

A Research on Optimizing the E-Commerce Marketing Platform for the Western Agricultural Products Basing on the Blockchain Technology

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ABSTRACT

In 2015, in The Guiding Idea on Rapidly Developing the Rural E-commerce, the General Office of the State Council pointed out: the rural e-commerce was the important method to transform the development way of agriculture and the important carrier of the targeted poverty alleviation. In 2016, the No. 1 Central Document pointed out: support the construction of the marketing service platform form the agricultural products; promote the rapid development of rural e-commerce; form the online and offline integrative development; encourage the large e-commerce platform enterprises to carry out the rural e-commerce service. The data from the Commerce Department showed that it was more than 220 billion Yuan for the e-commerce trade volume of the agricultural products in the whole year of 2016, which accounted for 10% in the whole national market of the fresh agricultural products. According to the newest data of Alibaba, in the first 20 cities of all over the world about the marketing of agricultural products, there are three western cities in the list only; Kunming is the in the 5th place that is behind Beijing, Shanghai, Guangzhou and Hangzhou; Chengdu is in the 12th place; Urumchi is in the 18th place. To a certain extent, this reflects the lagging of western rural e-commerce.

Keywords: *Blockchain technology, Bestern agricultural products, E-commerce.*

1. INTRODUCTION

The product with the greatest advantage is agricultural products in the development of western rural e-commerce. According to the research, almost 80% western web stores work on the marketing of agricultural products, and the trade volume accounts for about 70% of the GMV of the whole network marketing. Western agricultural cultivation has long history and the variety resources of the agricultural products are very abundant. The green products and agricultural products are world-famous. The annual output of the agricultural products is more than 110 kinds and about 40% agricultural products have a certain production scale. The variety resources of the agricultural products are

abundant, and it initially forms the regional superior instructions and products after the development over the years, such as potato, melon and fruit, raw materials of beer, traditional Chinese medicine, broad bean, lily and so on. The area of potato is more than 10 million mu and the annual output of the fresh potatoes is about 12 million tons, which is in the first place of the country. The outputs of broad beans, black melon seeds and the raw materials of beer all account for the first place of the whole country. For the familiar and special local agricultural products like apple, beef of yak, rose, angelica sinensis, walnut and olive oil, their qualities are far better than those in other regions when the scientific research institutions test their nutritional ingredient, but the overall development level of its network marketing is

still at the end of the whole nation. Because of the vividness, seasonality, regional and dispersity, it is high-efficiency marketing security for the agricultural products to choose e-commerce platform, and the platform supports all-around e-commerce service for the network business, suppliers and consumers, including information transfer, online payment, transformation and distribution and so on. The most importance is to adopt effective network marketing strategies to support the commodities or all kinds of services meeting the user needs and attract more clients to click the website or buy the commodities through the supporting of correlation techniques, such as search engine optimization, blockchain technology and online promotion technology.

2. PERTINENCE BETWEEN THE BLOCKCHAIN TECHNOLOGY AND E-COMMERCE

This is the first time for this paper to introduce the concept of blockchain. The blockchain is the technology system that uses data storage, multiple safeguard and cryptography to guarantee transfer and access, and bases on the block structure to realize the data storage. The blockchain is the distributed database management system that is basing on a kind of new decentralized protocol and the node participates in it through the technologies like consensus mechanism and encryption algorithm. In the recent years, the blockchain technology has become the hot spot researched and explored by the enterprises in many countries and regions. The blockchain technology is applied in e-commerce field and it has irreplaceable advantage. There is a bulk of information and data, including commodity information, user behavior, commodity transaction and commercial activities, while the blockchain technology can store the data safely, which extremely reduces the possibility of the monopoly and information leakage for the traditional and centralized e-commerce platform has high security. The data is stored in all the data blocks and form blockchain according to the rank of trading hour,

which has evidence to depend. The nodes of Consortium Blockchain monitor themselves and they can establish the trust relationship among them without the participation of the third party, which is beneficial to improve the work efficiency and reduce work cost.

