The innovative development of blockchain technology in the insurance industry and its practice in China

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Abstract Since its inception in 2008, blockchain technology has been one of the most sought-after technologies in the financial technology field in the past five years. Not only financial companies, but also many industries, think tanks and regulators are paying close attention to blockchain technology, and have been studying and exploring the value and potential risks it brings. There is no doubt that the core advantages of blockchain technology such as decentralization, smart contracts, high efficiency, openness and transparency will provide an important impetus for the innovation and development of the financial industry, especially the insurance industry. This article sorts out some literature related to the domestic insurance industry and blockchain technology in recent years, summarizes the innovative role of blockchain technology in the insurance industry, sorts out the existing practical activities of blockchain technology in China, and discusses its future The development trend is prospected.

Key words: Blockchain, Insurance innovation, Insurance regulation

1 Introduction

The business model of the insurance industry has not undergone major changes in the past few decades or even a period of time, and the level of intelligence is low. Due to the high precision and complexity of the insurance industry, the insurance industry has become one of the industries most affected by technological innovation during the rapid development of global financial technology. For the insurance industry, what it is facing and will face is not only an increasingly strict regulatory environment, but also multiple challenges brought about by factors such as technological innovation, the rise of technology companies, and the blurring of industry boundaries. Operational transformation of insurance institutions and technology-enabled industries will become the key words for the future development of the insurance industry.

With the rapid development of emerging technologies such as cloud computing, big data, artificial intelligence, blockchain, Internet of Things, and biotechnology, the insurance industry has gradually begun to use these emerging technologies to transform existing businesses. The digital transformation of the insurance industry will present two trends in insurance in the future: collaborative network ecology and intelligent decision-making. The digital transformation revolution will bring huge development opportunities to the transformation of the traditional insurance industry. With the support of emerging technologies, the insurance industry is undergoing a “reconstruction” of insurance formats, a “remodeling” of the insurance value chain, and a “renewed” insurance experience. Definition", the "reorganization" of the insurance business basis.

The openness of blockchain can solve the problem of trust mechanism from the bottom and increase market transparency. Decentralization, openness and transparency, high reliability and linked smart contract system are the main features of blockchain technology. Blockchain technology has a wide range of applications in the financial field. Blockchain technology has broad prospects in

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currency electronization, settlement and payment, credit and financial transactions.

2 Materials and Methods

Overall, the research on blockchain technology itself is very mature. Ren Anjun (2016) mentioned that securities asset transactions, international clearing, data bills, etc. will become the most important financial application scenarios of blockchain technology. Wu Wenbin (2015) believes that blockchain technology makes the promotion of digital currency possible, and further provides technical support for electronic currency to become legal tender. Wang Sheng (2016) mentioned that in the era of Finance 3.0, with big data, artificial intelligence and High-end technologies such as blockchain will completely change the development trajectory of the original financial market and bring many possibilities. Qiao Haishu (2017) judged that taking blockchain as an example, this technology can intelligentize financial transactions and conduct various transactions in the form of smart contracts, and financial intelligence will become the main form.

In terms of the relationship between blockchain technology and the insurance industry, many scholars have also given different discussions. Xu Airong (2017) believes that insurance technology is a part of financial technology from an application point of view, with technology as the core, using blockchain and other technologies to empower the entire process of upgrading the insurance industry. Blockchain technology is a kind of technology that can identify, transmit and record A distributed database-based system for information and other functions. Xu Xian (2017) mentioned that blockchain may be one of the most likely technologies to be popularized in the insurance industry. Ma Xiangdong (2017) believes that blockchain technology is a huge business opportunity for the insurance industry. It can not only provide technical support for the transformation and upgrading of traditional insurance companies, but also completely solve the problems of trust asymmetry in the insurance industry and explore the application of insurance products. Scenarios continue to empower the overall development of the insurance industry.

Although scholars have discussed some links between blockchain and insurance companies from different perspectives, there are few in-depth studies on insurance innovation, and even fewer studies on China's practice.

For the innovation of blockchain technology in the insurance industry and the practical problems in China, there are many concepts that need to be clarified in theory, and some theoretical problems need to be systematically analyzed and analyzed to provide theoretical guidance.

