

Research on Shared Travel Development Model Based on Blockchain Technology

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Abstract: This paper analyzes the current development status of the shared travel industry in China, and analyzes the problems of inadequate supervision, high operating costs, user information security and information asymmetry in the development of shared travel. Aiming at these problems and combining the advantages of blockchain technology, this paper proposes a new mode of "blockchain+shared travel", which solves the problem of sharing through the decentralization of blockchain technology, information not tampering, and information transparency. The problem of user information leakage during travel, effectively improve the level of market supervision, reduce trust risk, information asymmetry, transaction costs and reduce the occurrence of monopolistic behavior, which will help promote the further development of shared travel in China.

Keywords: shared travel, blockchain, sharing economy

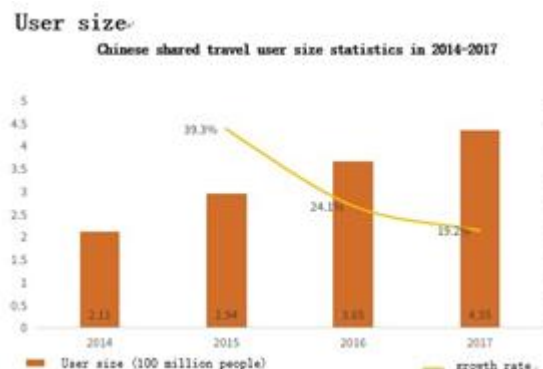
1. Introduction

With the continuous development of the economy, society has gradually changed from a shortage economy to the surplus economy makes many people's possessions impossible to fully play. Used for people. Therefore, sharing these idle resources is one a good choice, coupled with the support of Internet technology, sharing the economy started to rise. The sharing economy has spread rapidly in China since 2016. It first appeared in the field of transportation. From the price war of a mobile phone terminal, it has grown wildly and explodes in just 10 months. According to estimates by the National Center for Information Sharing, the number of people participating in the sharing economy has exceeded 600 million by February 2017. As of February 2017, the total number of drivers registered on the Didi platform reached more than 17.5 million, and 2 million active drivers. People, the per capita daily income is more than 160 yuan; shared transportation can be seen as the fourth way of travel except for public transportation, taxis, private cars, and the Chinese people's "less money to do more" consumer demand is exactly the same. Sharing travel is to improve the efficiency of the car without increasing the number of vehicles. It is the best solution to alleviate the bottleneck of traffic congestion at this stage. It also breeds a number of pioneering companies, such as Didi Travel, Mobike, etc. Synonymous with the sharing economy in China.

2. The status quo of shared travel

At present, China's shared economy market has reached US\$62.5 billion, and it maintains a rapid growth of 54% per year. It is expected that by 2018, China's shared economy market will reach US\$230 billion and become a leading force. As the leader of the sharing economy, the market capacity of shared travel has maintained a rapid growth rate of 79%. It is expected that by 2018, the potential shared travel market capacity brought by potential travel demand is expected to reach 1.8 trillion yuan. The development of shared travel in China is relatively late, but the pace of development and scale are growing rapidly. In 2016, the

number of people sharing travel in China was close to 400 million, and about 62.5% of users used this shared travel software at least every week. The user's stickiness improved and cultivated a solid consumption habit. Car sharing travel has rapidly grown to an annual order volume of 1.77 billion, creating 5.5 million jobs, attracting investment of 23.4 billion US dollars, and still accelerating development, showing strong vitality, relevant data shows that car sharing in 2018 The market capacity of travel is expected to reach 380 billion yuan. Sharing travel has penetrated into the economic situation and residents' lives, and its development in China is inevitable. Combining the research on the status quo of development at home and abroad, at present, China's car sharing travel mainly includes five modes: shared car, network car, traditional leasing, ride (carpooling) and P2P car rental.



3. Sharing travel problems

Market regulation is not strict. Due to the low barriers to entry for shared economic enterprises, The relevant regulatory authorities are not strict with the review of enterprises, resulting in a large number of entrepreneurs joining. The fierce competition between the industries and the state of melee between enterprises will inevitably lead to market chaos and vicious competition. For example, there are illegal operation problems such as unlicensed operation and deck operation in the online car market, and some low-cost dumping of the network car platform also

undermines the fairness and order of the market. The subsidy war has caused large-scale congestion in some cities. Shanghai The peak congestion index in the first quarter of 2018 hit a four-year high. Although the platform was resisted by the taxi industry and the law enforcement agencies investigated, but because the sharing economy in China started late, there are no complete laws and regulations to restrict it. Secondly, the use of shared deposits, supervision, and the refund of deposits after business closures are all in urgent need of relevant policies. Relevant information shows that as of June 2018, the total deposit amount of the entire shared economy has reached 15 billion yuan. The deposit itself is a credit restriction mechanism, but now it is more conducive to sharing the economic platform, making the common credit risk constraints have inequality and increasing the credit cost of consumers.

