

Artificial Intelligence Deeply Enables the Insurance Industry: Research and Analysis of Insurance Question Answering Assistants based on User Needs and Market Analysis

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Abstract. With the rapid development of artificial intelligence, the application prospect of AI in the insurance industry is becoming more and more broad. Based on this trend, this article will conduct an indepth investigation of insurance Q&A assistants from the perspective of user needs and market analysis, to explore their potential in enhancing customer experience, optimizing service processes, and driving business innovation. The survey found that the industry's emphasis on customer experience is increasing at the service level. Improving service quality is seen as the most attractive factor in marketing strategies for the insurance industry. The positive impact of digital transformation and technological innovation has been widely recognized. With the continuous development of technology and the gradual change in consumer habits, the rise of online sales channels will inevitably have a profound impact on traditional sales models, and the positive effects brought by digital transformation and technological innovation have been widely acknowledged. Additionally, this article conducts a heterogeneity analysis of different regions, finding significant differences in acceptance and awareness levels between Xinjiang and other developed areas. Based on the research analysis, this article proposes prospects for the future development trends of the insurance industry from four aspects: technological innovation and product transparency, intelligent and personalized services, application of artificial intelligence technology, and improvement in professionalism and practicality. Finally, this article identifies issues such as weak targeting, low risk control, and untimely recommendations in the AI-empowered insurance industry, and offers relevant suggestions to better promote the development of AI in the insurance sector.

Keywords: Insurance; Artificial Intelligence; Insurance Q&A Assistant; User Needs.

1. Research Background and Research Significance

1.1 Research Background

With the rapid development of the digital economy, the insurance industry is facing both unprecedented opportunities and challenges. Premium growth rates are slowing, putting pressure on profit margins, while national policies are emphasizing digital transformation as a key strategy for the future development of the insurance industry. In September 2024, the State Council issued "Several Opinions on Strengthening Regulation, Preventing Risks, and Promoting High-Quality Development of the Insurance Industry." This document outlines the development of China's insurance industry over the next 5 to 10 years, highlighting the need to enhance sustainable development capabilities and improve digital intelligence levels. It calls for accelerating digital transformation, increasing resource investment, and enhancing management efficiency, with an emphasis on utilizing technologies like artificial intelligence, big data, and blockchain to improve marketing, risk management, and investment operations. This policy is a clear signal to promote high-quality development in the insurance industry [1-2].

Digitalization has become a core driver for the high-quality development of the insurance industry. The integration of technologies like AI, big data, and blockchain can optimize business processes, improve operational efficiency, and foster innovative product development. Technologies such as blockchain can improve data security and transparency, AI can enhance product recommendations and customer service, and big data can help accurately capture market trends, thus supporting product

innovation [3]. The digital transformation of the insurance industry is not just a national policy priority but an essential step for companies to stay competitive and adapt to future challenges [1].

Insurance companies must seize the opportunity of technological advancements, leveraging AI technology to break free from traditional business models and build a "second growth curve" to gain an edge in an increasingly competitive market [2].

AI has vast application potential in the insurance industry. For example, Xinhua Insurance has integrated Deep Seek generative AI into its Xinhua e-Home APP, creating a personal AI assistant that supports various intelligent application scenarios. This integration, facilitated by the United Innovation Lab, has significantly improved the operational efficiency of insurance professionals. Deep Seek's effectiveness is evident in its ability to aid in communicating complex insurance concepts and explaining product functions, especially through large language models that bring deeper information breadth and clarity [4].

AI also drives professionalization in the insurance industry by enabling agile product design, dynamic optimization, precise risk prediction, and cross-boundary innovation. For instance, AI accelerates product iteration, enhances market predictions, and fosters new insurance products like smart contract insurance, integrating technologies such as meteorological AI for dynamic premium pricing [5-6]. Additionally, AI is transforming service-oriented business models, facilitating on-demand services like hourly rentals for construction machinery and advancing products in sectors such as medical imaging and intelligent transportation [7].

Despite the promising applications, challenges remain, including insufficient technical explainability, resistance to organizational change, and regulatory lag. As AI technology evolves, it is crucial to balance innovation with social responsibility, ensuring that products are not only functional but also sustainable and meaningful [8].

1.2 Research Meaning

Although there is broad consensus on the potential of AI integration in insurance and risk analysis, significant theoretical gaps and practical shortcomings remain in areas such as technical applications, talent development, industry standards, and long-term ecosystem impacts. Further research is needed to address these gaps and foster the development of a comprehensive theoretical framework as well as deeper practical applications. While much of the existing research has focused on macro-level analyses, insights at the micro level, particularly from the user's perspective, are equally important. A detailed examination of user needs is crucial for understanding market dynamics, optimizing product design, and enhancing user experience.

To bridge the gap between macro analyses and actual user requirements, designing a questionnaire survey targeting insurance users is essential. This approach allows for direct insights into their true needs, preferences, and pain points, thereby identifying the shortcomings of current insurance products and services. Such micro-level analysis not only reflects the users' real-life experiences but also highlights opportunities for innovation and improvement in the industry. Additionally, it offers valuable guidance for policy-making, helping to address issues within the market and supporting the sustainable development of the industry. Ultimately, this research aims to contribute to the continuous innovation and optimization of user experiences within the insurance sector [9-10].

In summary, a questionnaire-based analysis of insurance users' needs is not only a valuable complement to macro-level research but also a critical tool for driving continuous innovation, optimizing user experience, and fostering healthy market growth.

2. Analysis of the Questionnaire

This survey aims to gain a deep understanding of the actual experiences and pain points of social groups in the process of purchasing insurance, clarify existing issues, and explore areas for continuous improvement and innovation. To this end, we adopted a questionnaire survey method, distributing questionnaires via online QR codes, with the hope of providing strong guidance for project

development. In this study, we collected a total of 301 questionnaires, excluding 5 invalid ones, leaving us with 296 valid responses, achieving an effective rate of 98%. By collecting and analyzing user feedback on existing intelligent Q&A assistants, we can identify areas where current market offerings fall short, such as insufficient personalized recommendations, untimely information updates, and unclear product descriptions.

2.1 Through Questionnaire Analysis, User Portraits are Formed

Among the 301 respondents who participated in the survey, 83.96% reported having purchased insurance, while only 16.04% did not. This indicates a high prevalence of insurance among respondents, reflecting their emphasis on risk management. In this survey, male respondents accounted for 45.86%, and female respondents for 54.14%. The proportion of respondents aged 35-44 was 35.85%. Among all participants, working professionals made up 44.34%, representing the primary demographic group in the survey.

In this survey, the popularization of travel insurance, the recognition of insurance market products, and the reasons why consumers do not choose other insurance companies are deeply explored.

As for the popularity of life insurance, data shows that 69.17% of respondents said they or their friends have bought life insurance, which is significantly higher than other types of insurance

The importance we attach to life insurance. This data shows that people generally pay attention to their own and their family's long-term protection needs.

From the perspective of product recognition in the insurance market, the survey results show that 63.16% of respondents said that they or their surrounding people have never known the products of other insurance companies, which indicates that the market recognition of insurance products is high.