Compared with the e-commerce history for more than 20 years, it is less than 10 years for blockchain technology since its real invention. Though its application starts just now, it has impacted on the existing development pattern. It is a little late for China to pay attention to the blockchain technology. It has qualitative leap for Chinese attention on blockchain in 2015 and China sets up influential blockchain industrial alliances like ZhongGuanCun Blockchain Industrial Alliance and Financial Blockchain Alliance in 2016. Alibaba, JD, DiDi and other representative e-commerce enterprises start researching the application of blockchain technology on e-commerce industry actively to reduce the cost and improve the quality further more. In Oct. 2016, our Ministry of Industry and Information Technology printed *the White Book on the Application and Development of Chinese Blockchain* and it became the basis and footstone for the application and development of Chinese blockchain, which pointed out the route and direction for the application of blockchain in the agricultural field. The exploration and application of blockchain technology in e-commerce field can solve the problems of bogus transaction and fake comment, which saves the fussy intermediate link for both sides of the transaction, shares the whole ecological users, flux and resources, saves the trading hour and cost, improve the transaction efficiency and quality and strengthens the brand sense and competitiveness. According to the blockchain technology, the participants of e-commerce platform can reach an agreement on the transaction data and finish the transaction without any guarantee of the third party. Blockchain technology provides bran-new technical support and approach for optimizing

the platform of e-commerce enterprises. Blockchain technology can store data safely, which extremely reduces the possibility of the monopoly and information leakage for the traditional and centralized e-commerce platform and has high security. The data is stored in all the data blocks and form blockchain according to the rank of trading hour, which has evidence to depend. The nodes of Consortium Blockchain monitor themselves and they can establish the trust relationship among them without the participation of the third party, which is beneficial to improve the work efficiency and reduce work cost.

3. FEASIBILITY OF THE BUSINESS MODEL OF THE E-COMMERCE PLATFORM BASING ON BLOCKCHAIN TECHNOLOGY

For the e-commerce platform basing on the blockchain technology, the motivation for establishing the platform is that can provide value for all the merchants and consumers. The merchants are willing to invest more capital to exchange for future service, so “the users of platform are the stakeholders”. The blockchain platform can establish and exist, which is to say the sustainable development in economy as long as that the merchants and users of blockchain platform are satisfied. The blockchain energizes the business model of the platform and makes the design of business model stronger flexibility. The e-commerce platform basing on blockchain technology has three advantages:

3.1. Multiple centralization or decentration

The centralization of blockchain refers that the blockchain is not controlled by any single nodes. The traditional e-commerce platform is controlled by single company, so the traditional e-commerce platform is centralized, while the e-commerce basing on blockchain is decentralized; it is decentralized platform if we establish the blockchain platform with public blockchain, and it is a multiple centralized platform if we establish the e-commerce platform

with consortium blockchain technology. Blockchain technology can realize information connection for the demand of merchants and users, which means that all the participants can find supply nodes or node groups for realizing its own demands in the platform, makes the contracting parties combine closely and removes the maintenance cost and transaction cost of the third party. This can save the cost for improving the quality of platform’s service and meet the diversified demands of the users.

3.2. The cost of trust acquirement is low

For the transaction of some agricultural products, it adopts blockchain tally on the e-commerce platform of the Internet and records the information in blockchain, so that no one can change the information. It can record not only the trade information, but also the commodity information and credit information; the method that both sides of the transaction obtain adverse credit depends on the third-party trusted subject. The sellers obtain the check of the platform and the consumers need to pay to the platform, so the platform guarantee can reduce the cost of trust acquirement under this mode; on the blockchain e-commerce platform, trust comes from the consensus agreement of the blockchain platform, which can make all the nodes synchronize the data and make the blockchain system form autonomous ecology, because it includes many rules, for example, data communication and transformation, the blockchain system can update, and the blockchain system can’t be controlled by single node. The cost of trust acquirement is lower because the transaction on blockchain platform doesn’t need any credible third party.

3.3. High openness

The e-commerce platform basing on blockchain has better openness. On the level of technology, the public blockchain system is open source, which means that more applications will be developed and shared, for example, smart contract can set the precondition. When it meets the condition, it will execute the presupposed

items automatically. For the merchants on the e-commerce platform, the precondition may be “The goods have been signed”, and the automated item may be “Transfer the payment for goods to some account”. The meaning of the smart contract is not only the function instead of the contract in the traditional e-commerce trade, but also the obligation that enforces the agreement automatically to provide larger growth for the platform; for the consensus agreement, it guarantees that the e-commerce platform basing on blockchain is highly autonomous, so it expresses that the platform has high openness.