Infringe on consumer rights. The sharing economy depends on internet technology, in me

When we use the shared economic platform, we need to input our personal information, sometimes involving some private information. Some people use system vulnerabilities to steal user information for profit, which infringes consumer privacy. Recently, the relevant departments of China investigated the 174,000 users with the help of the Ant Financial Platform. It was found that about 70% of users had personal information leakage problems when using shared economic products and services, but the disciplinary mechanism for sharing the economic platform behavior was insufficient. It makes it difficult for the regulatory authorities to lose rights for users. Secondly, since traders sharing the economy are strangers, credit has become a key factor in the sharing economy. However, China's credit system is still not perfect, and there are moral hazard problems, coupled with the lack of direct contact and effective traders. Constraint, when consumer rights are violated, it is difficult to maintain their rights. In addition, some information in the sharing economy is not completely transparent, such as product quality, usage information, etc., and most of the information is concentrated in centralized organizations, which are prone to information asymmetry and other issues, leaving consumers at a disadvantage. Damage to consumer rights.

The underlying data is not perfect. The key to the development of the sharing economy lies in the accuracy of the collection and analysis of credit data. The basic data under the traditional shared economic model is mostly monopolized by the market oligarchy. The real-time scheduling and control ability of the data needs to be strengthened, even if some small enterprises have novelty. Or an innovative shared economy model is difficult to achieve. Therefore, the lack of credit data has become an important reason hindering the development of financial institutions. In addition to the different levels of informationization in different industries and the lack of basic data, the data sharing information between industries is not clear, and the data collected between the industries

has no specific standard. As a result, the collected data cannot be directly used. Further processing or translation is required, resulting in increased operating costs. As the underlying technology for sharing economic operation and development, big data technology will directly affect whether the sharing economy can develop healthily, because the key to the development of sharing economy lies in the accuracy of credit data collection and analysis, especially credit. The lack of data has become an important reason for hindering the development of financial institutions.

4. Definition and characteristics of blockchain

(1) Definition of blockchain

Blockchain is the core technology of Bitcoin. It is a technical solution to collectively maintain a reliable database by means of decentralization and trust. It consists of a series of encrypted data blocks that are combined in a chronological order in a chain to form a data chain. In general, the blockchain can be viewed as an open database book, and everyone can supplement the data to make the blockchain more complete and meet everyone's needs.

(2) Characteristics of the blockchain

First, decentralized structure. Decentralization means that in the absence of third-party participation, each node can automatically reach transaction consensus and trust in the process of data exchange. Each node has the same rights, has equal obligations, and does not need to rely on. The central processing node. Moreover, the data in the system is jointly maintained by nodes with maintenance functions. When data needs to be recorded or modified, it needs to be unanimously recognized by other nodes, so that the blockchain network is not controlled or affected by certain nodes. This can not only improve the operational efficiency of the system, reduce costs, but also ensure the security of information.

Second, information cannot be tampered with. Once the information in the blockchain is added, it becomes a node in the blockchain network, which in turn becomes a record that is permanently saved and cannot be modified. The information can be tampered with only when more than 51% of the nodes in the system are controlled at the same time, but the implementation is extremely difficult, so the reliability and stability of the data is very high. And with the increase of nodes, the rigor of the algorithm is improved, and the security of information is gradually enhanced. In this way, the relevant law enforcement personnel can easily check the past real transaction records, which is conducive to the improvement of the supervision level.

Third, programmable smart contracts. When signing a contract, when the parties agree on the content of the agreement, the smart contract can be embedded in the blockchain in a digital form. The intelligent contract converts the agreed terms in the traditional contract into the program code, and then the blockchain automatically judges the execution conditions of the contract. When the contract conditions are satisfied, the blockchain can be trusted

without the trust of the third party. The triggering and execution of the contract not only improves the efficiency of the execution of the contract, but also ensures the smooth execution of the contract without supervision.

Fourth, information is transparent. The operational processes and information in the blockchain system are open and transparent. When the information is updated, each node can obtain a copy of the complete database in a short time to realize data synchronization across the network. And because the blockchain runs the program, the access methods of the nodes are all open, and anyone can access the data in the blockchain through the relevant data interface, ensuring the high transparency of the blockchain information. At the same time, considering the security of user information, some private information will be encrypted and can only be accessed with the authorization of relevant personnel, which can make the information transparent and protect consumer privacy.

5. "Share travel + blockchain" new mode

Protect user information security. The blockchain can use mathematical algorithms to protect user privacy through encryption technology. It can build a transparent, unowned system. The devices inside can be managed and repaired by itself. The whole system is a decentralized self-organizing system. In this system, people can carry out peer-to-peer value transmission without trust and ensure the security of information. Therefore, even if people disclose personal information during the transaction, there is no risk of information leakage without intermediary participation. In addition, through the blockchain's symmetric encryption and authorization technology, consumer privacy can also be prevented. For example, in the shared bicycle industry, information such as the deposit mechanism and credit scores are managed by third-party organizations, and there is a risk of information leakage or loss. The user identity information is encrypted by the blockchain technology, and only the data owner is authorized. In order to access, the privacy of consumers is protected.