When investigating the reasons why consumers do not choose other insurance companies, the survey found that 36.73% of respondents stated lack of relevant needs was the primary reason. Additionally, 28.57% of respondents believed that service quality was low. This clearly indicates that for insurance companies to gain an advantage in the highly competitive market, they must not only place great emphasis on customers' actual needs but also invest more effort in improving service quality and brand image. They need to accurately target the market and develop insurance products that better meet consumer demands, thereby promoting the healthy development of the insurance market.

2.2 Opportunities and Challenges Behind the Data

This survey focuses on the insurance industry, and through the collection and analysis of data, it deeply explores the development status, consumer preferences and future trends of the insurance industry.

In terms of service, the data clearly reflects the positive transformation in the insurance industry. 63.21% of respondents perceive that insurance services have become more personalized in recent years, while 61.32% agree that the insurance application process has become more transparent. These figures intuitively show that the insurance industry has made significant progress in meeting customers' personalized needs and enhancing transparency, reflecting a growing emphasis on customer experience.

When it comes to marketing methods in the insurance industry, consumer preferences are very clear. As high as 85.85% of respondents view customer service quality (including claims processing and consulting services) as the most attractive factor in insurance marketing, which profoundly reflects consumers' high concern for service experience. In comparison, while discounted prices, word-of-mouth recommendations, and brand reputation are also favored by consumers, they are less attractive than customer service quality. When it comes to purchasing channels, 93.4% of respondents prefer buying insurance products through online platforms, clearly demonstrating their pursuit of convenient and quick purchasing methods. However, offline agents still receive recognition from

85.85% of respondents, indicating that face-to-face communication remains valuable in the insurance sales process, though its appeal is slightly less than that of online channels.

