



Decision Support System of E-commerce Agricultural Products Based on Blockchain

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Abstract: The market data of web based business agrarian products has the attributes of intricacy and delay. It is hard for makers to acquire and precisely handle the constant market data on schedule, bringing about monetary misfortunes under the data imbalance. From the viewpoint of item makers, joined with the application layer of new blockchain innovation and the fundamental stage and administration foundation of internet business data stage, an internet business farming product choice emotionally supportive network, which depends on blockchain innovation and fixated on blockchain information base, is developed. The framework comprises of three sub-frameworks: online business horticultural product data administration stage, inventory data input stage and coordinations data criticism stage, and it finishes the assortment, arranging and yield of these three sorts of data under the help of blockchain framework, in order to help rural makers settle on correct choices and accomplish the motivation behind advancing agrarian product deals and expanding ranchers' pay.

Keywords:- decision support system; blockchain; e-commerce; information service

I. INTRODUCTION

In 2018, the public rustic online trade deals arrived at 1.37 trillion yuan, a year-on-year increment of 30.4 percent, and the public farming products online retail deals arrived at 230.5 billion Yuan, a year-on-year increment of 33.8 percent[1]. Country online business grew fastly. Internet business has become a significant methods for neediness lightening. In any case, as of now, the marvel of "low cost of vegetables hurt horticulture" shows up much of the time on the lookout, and the makers of agrarian products are frequently hard to get constant trade data on schedule, which prompts their powerlessness to change the planting plan of farming products on schedule as indicated by the interest of market. The primary justification this surprising is data asymmetry[2]. It is hard for individuals to completely comprehend this sort of helplessness and precisely handle a range of hazard factors and different parts of data, which prompts one-sided harm of exchanges. Contrasted and other data, the market interest data of horticultural products has the qualities of response postponement, scattering and disguise, which is bound to prompt the marvel of data transmission isn't smooth and data unevenness, which greaterly affects the upstream and downstream of the rural items in inventory. Accordingly, in the view of the blockchain and the blockchain data set as the middle, this exploration develops a web based business horticultural product choice emotionally supportive network to coordinate the information and give powerful data to agrarian product makers and buyers, in order to understand the more ideal portion of benefit and improve the pay of rural item producers[3].

II. THE NECESSITY AND FEASIBILITY OF APPLYING BLOCKCHAIN TECHNOLOGY TO E-COMMERCE AGRICULTURAL PRODUCT DECISION SUPPORT SYSTEM

A. Necessities

From one viewpoint, data imbalance makes buyers unfit to identify the item quality and its cause, which affects shoppers to lose trust in the product; then again, it additionally makes farming sellers difficult to get a handle available elements, incapable to opportunity change the yield and make important item determination as per the market interest, bringing about an enormous number of agrarian items gathering or even defilement, making horticultural items Product income is seriously harmed. On the off chance that blockchain innovation is applied to rural creation dynamic data framework, eethe above data unevenness issue can be adequately solved[4]. As the transporter of financial exercises like course and deals of rural items, the data that the market takes care of back to the makers and processors of rural items is of extraordinary importance for them to settle on creation and deals choices. The imbalance of market data will lead the sellers and producers of farming products to settle on wrong creation and promoting choices, which will prompt issues, for example, lacking use of creation components, overcapacity and low proficiency. In this way, by utilizing the Internet, breaking down the information of customers' buy and perusing, mediators' deals and activity, and utilizing blockchain new idea to guarantee the ideal, protected and exact criticism of information to rural creation partners, we can successfully



tackle the issue of market information asymmetry, reduce overcapacity, and advance the development of ranchers' income[5].