Due to the short development time of blockchain technology itself, the application of this technology is still in the exploratory stage. Before 2016, Bitcoin and its underlying blockchain technology did not attract public attention, and domestic academic discussions on blockchain technology were relatively less. However, after 2017, with the rapid development of Bitcoin, domestic research on digital currency and blockchain technology has gradually increased. Therefore, this issue has become an important area that must be carefully studied. Especially when it comes to the insurance industry, it should be paid attention to, and in-depth discussion and research should be carried out, and the successful experience in practice should be summarized, and the lessons of failure should be fully alerted.

This paper mainly adopts two research methods: one is the literature analysis method. Collect theoretical achievements related to the innovation of blockchain in the insurance field through libraries, the Internet, electronic databases and other channels. Through systematic reading and learning of blockchain and insurance theory and related literature, understand the development status of blockchain insurance in countries around the world. The second is the comparative analysis method. By stating the shortcomings of China's traditional insurance industry, comparing it with the advantages of blockchain technology in the context of digitalization, clarifying the advantages and disadvantages, and systematically explaining some deep-seated problems in China's insurance industry. The third is empirical analysis. Some Chinese companies have already started to apply blockchain to the insurance field, and a number of companies have implemented corresponding solutions and products for various application scenarios. By collecting the application of blockchain technology in China's insurance

industry, an empirical analysis of the current situation is carried out.

3 Result

3.1. Research on the innovative role of blockchain technology in the insurance industry

3.1.1. Pain points of China's insurance industry

The traditional insurance process is complex, inefficient and costly. The cost of traditional insurance institutions is mainly labor costs and operating costs. Especially in China, the number of insurance agents is extremely large, and the number of agents of large insurance companies such as Ping An is even as high as Hundreds of thousands. The reason is that in the process of customer acquisition, underwriting, and claims settlement, the proportion of manual services provided by insurance companies is too high, which directly causes high labor costs to insurance companies and brings potential risks of mistakes.

Moral hazard, adverse selection, insurance fraud, etc. are still frequent. Due to the particularity of their business, insurance companies, as the distribution center for risk control and transfer of social groups, also undertake potential but huge adverse selection and moral hazard. To some extent, the status quo of “centralization” of insurance companies is one of the most important risks in their long-term future development. There is no denying that technological advancements are a huge opportunity for both fraud exploiters and fraud preventers. In recent years, insurance fraud incidents have not decreased but increased, it has become more and more difficult to identify insurance fraud, the cost of underwriting has become higher and higher, and an effective solution has not yet been found.

Simple structure of insurance products and lack of differentiation Taking Internet insurance as an example, at present, low value and poor level of personalization are the main problems of China's Internet insurance products. First, there are few types of Internet insurance. Car, life and financial product insurance are the mainstream, and other types of insurance account for a very low proportion. Second, the products of various Internet insurance companies are relatively similar, with a high degree of homogeneity and lack of Differences; third, Internet insurance companies are still unable to provide more customized insurance products based on the consumption habits and characteristics of users.

Information security technology is immature, and it is difficult to protect customer privacy The open Internet makes it easy for some commercial organizations to use inappropriate means to tamper or destroy data on the insurance network. The information security of Internet insurance customers is facing serious threats, and problems such as information leakage, loss, and theft have caused huge violations of customer privacy. How to ensure information security as soon as possible is a key issue that needs to be solved urgently in the development of China's Internet insurance.

3.1.2. The innovative role of blockchain technology in the insurance industry

Establish a trust security mechanism and enhance the security attributes of insurance As mentioned above, the two major problems that the insurance industry has been criticized for are lack of trust and insufficient security. The lack of customer trust in insurance companies is the main reason that restricts the development of commercial insurance in China one. The inherent digital encryption and information authentication technology of the blockchain can "lock" the data, which cannot be tampered with and shared at will, to ensure the privacy and data security of customers, thereby enhancing the trust and security of the insurance industry. Issues such as mistrust and contract disputes in the insurance industry can be resolved through technical means such as "time stamping", thereby enhancing the level of trust and security in the insurance industry. The customer's transaction information will be stored in the "chain" and form a "consensus" on the blockchain technology, which fundamentally eliminates potential risks such as information tampering.