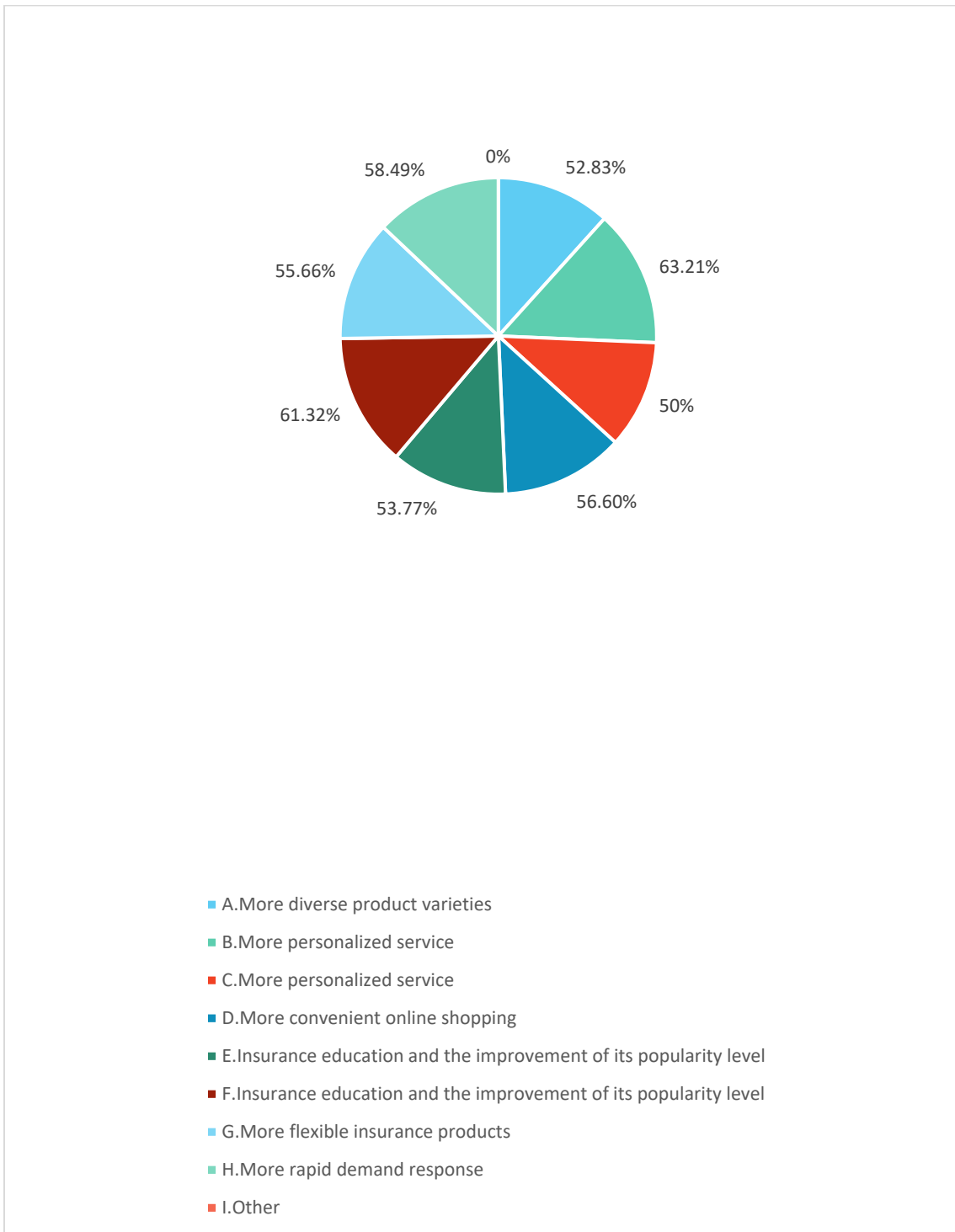


Figure 1. Insurance services

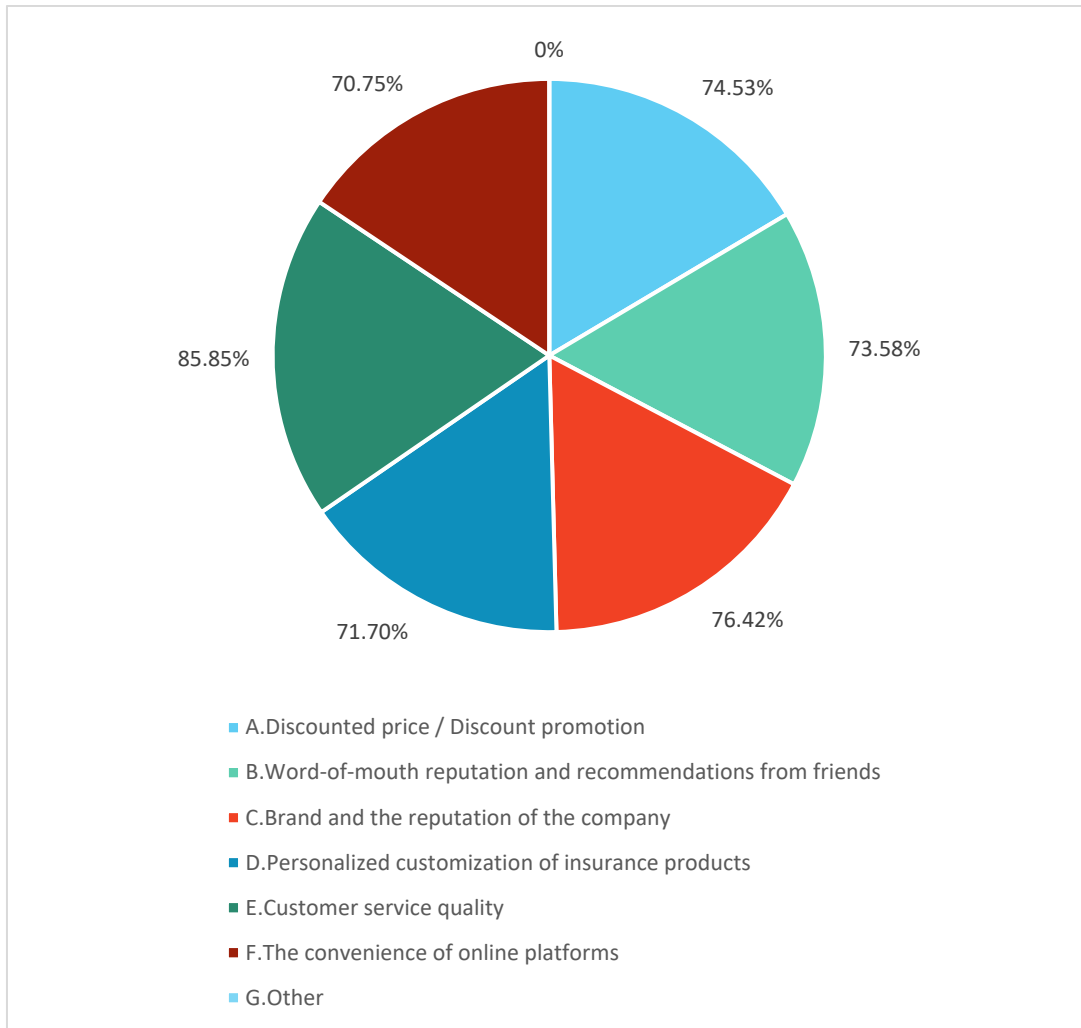


Figure 2. Marketing situation of the insurance industry

From the perspective of industry transformation, the positive impact brought about by digitalization and technological innovation has been widely recognized. 80.19% of respondents reported that digital transformation has provided them with better experiences, indicating that the advancement of digitalization in the insurance sector has gained widespread consumer approval. At the same time, 87.74% of respondents believe that technological innovation has improved service quality, and 86.79% of respondents think these innovations have simplified the purchase and claims processes. This shows that the application of technology in the insurance industry is not only widely acknowledged but also genuinely enhances customer experience significantly.

Consumer perceptions of the insurance market are also reflected in the survey. 76.42% of respondents believe that competition in the insurance market is intense and prices are transparent, and this proportion of respondents also acknowledge improvements in service quality. This indicates that consumers maintain a close watch on market dynamics and service quality, which is likely to have a significant impact when making purchasing decisions.

Looking forward to the future of the insurance industry, the trend of sales channel transformation is evident. All respondents involved in the survey.

Visitors unanimously agreed that future insurance product sales will rely more on online channels, and the hybrid model (online + offline) will become the mainstream sales model. With the continuous development of technology and the gradual change in consumer habits, the rise of online sales channels is bound to have a profound impact on traditional sales models.