B. Feasibility

With the slow extension of the extent of exchanging commodities and the expanding interest for exchanging, the insufficient and deficiencies of the internet business stage at this stage are progressively uncovered. The new electronic data new block chain innovation, with the qualities of decentralization and tamperability, can be applied to the development of e- business stage, compensating for the absence of elements of the online business stage at this stage. As of late, researchers at home and abroad have considered and talked about from various manner. Taking into account the low privacy of business stage data and the failure of shoppers' data to be secured securely and adequately, NIR Kshetri accepts that the arrangement dependent on blockchain might be superior to the current Internet of things biological system depending on concentrated cloud workers through specialist organizations in numerous angles, and shows that the delegated attributes of blockchain may prompt the low simplicity of control and fraud by malevolent members Sensibility. Liu Zhongkai called attention to that the pith of blockchain is a specialized answer for take care of the trust issue and its decentralization and de credit go-between are exactly what information assurance benifit. Regarding the development of e-business stage dependent on blockchain innovation, Pu Dongping isolates the framework into installment framework, dissemination framework and credit framework as per the various types of transmission between various elements, and joins the agreement instrument, brilliant agreement, delegation and other specialized highlights with it, in order to gather all the web based business framework from the point of view of blockchain.

III .DECISION INFORMATION SYSTEM OF AGRICULTURAL PRODUCTION

A.System construction ideas

The framework collects and organizes the data through the blockchain creation, and sends the examination results to the significant subjects of farming creation. Simultaneously, the applicable subjects convenient give the new item data created in the wake of accepting the data to the blockchain data once more, to shape a kind two-way transmission chain of horticultural product data. An enormous number of client data will be created in the buy interaction of the total internet business stage. The coalition blockchain will sum up and record these data, measure them midway, figure out and investigate the market interest data, stock data and value data, and afterward push the market circumstance to the horticultural creation partners progressively through the rural creation dynamic data framework, to take care of the issue that the farming item data isn't accessible Finally, the makers and processors of agrarian items input the new item data to the blockchain data set, and afterward the data set will give the data to the upstream related subjects after assortment, in order to shape a kind two-way data move chain with the blockchain data set as the focal contact point (Fig1).

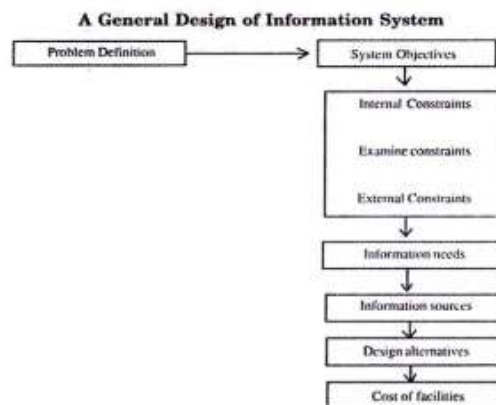


Fig1. Information system of production decision.

B. Related subjects involved in the system

The three primary bodies with the framework are government, horticultural items makers and internet business stages. The public authority is the manufacturer of the framework. Its development mainly depended on the point of view of farming makers. Its main aim is to take care of the issue of data imbalance between horticultural makers and the market. The immediate customer of the framework is without a doubt the maker of agrarian products, which is partitioned into essential horticultural makers and rural product maker. As per the infomation given by the stage, the makers of



horticultural products comprehend the market area of the market and the value circumstance, and decide the farming products to be planted in the momentum term. For more gainful items, rural item producers can decide the root and creation amount of handled agrarian products as indicated by the data ordered deliberately, to diminish the immediate rot of rural products in the infabnt. Since the activity of the framework depends on countless ongoing information, and the current e-business stage market drove by Taobao, Jingdong, and so on is generally full grown, so the framework needs to consolidate different internet business and coordinations stages, gather an enormous number of foundation information of every stage, and on this premise, sort out and explore. Subsequently, every web based business stage and coordinations stage is the primary data supplier of the blockchain data, yet since the framework is a two-way data move chain focused on the blockchain data, in the later stage, every stage is likewise the customer of the rural creation dynamic data framework.

