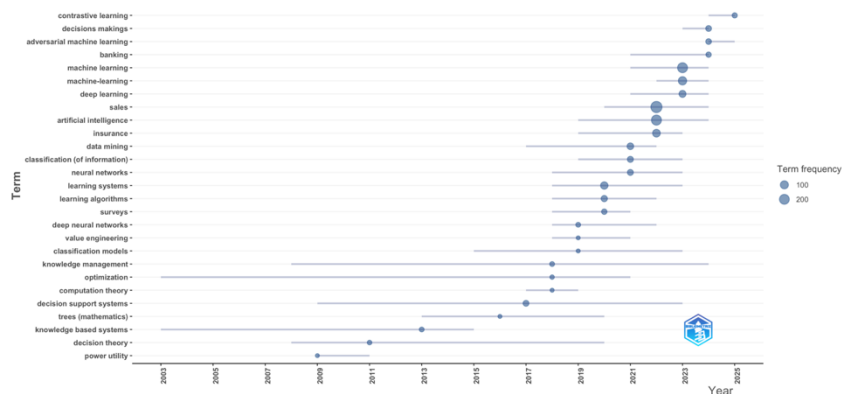


Figure 7: Trend Topics

Figure 6 highlights the most relevant publication sources contributing to the discourse on AI in the insurance sector. Journals such as Lecture Notes in Computer Science, Expert Systems with Applications, and IEEE Access lead with the highest number of published documents, demonstrating the strong presence of technical literature in this field. Additionally, contributions from sources like Technological Forecasting and Social Change and ACM International Conference Proceedings reflect the interdisciplinary nature of this research,

integrating perspectives from artificial intelligence, business innovation, and financial technology. This diversity in publication outlets suggests that the topic of AI in insurance attracts a broad academic audience, including scholars from both computer science and business disciplines. As noted by Z. Yang et al. (2021), the growing body of literature in AI-related journals underscores the increasing importance of digital transformation in financial services and the vital role of scholarly communication in advancing knowledge in this area.

Finally, Figure 7 shows the trend topics over time (Moura et al., 2025). Early literature focused on automation, efficiency, and operational forecasting. However, recent research has shifted toward themes such as AI ethics, transparency, customer trust, and agent empowerment. This shift indicates a maturation of the research field, as scholars begin to explore not just the technical potential of AI, but also its societal, ethical, and organizational implications. The increasing attention to transparency and responsible AI points to a future where AI deployment must balance innovation with accountability and human-centric values.

In short, the bibliometric results demonstrate that the application of AI among insurance agents is an emerging but rapidly growing field of study. The literature is expanding in both volume and depth, with increasing emphasis on ethics, customer experience, and operational integration. These findings offer a strong foundation for future research, particularly in addressing gaps related to agent adoption, trust-building, and responsible AI governance in the insurance industry.

5. Conclusions

This bibliometric mapping of literature research presents an overview of global academic work on the use of Artificial Intelligence (AI) by insurance agents. The study indicates consistent growth in output of research, especially since 2018, with increased interest in how AI can fundamentally transform the insurance sector. Keyword and co-occurrence themes recognize broad themes of machine learning, sales automation, customer interaction, and CRM tools, and developing themes of AI ethics, empowerment of agents, and data privacy. Source and author analysis underscores the interdisciplinary nature of the research with contribution from business, computer science, and information systems disciplines. Despite increasing scholarly attention, there remains a significant research gap in elucidating the true challenges facing insurance agents in real life, particularly in developing economies where digital readiness can lag.

Future research investigations need to capture this deficiency by examining the barriers to adoption, trust formation in AI solutions, and training, and policy support for AI utilization by front-line workers. In general, this investigation contributes to scholarly knowledge by both applying pictorial and quantitative eyes to this niche field and laying the groundwork for future targeted and effective research.

6. Limitations

The study identifies several limitations which may have the potential to affect the richness and generalizability of the results. To begin with, the dataset was only extracted from the Web of Science (WoS) database and may not be a true reflection of all respective studies stored in other databases like Scopus or Google Scholar. This is a limitation that constrains the range of the bibliometric mapping. Secondly, the sample size was very small, with just a bit more than 20 articles that directly referred to AI in the insurance agent setting. Even though the selected studies are meaningful, a larger dataset would yield more stable and diverse thematic clusters. Secondly, publication and language bias could have been present since only English-language journals were utilized. Lastly, the dynamic nature of AI and technology adoption means that the literature is continuously shifting at a rapid rate. Thus, the results of the current study are a snapshot rather than a comprehensive overview. Future studies utilizing longitudinal updates and other databases will be necessary to give a more integrated picture of this new, fast-evolving research niche.

7. Suggestions for Future Research

Based on the aforementioned limitations, the present research proposes several avenues of future study. Firstly, empirical research is necessary to explore the actual world adoption of AI tools among insurance agents, particularly from emerging countries where digitalization is bound to be slow. Situating global patterns within the realms of regional variations and infrastructure readiness will make the findings richer. Second, longitudinal analysis of changing agent behavior, application of technology, and customer satisfaction over time would offer useful insights into the evolving dynamics between humans and AI in insurance services. Third, research must delve into the ethics of AI and look at how transparency, bias, and accountability issues affect agents and customers. Investigating frameworks of good AI governance would enrich the policy discussion. Besides, future studies can explore cross-disciplinary solutions, consolidating computer science, behavioral economics, and communication studies insight to further study the human-AI interface. Studying these issues enables researchers to enable more beneficial, equitable, and human-centered AI applications in the insurance.

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