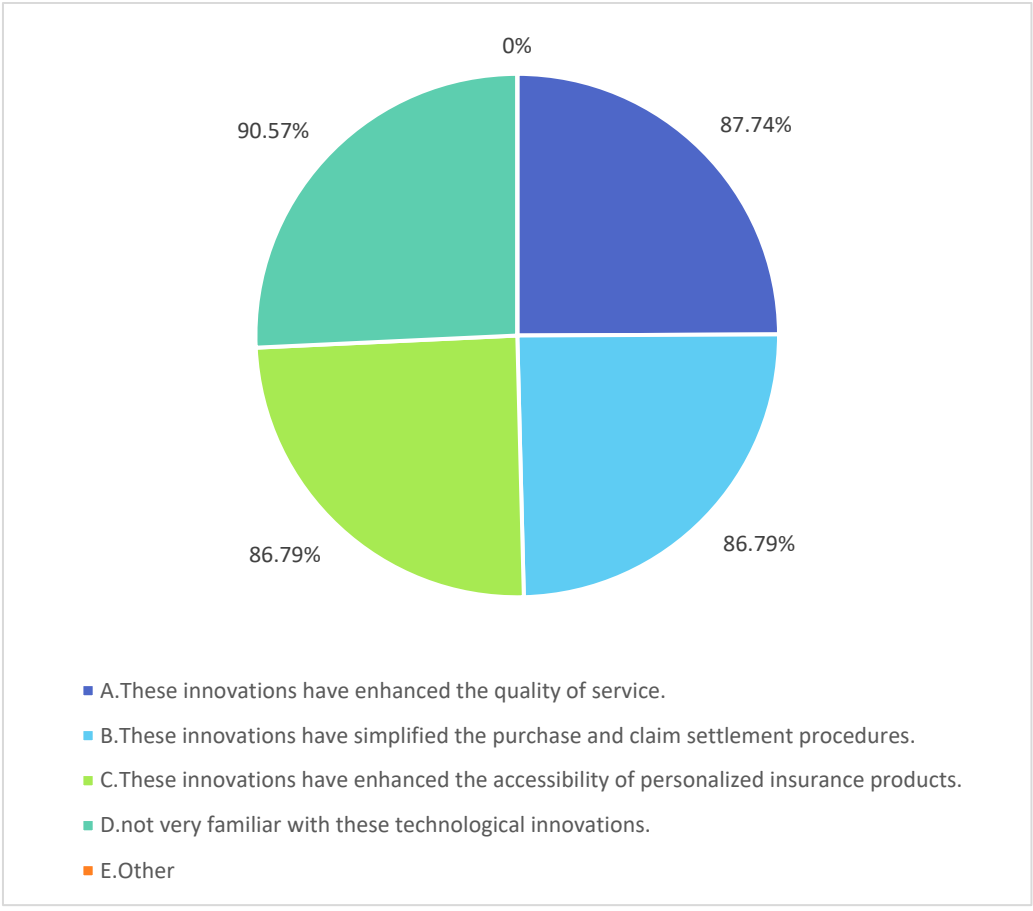


Figure 3. Industry changes in insurance

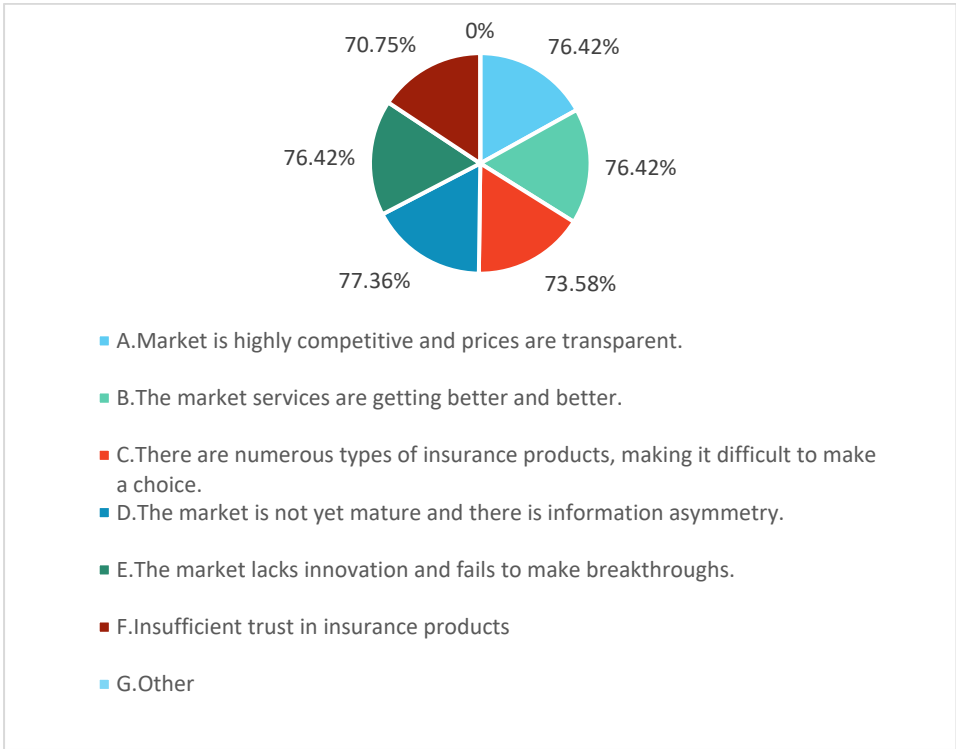


Figure 4. Consumer perception of the insurance market

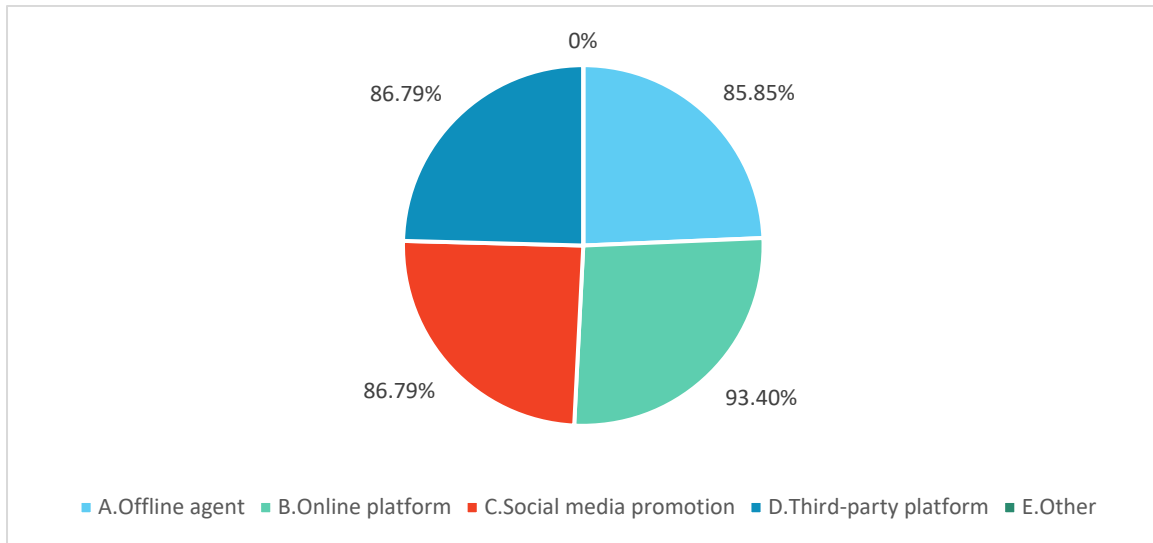


Figure 5. Changes in sales channels of the insurance industry in the future

In terms of consumer needs and expectations, the survey data also provides clear guidance. 65.09% of users show a high demand for personalized services, and 74.53% of users are influenced by trusted friends or family members when making purchasing decisions. This indicates that insurance consumers seek customized services that meet their personal needs, with trust playing a crucial role in the decision-making process. Additionally, most users expect insurers to focus on enhancing product transparency and ease of understanding (60.38%), optimizing user experience on online platforms (100%), providing faster and simpler claims processing (60.38%). Strengthening after-sales service (63.21%) and protecting user data privacy (64.15%) are also considered important needs by users. This fully demonstrates that users pay close attention to service quality and safety when selecting insurance products.

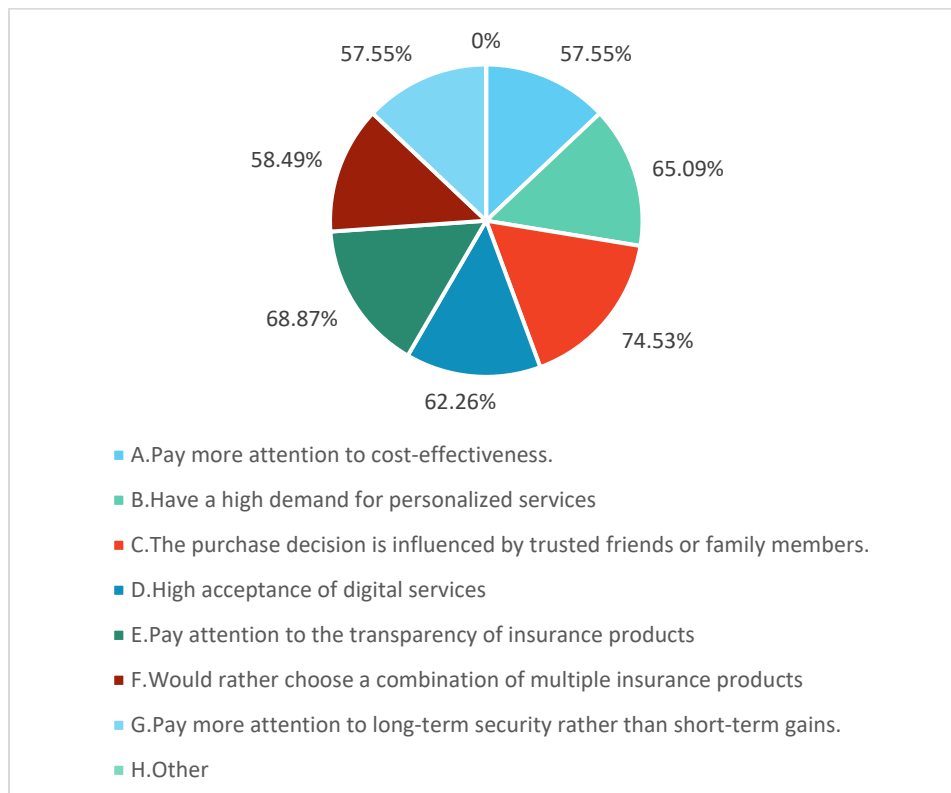


Figure 6. Consumer demand and expectations

2.3 Regional Heterogeneity Analysis

2.3.1 Understanding of AI-enabled Insurance Industry in Different Regions

The data from this study shows that there are structural differences in the functional perceptions of AI-empowered insurance industries across the surveyed regions. In basic service areas (such as process simplification and service quality improvement), the cognitive levels in six regions—Beijing, Hebei, Hunan, etc.—are similar, with an average awareness rate of 75%, indicating that the technological penetration of basic functions is widespread. However, in terms of innovative features like personalized product development, regional perceptions exhibit a gradient characteristic: Beijing (75%) and Shanghai (70%), as leading cities in technology, have a dominant position; central provinces such as Hunan (60%) and Hebei (58%) are at intermediate levels, while Shanxi (46%) and Xinjiang (31%) still have significant room for improvement in their awareness. Notably, the proportion of respondents from these six regions who are unaware of AI-empowered insurance functions remains stable at around 25%, reflecting that both the breadth and depth of technology dissemination still require systematic optimization.