Shift from “centralization” to “decentralization” to reduce systemic risks and solve information asymmetry in the insurance industry

The "distributed" feature enables the execution of smart contracts to self-repair, reducing the overall risk of insurance companies. Blockchain can help reduce mistakes and identify fraud, and has a qualitative improvement in verifying the authenticity of customer information and the authenticity of

policy claims. The traceability of blockchain technology can make insurance services more transparent and reduce information asymmetry and its potential risks and losses. In short, blockchain technology "distributed" public ledgers can centrally record data on activities carried out in different locations and in different ways, thus providing insurance companies with complete personal information. This makes many operations of insurance companies do not need to rely on third-party institutions to actively verify the identity information, transaction records, medical conditions and other data of insured customers, reduce the risk of information asymmetry, and fundamentally eliminate the risk of centralization and centralization. bring potential systemic risks.

3.1.3. Reduce costs, improve efficiency, enrich product content and form, and improve customer service levels

Blockchain technology can promote the development of the Internet of insurance, and greatly reduce the proportion of agents and their labor costs while ensuring service quality. In addition to reducing operating costs, blockchain technology can also help insurance companies improve efficiency in underwriting and claims settlement. There are as many as seven or eight steps in the traditional claims settlement process, from case acceptance to initial review and final settlement. The high proportion of manual operations and repetitive and cumbersome workflows are the two major drawbacks of traditional claims settlement. The traceability of blockchain technology and the characteristics of smart contracts can update the insurance claims process. While ensuring the authenticity of the data of the insured, information disclosure and audit automation can be realized, which greatly improves the efficiency of claims settlement, which not only reduces the operating expenses of insurance companies, but also improves the customer service level.

In terms of insurance product development and design, with the immutability of blockchain technology, insurance companies can deeply mine the data information of insured customers, and further optimize risk pricing and product innovation, which can improve the richness and fit of insurance products. . Blockchain technology will bring new insurance models, such as index insurance, Internet reinsurance, etc., which may turn insurance companies from risk takers and diversifiers to risk management consultants.

At the level of product customization, blockchain technology can provide technical support for insurance products with high personalized needs, and there will be a huge application market in agricultural insurance, quality insurance, etc. The most important thing in the insurance process, such as agricultural insurance and quality insurance, is the authenticity of various information of the insured. It plays a decisive role in the pricing and calculation of insurance. In the past, many industries and insurance could not be effectively integrated due to the undisclosed information of insured companies, the products being too niche, and the difficulty in obtaining information. The application of blockchain technology can not only help insurance companies expand their business to more industries and develop customized insurance types in different fields, but also greatly improve insurance companies' information acquisition with its unique technical features such as storage, encryption, and immutability. While reducing the effectiveness of information asymmetry and other thorny problems, predict potential risks in advance, so as to provide more personalized insurance solutions in product pricing, claims and other aspects.

3.2. Application cases of blockchain in the insurance industry

Some Chinese companies have already started to apply blockchain to the insurance field, and a number of companies have implemented corresponding solutions and products for various application scenarios. The pace and connotation of its innovation is not only a simple transformation of the existing business model and transaction process, but also combined with the pain points of the industry, boldly under the blessing of blockchain technology, combined with business, regulatory and legal elements, to build a new process , the new mode. At present, the application cases of blockchain in the insurance industry mainly focus on the following aspects:

3.2.1. Break information barriers in the industry, improve business collaboration efficiency and industry risk control capabilities

Solve the problem of operational inefficiency in the reinsurance and co-insurance business

By uploading the policy and billing data to the chain in real time, the affiliated or co-owned companies can instantly obtain relevant business data and confirm the bills at their respective blockchain nodes, thereby breaking the barriers of information asymmetry, avoiding repeated entry by multiple parties, and greatly reducing traditional re-entry. The manual work in the insurance and co-insurance business can effectively improve the business efficiency and help to form a new ecology of re-insurance and co-insurance.

Improve the efficiency of collaboration between institutions in the annuity management business

In the current annuity management business, multiple entities such as trustees, account administrators, and custodians are required to collaborate and interact, but the industry lacks a unified standard interaction platform. Problems such as low efficiency, high operating costs, unsecured funds, and difficulty in guaranteeing data security. Connecting all participants through blockchain technology, sharing and transferring information on the chain on the basis of fully guaranteeing the privacy and security of information of all parties, not only greatly improves the efficiency of institutional interaction, shortens the business cycle, reduces the amount of funds and manual reconciliation, but also greatly improves the efficiency of institutional interaction. Can improve user experience.