3.4. Transparency and traceability.

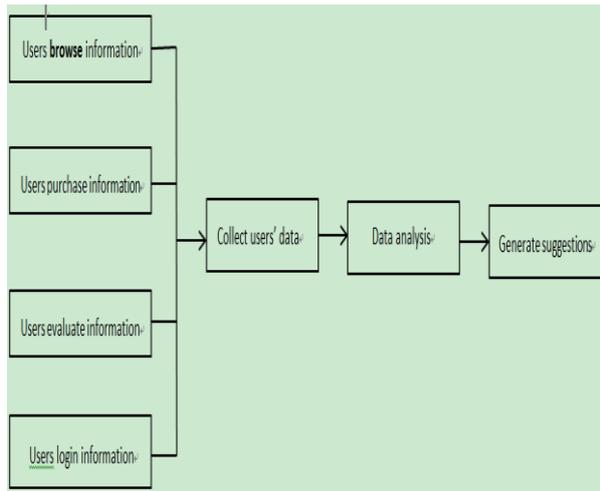
The modification, test and delivery of any data information needs the common certification of all the nodes, and the encryption process of the blockchain is to combine the key encapsulation mechanism with data encapsulation mechanism, which satisfies the requirement of security, transparency and ownership protection. Because the blockchain database formed by timestamp has unforgeability and non-tempering, it generates the time dimension of the data information and it can record transfer path completely through linked storage structure.

4. CONSTRUCTION OF OPTIMIZED SERVICE PLATFORM FOR THE E-COMMERCE MARKETING OF WESTERN AGRICULTURAL PRODUCTS BASING ON BLOCKCHAIN TECHNOLOGY

Under the environment of big data and blockchain technology, it completely considers the features of e-commerce website, property of agricultural products, and the factors of consumers and merchants; analyzes the obtained data of consumers, their shopping behaviors and shopping intentions; perfect enrich the function of the recommendation system for the platform to make it smarter and more accurate. Take the e-commerce consumers of the western agricultural products as the research object and analyze the users' data consumption under the

marketing mode of the traditional e-commerce platform.

The traditional e-commerce business mode designs the maximum benefit as the target, and the centralized monopoly platform is bad for the consumers, suppliers and government. In the e-commerce business system, it is limited or the method of reducing trust cost. The nature of agricultural products decides that the e-commerce enterprises should pay high attention to the users' personalized experience and improve the quality of obtained users' information. This paper depends on the researches of relative theories and literature, puts forward the hypothesis about the influence factors on the users' willing of agricultural products, designs the questionnaire through analyzing the influence factors when the consumers buy agricultural products, designs the questionnaires from the users' features, including knowledge level, cognitive need and cognitive style, and guide the users to provide more personal information. According the survey data, it verifies and amends the establishment of the marketing platform, takes consumption value theory as the general framework, applies SPSS and other software to conduct statistic analysis on all the elements of the platform, filtrates the influence factors and takes the theory of consumer behavior and consumption value and the relevant hypotheses as the framework to study the influence degree of different consumption value factors on the consumers' adopting willing. It takes the function value, sentimental value, cognitive value and other consumption values as the independent variable and takes the adopting willing as the dependent variable to study the influence degree on all kinds of consumption values of the consumers on the e-commerce platform involved by the blockchain technology. It applies the following diagram form to collect the user information, analyzes the relevant data and provides users' data for the information recommendation.



4.1. The e-commerce platform basing on blockchain should have three main bodies, e-commerce platform, blockchain technology and all the users

When the users use the e-commerce platform for the first time, they should depend on the rules to login personal account. Setting this step is to save users' time on checking out the target commodity and they can conduct real-time communication and interaction with other users during the process. Each ID is unique. The background system will match the nodes and generate ID with the help of blockchain technology and the users do not need to operate any process, which provides required guarantee for the security of user information. If the merchants want to sell agricultural products on this platform, they should establish a catalogue covering the names and prices of all the products. When the catalogue is established, it will be sent to corresponding page with fastest speed, and the established commodities will be sent to the merchants' ID.

If the consumers want to purchase agricultural products on the platform, they need to choose or search the key words on the marketing page. When they choose the commodities that they want to but, they can communicate with the sellers. The e-commerce platform will not establish a smart contract combining the price and amount of both parties until the both sides get an agreement, and the contract will be sent to

the relevant block in the first time for verification. After all the blocks' verification, the sellers can depend on the relevant requirement to deliver goods. When the buyers receive the goods and confirm reception after a period of time, the digital currency will be sent to the sellers' account with the fastest speed. This can show that all the information in the whole trading cycle will be kept in the position of the corresponding blockchain nodes with the intact state.