2.3.2 Acceptance of AI-enabled Insurance Industry in Different Regions

From the perspective of technology application practice, the adoption frequency of AI insurance assistant shows a significant stepwise distribution feature. Beijing (64%) and Shanghai (57%) constitute the core area of high-frequency use, and its users have formed forming stable technology usage habits; Hunan (66%), Hebei (53%), and Shanxi (42%) form the mid-frequency usage band, characterized by intermittent technology application; Xinjiang stands out with a low-frequency usage rate of 61%, highlighting the resistance to technology implementation. This stratified pattern is closely related to the level of digital infrastructure construction in each region, as well as reflecting the potential impact of social psychological factors such as user trust in technology and operational adaptability. Further research indicates that economically developed areas accelerate user behavior transformation through their technological ecosystem advantages, while less developed regions need to address barriers to technology adoption specifically to achieve inclusive technological empowerment.

2.4 Insurance Industry: Change and Outlook under User Cognition

Based on survey data, insights into the development trends of the insurance industry and public perception can be gained. In terms of how technology is driving changes in the insurance sector, the data shows that 65.09% of respondents believe the industry will move towards greater intelligence, with artificial intelligence and big data playing a key role. At the same time, 70.75% of respondents expect insurance products to become more personalized, better meeting individual user needs. This data indicates that technological progress is a significant driver for enhancing the intelligence and personalization of insurance services.

The focus of future innovation in the insurance industry will mainly be on technological means and product transparency. Survey results show that 65.09% of respondents view the introduction of advanced technologies such as AI and blockchain as a crucial path for future innovation in the insurance industry. At the same time, 69.81% of respondents believe that improving the price transparency of insurance products is important. Brightness is critical. This clearly reflects technological innovation and product transparency, which are the two areas of focus for respondents.

For the application of AI in the insurance industry, 59.43% of respondents strongly agree that AI can improve claims efficiency and reduce human errors. This indicates that respondents generally have an optimistic view on the potential of AI technology in the insurance industry, believing it can enhance overall industry efficiency.

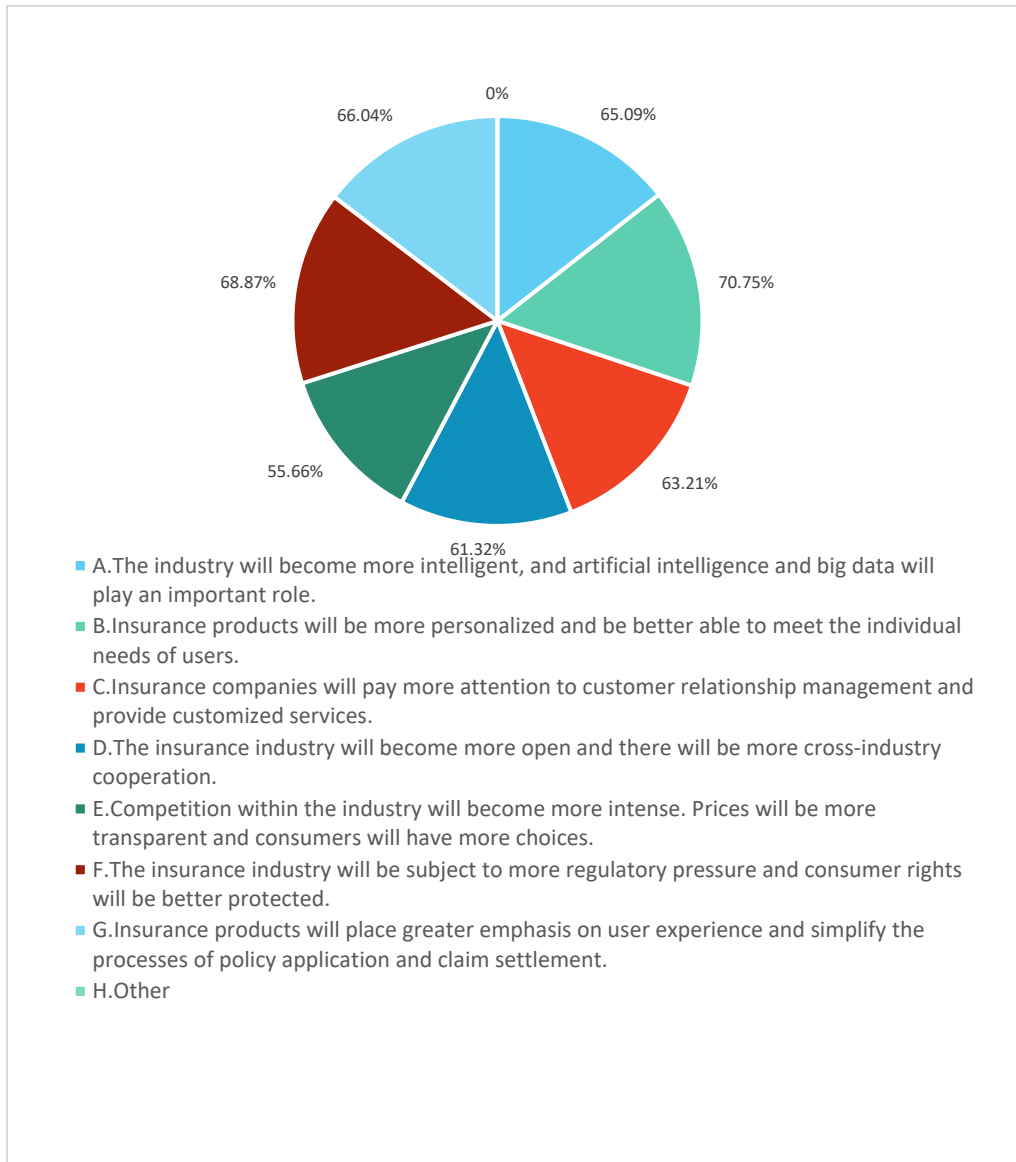


Figure 7. Trends and public perception of the insurance industry

In terms of intelligent Q&A assistants, 61.32% of respondents strongly support insurance companies using smart Q&A assistants (such as chatbots) to provide fast and convenient services. This reflects the positive attitude of respondents towards the application of smart technology in insurance services, believing it helps improve service efficiency and user experience. In terms of usage, 63.21% of respondents frequently use existing insurance Q&A assistants on the market, while only 20.75% occasionally use them. The percentages for infrequent users and never users are 6.6% and 9.43%, respectively, indicating that this tool has a high level of popularity and daily importance among users. Regarding satisfaction, 63.21% of users are very satisfied, finding the functions comprehensive and accurate answers, significantly enhancing usage efficiency; only 5.66% of users are dissatisfied. However, users also point out shortcomings in insurance Q&A assistants, with 93.4% believing their functions are limited and unable to meet complex insurance inquiries, 86.79% of users reported that the answers were vague and could not effectively solve the problem, which indicated that users had high expectations for their professionalism and practicality, and the existing products could not fully meet them.