Promote industry information sharing and enhance insurance anti-fraud capabilities

In the civil period of the insurance industry, risk data distribution is decentralized and fragmented, resulting in weak risk identification and anti-fraud capabilities. The use of blockchain technology to achieve industry risk information sharing ensures that business data is stored locally in each institution and meets industry interconnection. Interoperability, one is to ensure data privacy and security and data ownership, and the other is to achieve real-time sharing to meet the needs of Internet business development such as travel insurance, accident insurance, health insurance, etc., and build transparency in a low-cost, efficient, and transparent way , trust and security industry development ecology.

3.2.2. Connect the upstream and downstream industrial chains of the industry and promote the sustainable development of the industry

Support the efficient and credible exchange of points to solve the problem of low customer contact frequency

Infrequent contact with customers is a common problem in the insurance industry. How to increase the frequency of contact with customers is a common problem faced by the industry. Use blockchain to build a cross-institutional point circulation platform. First, after merchants issue points on the blockchain, users' points can be circulated among all participating institutions, and the dominance and value of points can be enhanced, which can increase user stickiness, improve the circulation rate, and promote the merchants to achieve their marketing goals. The second is to use the distributed ledger for accounting, data tamper-proof, traceable, safe and trustworthy, the point exchange information between merchants is recorded in the blockchain ledger in real time, and real-time settlement between merchants is performed to save tedious reconciliation costs. The third is to predefine the business rules in the smart contract. When the corresponding conditions are met, the smart contract will automatically execute the point transaction, improve the operation efficiency, and ensure the openness and transparency of the transaction.

Realize the connection between insurance and cross-border trade industry chain, and improve the ability of insurance to serve the real economy

Build a cross-border trade insurance platform based on blockchain technology, connect insurance institutions, customs, banks, and other trade industry chain entities, break through information barriers between trade entities, and achieve efficient and secure information transmission and sharing, so that trade companies can Enter and use it multiple times to improve the efficiency of insurance. Insurance institutions can obtain risk information in a timely manner for risk identification and risk management, and conduct cross-validation of information to improve information accuracy. Improve the ability of insurance to serve the real economy, and build an efficient, safe and convenient cross-border trade and business ecological environment.

Promote the interconnection between the insurance industry and the medical and health industry, and achieve a win-win situation among hospitals, patients and insurance companies in a safe and credible manner

With the help of blockchain technology to realize the interconnection of insurance, medical care, health, pension and other data, the following problems can be solved: First, the information barriers between the medical system and the insurance system can be opened up, so that the medical system data and the insurance system data can be stored in the Real-time interconnection is carried out on a credible channel to form a complete user medical and insurance file. Users can obtain compensation in a short time, reduce economic pressure and improve claims experience. The second is to use blockchain technology to achieve peer-to-peer interaction between medical care and insurance. Personal health information is encrypted and isolated through blockchain privacy protection technology to protect information from illegal leakage and illegal use. The third is to truly return the ownership of user data to the user himself through the user authorization certificate of blockchain technology. Fourth, nodes can be deployed to supervise each piece of data in real time in institutions such as medical insurance, human resources and social security, and insurance supervision.

4 Discussion

Blockchain technology is essentially a database technology with a shared and open nature, which can gradually store data. The characteristics of decentralization and inability to modify are the core advantages of blockchain. There is no doubt that blockchain technology, with its unique technical advantages, has a major role in promoting the rapid development of China's insurance industry, but it is undeniable that the emerging Internet technologies represented by blockchain technology are used in the financial industry. There are many problems. Issues such as imperfect technology, difficult management, and high potential legal risks are all quite difficult. There have been many accidents in the development of electronic digital currency based on blockchain, and there are also certain security risks. It can be said that there are still many difficulties in the application of blockchain technology in the insurance industry (Sun Yuyao, 2017). At the most basic technical level: since its birth in 2008, blockchain technology is still in the stage of gestation and exploration. The transaction rate and scalability of blockchain technology and the data storage problems brought about by the large-scale application of digital currencies such as Bitcoin are all signs that blockchain technology is not yet mature enough, which may also restrict the scale of blockchain technology. three core issues of development. In terms of law: First of all, all the advantages of blockchain technology may become a crime tool with high technical barriers for criminals to commit crimes. How to prevent the use of blockchain technology in the reverse development of the insurance industry is an urgent need to solve at the legal level. Second, at this stage, blockchain technology still does not have a unified industry standard, and the regulatory system is not yet suitable for blockchain.