C. System structure

(1) E-commerce agricultural product information service platform

It emphatically affects improving ranchers' cash pay and settling on logical creation choice to precisely get a handle on purchasers' interest inclination and request. The data administration foundation of e-business agrarian items remembered for this framework utilizes block tie new idea to gather and handle shopper perusing information, examine potential client gatherings, and dissect purchaser request inclinations. Gather and divide the yearly, quarterly and month to month market deals circumstance of every locale, criticism the data to the horticultural item makers opportune and precisely, in order to help them make right market evaluations and creation and deals choices, and boost benefit. Likewise, farming makers can ideal transfer of rural creation interaction to the market data administration stage as photographs, and the framework will send the prepared data to the internet business stage, with the aim that shoppers can get the simultaneous information of the horticultural creation and handling measure, wipe out buyers' interests about the wellbeing and wellbeing chances in the rural creation measure, fortify the buy goal of expected customers, and advance Online deals of rural items.

(2) Inventory information feedback platform

In the business interaction of rural product, it is inescapable that there will be item issues of overflow. The stock data criticism stage can lessen stock by gathering and coordinating with stock data of various districts (Fig 2). In the first place, the stock data can be contribution by the online business stage, rural item makers and processors, and afterward took care of back to the blockchain data framework by the data stage, so the three gatherings can get a handle on the interest data of all gatherings on schedule to control their own stockpile, and utilize the leftover stock, in order to get the best allotment of assets

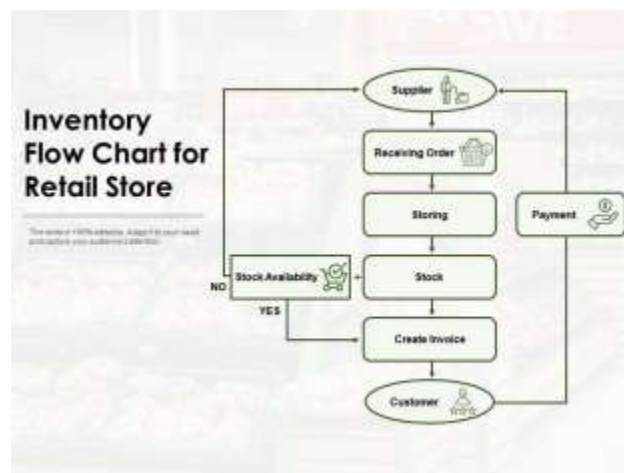


Fig 2. Flow of inventory information feedback..

The web based business stage ideal feedback its stock data (way (1)), that is, by implication takes care of back market request information and late shopper inclinations to agrarian item makers and processors, so horticultural item makers and processors can purchase crude items in a different way, and change the product supply structure and creation size of every thing. Furthermore, rural item makers can likewise give stock data to internet business stages and agrarian item processors in an opportune (way (2)).



The online business stage can change the business methodology on schedule in the wake of getting the input data from the horticultural items makers, increment the exposure of the items with adequate stock, and give proper special therapy to the items with adequate stock as far as cost, while the items with deficient stock can raise the cost suitably, to acquire advantage. Somewhat, this can forestall the overload of items, and furthermore help the makers of horticultural items to sell the agrarian items with better reap on schedule. Simultaneously, horticultural item processors can change their creation scale and item types on schedule as per the stock data of the market and crude material providers subsequent to accepting the stock data given by farming item makers and online business stages.

Simultaneously, farming item processors can likewise give stock data (way (3)) to the internet business stage and rural item makers, so the online business stage can get a handle on the important data of items with more stock, convenient change the buy amount and sorts of prepared items, change their evaluating and deals procedures; what's more, they can likewise give horticultural item makers some opportune inventory data, so they can ideal change their costs and deals methodologies Production construction and creation scale, in order to diminish pointless misfortunes, expand benefits, and improve the pay of agrarians.