If the sellers and buyers have contradiction during the trading period, the notary public of the third party will intervene to solve the problems then. In order to ensure the justice and equity, the e-commerce platform sets matched reputation and marking system and it supports all the users to evaluate the trading anonymously. After authenticity and reliability of the evaluation is verified, the users with high reputation can apply to undertake the notary. The reputation can be showed with the method of accumulation, and the higher the reputation of the users is, the more digital currency they will get.

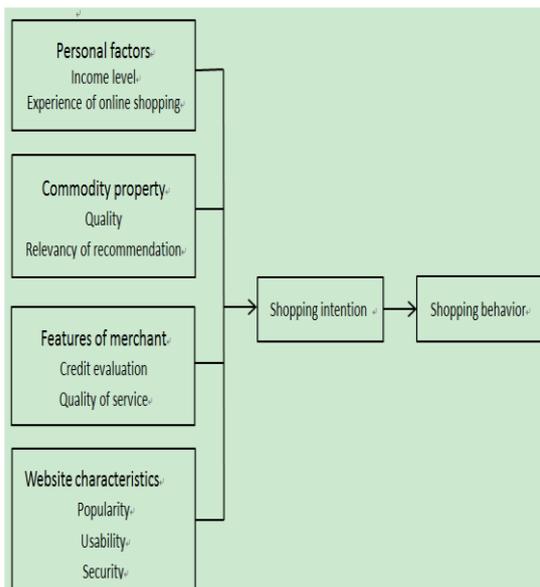
4.2. It needs 8 links to finish B2B trading on the e-commerce platform basing on blockchain

First, the sellers put the information of agricultural products in the e-commerce trading chain for verification and the buyers put the information of monetary assets in the e-commerce trading chain for verification. Second, the sellers shelve the information of agricultural products on the cross-border e-commerce platform basing on the Internet. Third, the buyers purchase and place an order on the e-commerce platform basing on the Internet. Fourth, the e-commerce platform basing on the Internet sends the order information, trade process information and other trade information including agricultural products to the e-commerce trading chain. Fifth, both parties write the trade information of the agricultural products on the initialized block. Sixth, broadcast the block including trade information in the

trading chain. Seventh, both sides accept that the transaction has been completed. Eighth, connect the initial block with the last block and the trading block extent for one block.

4.3. The e-commerce platform basing on blockchain realizes the excavation of the information value and the information assurance

After the blockchain system jacks into the rural e-commerce and logistic industry chain, the relevant trade information, contact information, and logistic operation information of the agricultural products will be recorded in all the nodes of the blockchain system. According to the technological mean, it can realize the integration, consolidation and deep excavation of the above information. For example, on the level of consumer information, the effective integration of all the trade information can effectively judge the loyalty index, influence factors on purchasing and purchasing habit of the clients, and can provide basis for optimizing the market and promotion strategy further according to the relevant information. On the level of main body of logistic enterprises, the effective judgment on the relevant information of the transaction can establish the enterprise image to provide reference of basic information for enterprise financing, guarantee and debit and credit, and other service.



Combine the “cloud computing” technology of the bag data, use “folksonomy”, “recommendation of topic”, “active tag”, “knowledge map” and other methods to conduct plan, classification and information extraction on the data of special agricultural products, insure column setup of the website, integrate the resource classification of the relevant agricultural products reasonably, optimizing the whole process of information search, guide the idea of knowledge management into the construction of portal website, realize the effective classification, integration and management of the network information resources, balance specialty of the website, the presenting content of the service of knowledge recommendation and the presenting mode of knowledge recommendation, and provide a convenient and fast e-commerce website platform of western agricultural products basing on the blockchain technology for the users.

5. CONCLUSION

For the e-commerce marketing service platform of western agricultural products basing on the blockchain technology, it plans and expects to realize the following optimized directions:

- 5.1. Take users’ the collective benefit maximization on the platform as the general objective of the business model design.
- 5.2. Unite the traditional e-commerce platform as one of the participant nodes.
- 5.3. Depend on the blockchain technology to establish the trust mechanism for the operation system of e-commerce platform.
- 5.4. Depend on the token system to enlarge the potential of business model of e-commerce platform.

This paper concentrates on expanding the research content of the e-commerce platform of the western agricultural products basing on the blockchain technology, perfecting and improving the e-commerce platform of western agricultural

products, promoting the security, user stickiness, loyalty index and repurchasing power of the e-commerce platform of western agricultural products, deeply excavating the potential users and improving the online and offline cross-selling of the e-commerce enterprises of the western agricultural products. It is beneficial to transform and upgrade the business mode of traditional e-commerce platform and explore new development direction of the business mode of e-commerce platform basing on the blockchain.

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