Reduce the risk of trust. The traders of the sharing economy are strangers. In the course of the transaction, the background information of the parties may be untrue and lack the guarantee of credit, so there will be trust problems in the people's transaction process. At present, most shared economic enterprises obtain trust from users by allowing users to pay deposits. However, this is risky for users. If there is a problem in the operation of the company, the company cannot afford to pay the deposit. The user's rights and interests will be impaired, and since the platform data is concentrated in the enterprise, when the company's responsible person is not seen, the supervisory department will have difficulty in knowing the number of users and the deposits collected by the company, and cannot protect the rights and interests of the users. The emergence of the blockchain solves the problem of intermediary credit. It allows the two parties to conduct secure transactions without any form of intermediary, so that users can enjoy

the service without paying a deposit, eliminating the use of the deposit to gain trust and avoiding Possible deposits are difficult to retreat. Secondly, the information and operational processes in the blockchain are completely transparent. On the one hand, the generation of false transactions can be reduced. On the other hand, traders can enhance the trust of each other by verifying the authenticity and reliability of the information, which is beneficial to reduce the risk of trust.

Reduce transaction costs. Due to the commercial attributes and credit problems of the shared economic enterprises, the transaction costs are getting higher and higher, and these costs can be effectively reduced by blockchain technology. Blockchain's smart contract technology has the advantages of auto-execution and trustworthiness. By compiling transaction conditions and related requirements into the computer, it can automatically execute these set programs, which not only improves transaction efficiency, but also saves contracts. Establish and execute costs. Secondly, the damage of shared items sometimes occurs. The shared economic enterprises usually use their own maintenance team or entrust a third party to conduct regular inspections and repairs. However, due to the large amount of items and high damage rate, it is inevitable that there will be omissions and high The operation and maintenance cost of the amount also increases the business burden of the enterprise and affects the development of the enterprise. Using the point-to-point technology of the blockchain, the terminal equipment can be uploaded to the blockchain, and smart contracts can be signed with the eco-collaborators on the blockchain, which can improve the response speed of the vehicle maintenance and other operational links, and can reduce the staff scheduling. the cost of. At the same time, the vehicle situation on the chain, and then through the credit network, you can use the social credit supervision, let people form a sense of self-discipline, effectively reduce people's damage to the vehicle, and help reduce vehicle maintenance costs.

Improve the level of market supervision. In the past market supervision process, law enforcement officials generally maintain market order by searching for violations and collecting evidence against offenders. However, this will cost a lot of manpower and resources. Due to limited resources, it will inevitably lead to a situation where supervision is not in place. Since transaction information is transparent and electronic in the blockchain, the use of blockchain technology can significantly reduce the difficulty and cost of collecting evidence by regulators. Second, the information in the blockchain is open, transparent, and traceable. Anyone can query the information in the blockchain, and the information in it cannot be tampered with by third parties, so if it occurs during the transaction. The problem is that the supervisors can easily check the real transaction situation in the past, make a fair and fair judgment on the transaction process, and thus protect the interests of consumers and maintain the stability of the market order.

Reduce information asymmetry. One of the characteristics of the sharing economy is that the benefits are distributed equally to all users, so that consumers and resource providers can achieve a win-win situation. However, for the moment, most of the benefits are occupied by centralized third-party platforms. Fair, because consumers and resource owners are also the creators of value, they are not getting the rewards, such as Airbnb and Uber, which are more successful in the sharing economy. Their business model is to integrate resources into the platform through centralization. And then unified distribution, let users achieve sharing, and finally charge a certain percentage of service fees. Since the information is concentrated in the centralized sharing economy platform, it is difficult for users to obtain all the valuable information, which forms an information asymmetry phenomenon, so that most of the benefits are ultimately owned by the company, which harms the interests of consumers. Using a decentralized economic mechanism such as blockchain, it allows traders to conduct peer-to-peer transactions without third parties, which facilitates the direct sharing of resources, solves the problem of information asymmetry, and better satisfies both the supply and demand sides. demand. Reduce the occurrence of monopolistic behavior. With the rapid development of the sharing economy, some shared economic enterprises have a tendency to accelerate mergers. These enterprises will eventually form a "one-size-fits-all" situation through competition and mergers and acquisitions, and then generate monopolistic behavior. According to statistics, in 2016, Didi accounted for more than 85% of China's special vehicle market. In August 2016, Didi merged with Uber. After the merger, the market share was over 93%, and there may be monopolistic behavior. When the sharing economy platform forms a monopoly, the platform operators can use the dominant position formed by the platform to implement price monopoly or restrict competition, and the information sharing asymmetry and status inequality between the trading platform and the traders. It is even more detrimental to the interests of the relevant participants. By connecting different enterprises through blockchain, the decentralization and information transparency of blockchain technology can break the monopoly of the shared economic platform, realize the sharing of different enterprise resources, and make the services in the entire ecological chain more diversified. In this way, each company can concentrate on its own business, avoid vicious competition, and reduce monopolistic behavior.

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