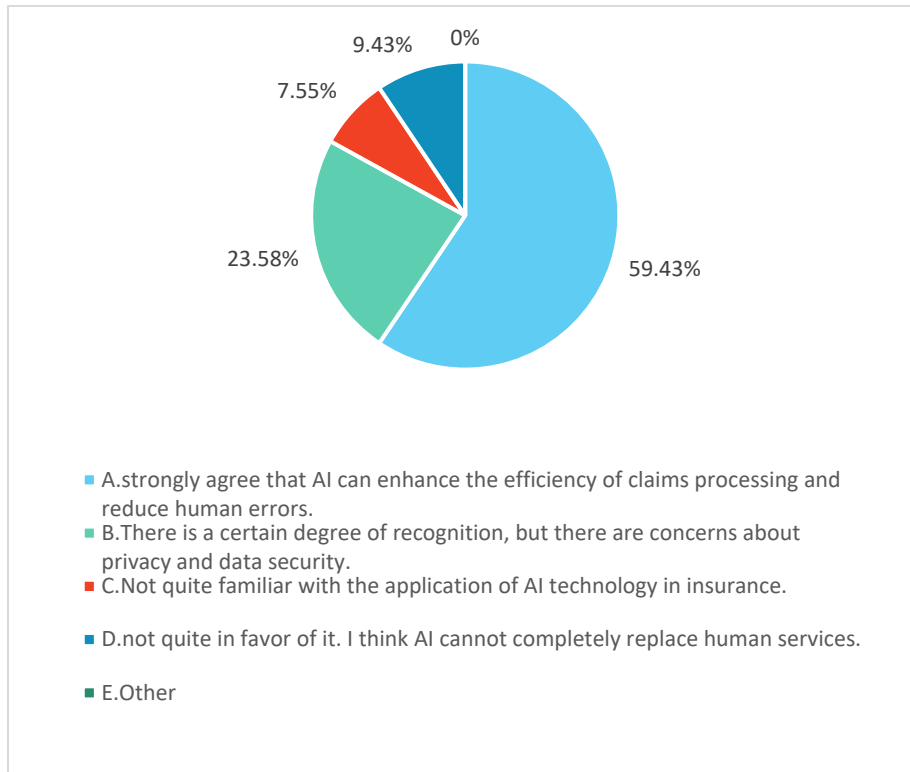


Figure 8. Application of AI in the insurance industry

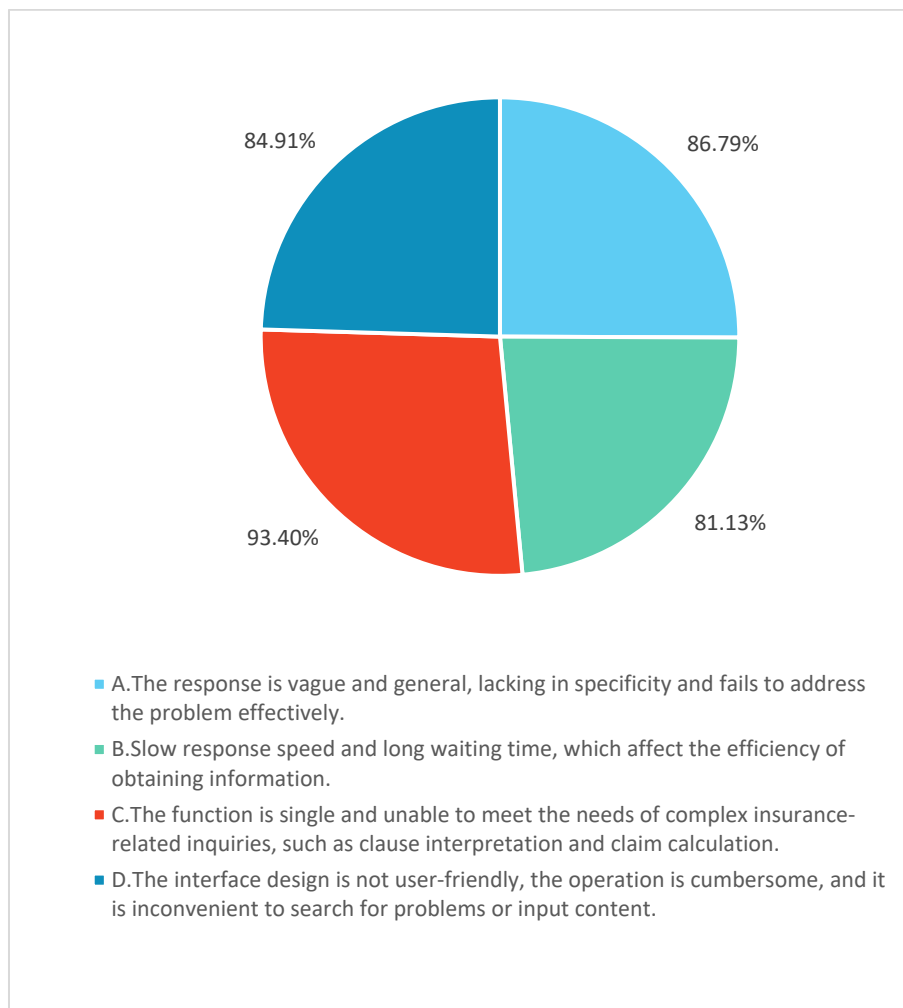


Figure 9. shows the situation of intelligent question answering assistant

In addition, the survey data shows that respondents have high expectations for intelligent customer service interaction (78.3%), smart claims assistance (76.42%), and precise intelligent recommendations (74.53%). This indicates that in the application of artificial intelligence in the insurance industry, there is a focus on how to improve customer service quality and claims efficiency through these aspects, to meet users' personalized needs and rapid response requirements.

3. Industry Analysis

3.1 Insurance Industry Data Security Management Policies Need to be Followed Up

As artificial intelligence technology is increasingly applied in the insurance industry, data security issues are becoming more prominent. Although there are currently no specific policies targeting AI applications in the insurance sector, national laws and regulations on data governance and privacy protection have provided a basic framework for data security management in the insurance industry.