(3) Logistics information feedback platform

The foundation of coordinations dispersion data criticism stage is to tackle the issues of inconvenient conveyance of horticultural items, high transportation cost and long transportation cycle. To begin with, the makers and coordinations suppliers of agrarian items input the pertinent data of farming items into the data stage, and afterward criticism to the blockchain framework through the data stage. After the blockchain framework incorporates the data, the coordinated data is taken care of back to the makers and coordinations suppliers of agrarian items. As of now, the data criticism is primarily to input the coordinations supply data of the coordinations suppliers to the agrarian item makers and the coordinations request data to the coordinations seller . After the farming item makers input the horticultural item data, the framework matches it with the data took care of back by the coordinations dealers, and afterward takes care of back the coordinating with data to the makers of agricultural producers. To understand the data docking between the makers of farming items and the coordinations dealers, to work with the rural items to get the "drifter" on time. The supposed "windmill" implies that when the coordinations supplier goes through some farming items territories that should be disseminated, it will send a limited quantity of rural items with a similar objective "coincidentally" to the conveyance objective, in order to decrease the expense of horticultural items appropriation by agrarian items makers and make rural items arrive at shoppers . What's more, through the input data of the stage, agrarian item makers can comprehend their own coordinations patterns of horticultural items. For the debasement of agrarian items brought about by inability to carry out the data, they can guarantee for remuneration from applicable coordinations to guarantee the interests of rural producers. Furthermore, buyers can likewise get the important data of buying farming items from the framework to guarantee the quality and wellbeing of rural items.

(4) Blockchain information entry and sorting

First, the technical architecture of blockchain is divided into five layers: data layer, network layer, consensus layer, incentive layer and application. Secondly, because the main structure of this research is agricultural production decision-making information system, the external security environment and internal security environment of the system platform are not considered. The application layer in the overall framework of blockchain technology is combined with the basic platform and service platform in the application framework of e-commerce system to form a blockchain information entry and sorting system. The first step is information entry, and relevant data instructions will be generated in the whole process of consumers' purchase of goods & in every step of the operation of commodity supply chain; the second step is that the basic e-commerce platform collects and manages these data in a centralized way, and in addition to data management, the basic platform has the functions of load balancing, transmission management and security management; the third step is the selection of goods by all consumers The data traces of information selection, logistics information and other relevant information will enter the information processing and analysis stage, and enter the corresponding blocks of data. The blocks are connected to each other for comprehensive analysis of data. The fourth step is that the market information sorted out and analyzed will be used by agricultural producers through e-commerce service platform, which manages the production data, Users need to pass the authentication before they can directly query the required data on the search engine.

(5) Information collection, analysis and interaction of blockchain database

In this process, the blockchain database mainly collects and arranges the information, and then provides the data to the producers and processors of agricultural products in the form of chart. The blockchain database can provide specific market information such as the market demand of agricultural products and the market supply and demand of agricultural products after comparison. The production decision information system of agricultural products uses the blockchain



technology to ensure the authenticity of the collected data and timely transfer of information with its security, de neutralization and other characteristics. The producers of agricultural products make scientific production decisions and make price adjustments based on these information. After the adjustment, new product information will be produced, and the producers can transfer these new product information to the blockchain database Through the integration of blockchain, these information will be publicized to the public, so as to achieve the information accommodation among the main bodies, ensure the integrity of information, eliminate information asymmetry and promote the sale of products of agriculture.

IV. CONCLUSION

The application of blockchain technology in the field of traceability is increasing, which is a direct manifestation of the development potential of blockchain technology in the Field. Due to the highly coupling of blockchain technology and e-commerce mode in the aspects of decentralization, and collaborative autonomy. This study takes a new approach to explore the establishment of agricultural production decision-making information system by taking advantage of the technical characteristics of blockchain, such as decentralization, smart contract etc., in combination with the corresponding technical concept of blockchain. The system uses the blockchain technology to collect, analyze and process the data, feed back the market supply and demand to the agricultural producers, so as to solve the economic losses caused by the information asymmetry of agricultural producers. The system can ensure the popularity rate in the hands of agricultural producers through diversified channels. Under the supervision of the government and the market, the system can also operate effectively and reasonably, so as to eliminate the economic loss of agricultural products caused by market information. This not only expands the new idea of blockchain technology application, but also realizes the interconnection of information chain and value chain, which provides a new way to promote the development of agricultural modernization and increase farmers' income.

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