Based on the advantages of the above-mentioned blockchain technology and several potential problems that still exist, this article attempts to put forward corresponding feasible suggestions from the perspectives of the government and enterprises: At the government level, the government and regulators should pay close attention to the use of blockchain technology as a Represent the impact of emerging technologies on the financial and insurance industries, strengthen top-level design, speed up the promulgation of relevant laws, reasonably regulate the application, operation mode, and industry standards of blockchain technology, and gradually undertake and do a good job in the supervision of preventing industry risks responsibility. With the in-depth development of blockchain technology, it is imperative for insurance and blockchain supervision to catch up. At the enterprise level, insurance companies should continue to accelerate the pace of digital transformation and build a data-based, online and platform-based business model. Insurance companies should also embrace blockchain technology, strengthen technical cooperation, expand capital investment, and carry out personnel training to further improve the development quality of China's insurance industry, especially the commercial insurance industry.

5 Conclusion

As a unique and valuable financial product, insurance still has many misunderstandings in its popularity and social acceptance. Especially in China, many residents are not aware of insurance, and they rely more on government-led social security insurance, but have little understanding of commercial insurance, and even have resistance. If we refer to the development of the insurance industry in Western countries and its role in financial development and social security, there is no doubt that there will be huge room for insurance in China. Fintech represented by blockchain technology will be a booster for the vigorous development of China's insurance market. While solving many pain points in traditional insurance, it can also emphasize customer-centric, customized services and personalized management operations. The concept provides technical support, thereby improving the quality of insurance products, improving the public perception of the insurance industry, and providing new impetus for the healthy development of the insurance industry in China.

References

1. Chang Ming. (2017) A preliminary exploration of the application prospects of blockchain technology in the insurance industry, Shanghai Insurance, (04): 22-23.
2. Ding Mengmeng. (2019) Application Analysis of Blockchain Technology in Insurance Industry, China Insurance, (12): 27-31.
3. Deng Wei. (2018) The application and significance of blockchain technology in the insurance industry, Operation and Management, (07): 30-32.
4. Lin Xiaoxuan. (2016) The application of blockchain technology in the financial industry, China Finance, (08): 17-18.
5. Li Xiaochun. (2020) Analysis of the fit between blockchain technology and the insurance industry, Modern Business, (26): 154-156.
6. Luan Yudong. (2019) Research on the application of blockchain technology in the financial field, Electronic Testing, (Z1): 138-140.
7. Ma Xiangdong. (2018) Reflections on the application of blockchain technology to the insurance industry, Journal of Insurance Vocational College, 32(06):49-53.
8. Sun Yuyao. (2017) Insurance supervision based on the current application of blockchain technology. Economist, (09).
9. Wang Yuhua, Dai Zexi. (2019) Application Scenario Research of Blockchain Technology in Insurance Industry. Jilin Financial Research, 2019(06):16-20
10. Wang Xingjiang. (2016) Exploration of Blockchain Insurance Application, Financial Electronicization, (10): 23-24.
11. Xu Dawei. (2018) Blockchain technology brings innovation in the insurance industry, Times Finance, (30).
12. Xu Xian. (2021) Blockchain and Insurance Innovation: Mechanisms, Prospects and Challenges, Insurance Research, (05): 43-52.
13. Zhang Weinan. (2019) Insurance industry should actively embrace blockchain, China Insurance News, 06-06(08).
14. Zhao Dawei. (2021) Discussion on the application of blockchain technology in the Internet insurance industry, Financial Development Research, (12): 35-38.
15. Zhang Xinyu. (2017) Application Research of Blockchain Technology in Insurance Industry, China Financial Computer, (01): 48-49.
16. Zeng Yujin. (2017) Application Status and Future of Blockchain in Insurance Industry, Tsinghua Financial Review, (12): 21-23.