First, the implementation of higher-level laws such as the Data Security Law and the Personal Information Protection Law has set clear compliance requirements for the insurance industry when applying artificial intelligence technology. These regulations require insurance companies to establish a robust data security management system when handling customer information and conducting risk assessments. Specifically, insurance companies need to: (1) define data classification and grading standards, providing special protection for sensitive data; (2) establish data access control mechanisms to restrict unnecessary personal information access; (3) implement data encryption and desensitization techniques to ensure the security of data during transmission and storage.

Second, the insurance industry faces unique data security challenges when applying AI technology. These challenges include: (1) centralized processing of large amounts of sensitive personal information, such as health status, financial information, etc.; (2) machines. The high dependence of learning models on training data may lead to the risk of privacy leakage; (3) the security risks brought by cross-institutional data sharing. These characteristics make it urgent for the insurance industry to formulate special data security management norms.

Again, the implementation of existing regulations in the insurance industry still faces numerous issues. These mainly manifest as: (1) regulatory details are not clear enough, causing confusion for insurance companies in specific operations; (2) the technical standards system is incomplete, making it difficult to effectively guide practice; (3) industry self-regulation mechanisms need to be strengthened, with data security levels varying widely among companies.

Based on the above analysis, it is recommended to improve the data security management policy system of the insurance industry in the following aspects: (1) Develop guidelines for data security management in artificial intelligence applications within the insurance industry, specifying detailed operational requirements; (2) Establish unified technical standards to standardize data processing procedures; (3) Increase regulatory efforts and conduct regular data security assessments; (4) Promote industry self-regulation and establish a mechanism for sharing best practices in data security.

To sum up, although the current regulations provide a basic framework for data security management in the insurance industry, it is still necessary to further improve the relevant policy system in view of the particularity of AI application, so as to promote the insurance industry to better play the innovative value of AI technology on the premise of ensuring data security.

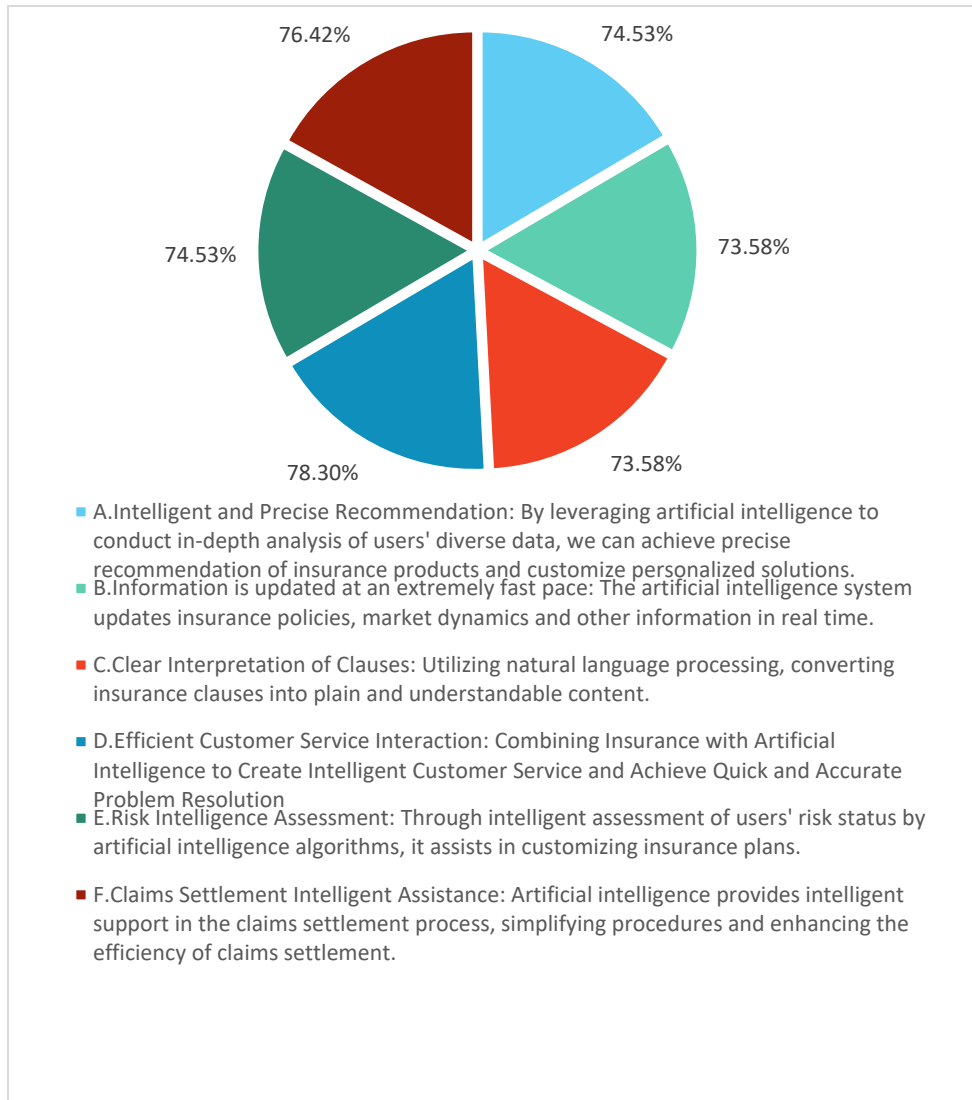


Figure 10. Focus of respondents

3.2 The Reality of Artificial Intelligence Empowering the Insurance Industry

3.2.1 Generalizability

From an open-source perspective, the open-source ecosystem has initially taken shape, but verticalization and collaboration mechanisms are still lacking. Although large open-source models (such as Deep Seek and Xuan Yuan Financial Model) have provided a foundational technical framework for the insurance industry, the industry-level open-source ecosystem remains in its early stages, lacking vertical optimization toolchains tailored to insurance scenarios. Leading insurers maintain a technological edge through self-developed or customized models (such as China Pacific Insurance's "Taishu Tong" platform), while smaller insurers, constrained by development costs and capabilities, find it difficult to directly reuse general models and must rely on open-source communities for lightweight, scenario-specific solutions.

3.2.2 Timeliness

The insurance industry faces issues such as untimely demand response and difficulties in technology implementation during the process of AI empowerment. Despite the enormous potential of AI technology, small and medium-sized insurers often struggle to quickly adjust their products and services according to market demands due to high technical barriers and significant cost pressures. For example, deploying traditional large models is costly, while open-source technologies have lowered hardware thresholds but still require substantial technical investment for local adaptation,

leading to delayed AI empowerment and an inability to promptly meet customer needs. Additionally, the lack of standardized tools and reusable cases further hinders the widespread adoption and application efficiency of AI technology.

3.2.3 Risk Control

Artificial intelligence, in empowering the insurance industry, has made information leakage a pressing issue to address. AI technology relies heavily on sensitive data (such as customer personal information, health records, and financial data), but its data security mechanisms are not yet robust, making it vulnerable to hacker attacks. Moreover, the widespread use of open-source technologies increases the risk of system vulnerabilities, and small and medium-sized insurers, due to limited technical capabilities, struggle to effectively counter data leakage threats. For example, in scenarios like medical image recognition and intelligent claims processing, data breaches not only infringe on customer privacy but can also damage corporate reputation and expose legal risks.

3.2.4 Precision and Technology

Artificial intelligence, in the process of empowering the insurance industry with precise recommendations, faces challenges such as incomplete user profiles and difficulties in technology implementation. First, building user profiles relies on multi-dimensional data (such as consumption behavior, health records, financial status, etc.), but these data sources are scattered and vary in quality, leading to imprecise profiles. Second, AI algorithms struggle to dynamically capture changes in user needs when recommending insurance products, often resulting in recommendation outcomes that diverge from actual user needs. Additionally, small and medium-sized insurers lack the technical capabilities to achieve complex algorithm optimization and model iteration, further limiting the effectiveness of precise recommendations.

3.3 Analysis of the Current Situation of the Platform

At present, some platforms in the market have made active exploration in empowering the insurance industry with artificial intelligence, but the idealized conception proposed in this paper has not been fully realized. The following analysis is made from multiple dimensions:

First, the precision recommendation platform. Some insurance technology companies have developed AI-based insurance recommendation platforms, for example: Policygenius: providing customized insurance product recommendations based on user input of personal information (such as age, occupation, health status, etc.), and supporting comparisons between products from multiple insurers. Lemonade: using AI technology to quickly analyze user needs and provide personalized insurance plans.

However, these platforms still have limitations in the accuracy of user profiling, dynamic demand capture, and cross-platform compatibility. For example, building user profiles often relies on static data, making it difficult to capture changes in user needs in real time; at the same time, data interoperability between platforms is poor, and a true "one-stop comparison and purchase" experience has yet to be realized.

Second, intelligent question answering system. Some insurance companies and technology companies have launched intelligent customer service and question answering systems based on AI, such as: Insurify: answering users' questions about insurance terms, claims process and other issues through chatbots.

An Insurance: launched an intelligent customer service system, which can handle common insurance inquiries.

However, these systems still fall short in the depth of knowledge graph, the accuracy of semantic understanding, and the reasoning ability of complex problems. For example, existing systems mostly rely on rule engines and simple machine learning models, which are difficult to deal with complex fuzzy queries and dynamic reasoning requirements.

Third, empower insurance salespeople. Some platforms have started to provide training and support tools for insurance salespeople, such as: AgentSync: to help insurance agents manage

customer relationships and provide product knowledge support. Zywave: to provide professional training modules and sales tools for insurance salespeople.

However, these platforms still have room for improvement in terms of intelligence, personalized training content and sales effect improvement. For example, the existing training modules are mostly standardized output of basic knowledge, lacking personalized content design for different sales personnel needs.

Fourth, data privacy protection and algorithm transparency. The current platforms on the market still have significant shortcomings in data privacy protection and algorithmic transparency. For example, many platforms use encryption technology but lack comprehensive mechanisms to protect user data; at the same time, the logic behind recommendation algorithms is often not transparent enough, making it difficult for users to understand the basis of recommendations, which to some extent affects user trust.

4. Sum up

Analyzing the questionnaire reveals the following issues: The open-source ecosystem for artificial intelligence in the insurance industry is still insufficient, with high technical barriers, data security risks, and low accuracy of user profiling. These problems can be analyzed from the following perspectives. In the process of empowering the insurance industry with AI, despite the enormous market potential, in-depth research has found that there are many pressing technical challenges to address, specifically in the following areas: First, inadequate construction of an open-source ecosystem. The vertical open-source ecosystem in insurance is not yet complete, lacking standardized toolchains and federated data collaboration mechanisms, which hinders the efficiency of technology sharing. Second, high technical implementation thresholds. Small and medium-sized insurers face high technical barriers and significant cost pressures, requiring substantial investment in localized adaptation, leading to lagging AI empowerment. Third, prominent data security risks. AI relies on sensitive data, but the lack of robust security measures increases the risk of data breaches due to vulnerabilities in open-source technologies. Fourth, low accuracy of user profiling. User profiles rely on scattered data, which varies in quality, making it difficult for AI algorithms to dynamically capture changes in demand. Fifth, limited effectiveness of precise push notifications. Push results often diverge from user needs, and small and medium-sized insurers lack the technical capabilities to optimize algorithms model.

Based on this issue, innovative attempts have been proposed: First, to build a precise recommendation platform. By matching users' personalized information (such as age, occupation, health status) with market insurance products, it provides customized recommendation solutions, achieving one-stop product comparison and purchase. Second, to enhance user experience. The platform supports answers to common questions about insurance terms and claims processes, continuously updates industry policies and product information, ensuring that recommended content stays in sync with the market.

Third, empower insurance sales personnel. Provide professional knowledge training modules to help salespeople understand product features, enhance their sales skills, and drive the digital transformation of the industry. Fourth, build a knowledge graph. Collect insurance business documents, use web crawling technology to scrape data, preprocess and extract features, supporting the development of intelligent Q&A systems.

Fifth, the question answering system is optimized by using deep learning models (such as BERT and GPT) for semantic analysis, combining knowledge graph to generate accurate answers, and continuously optimizing the performance of the system through index evaluation.

The future of AI empowering insurance has the following areas that need improvement: First, improve data privacy protection mechanisms. During the collection and use of user information, a stringent data privacy protection mechanism must be established to ensure user information security and compliance. Second, enhance the transparency of recommendation algorithms. Increase the

transparency of recommendation algorithms, explain the recommendation logic to users, and enhance user trust and experience.

5. Look into the Distance

The exploration and practice of artificial intelligence enabling the insurance industry has brought unprecedented opportunities and challenges to the industry.

Through theoretical analysis and case studies, this paper proposes directional suggestions for building precise recommendation platforms, optimizing intelligent Q&A systems, empowering insurance sales personnel, and improving knowledge graphs. However, despite some platforms in the market having made certain progress in AI applications, such as Policygenius's personalized recommendations, Lemonade's rapid claims processing, and Ping An Insurance's intelligent customer service system, these platforms still have significant shortcomings in user profiling accuracy, intelligent Q&A reasoning capabilities, the effectiveness of empowering sales personnel, and data privacy protection. They have not yet fully realized the idealized vision proposed in this paper. In the future, the application of AI in the insurance industry needs to focus on solving the following issues: enhancing the accuracy of user profiling and dynamic demand capture, improving the semantic understanding and complex reasoning capabilities of intelligent Q&A systems, and developing personalized and intelligent sales training modules. By systematically addressing these issues, the potential of AI to empower the insurance industry will be further unleashed, driving a comprehensive transformation from traditional models to intelligent and personalized services. We believe that with continuous technological iteration and deeper practical exploration, AI will inject new vitality into the insurance industry, helping it gain a competitive edge in an increasingly competitive market, ultimately achieving high-quality development and maximizing customer value. This study provides a theoretical framework and directional suggestions for the insurance industry to be empowered by artificial intelligence, but it still needs to be further verified and optimized through specific practices and pilot projects. We look forward to working with industry partners to jointly promote the intelligent transformation and innovative development of the insurance industry.

Acknowledgments

Supported by the Innovation Training Program of Xinjiang University of Finance and Economics 202510766006.

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