

Research on the Value-Added Path and Management Mechanism of the whole Agricultural Industry Chain Based on the Value Network

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The key to fostering the growth and prosperity of China's rural industry is to realize the added value of the entire industrial chain. This article focuses primarily on enhancing the value of the entire agricultural supply chain. Based on a systematic analysis of the existing value-added methods of agriculture and the theory of the entire industry chain and value network, it combines the multifunctional and multidimensional value attributes of the entire agricultural industry—the entire farming industry—under the value network. And put forward the value reconstruction network system and value-added method of "platform ecosystem + agricultural industry cluster," information resource optimization and integration, cultural value fusion, knowledge creation, and information resource sharing, value Internet relationship management, information virtual value chain management, and utilization of Internet technology innovation for driving value chain mechanism, etc., can promote the value-added effectively. Rejuvenate and expand the entire agricultural supply chain. For operation research to help ensure the future success of agricultural value chains, practitioners must comprehend and model the value chain as a complex adaptive system.

Key words: Value network, whole industry chain, value added, management mechanism.

1. INTRODUCTION

A value chain is a series of interconnected operations that increase the worth of a product. The development and transmission of plant breeding in farmer organization, productivity, and management strategies encompass the conveyance of goods, knowledge, and information to organize farmers and society according to societal demands. On a local or global scale, the characteristics of agricultural products depend totally on the cultivation of crops and commodities in response to seasonal and yearly variations. (Peng et al., 2016). To optimize the economy, each response in the performance mode, referred to as "industrial value chain management," coordinates closely with the other participants to continuously incorporate and improve all links of the vast manufacturing value chain. The value chain for agricultural commodities with added value may meet the circulating subjects' needs, significantly enhance agricultural products' manufacturing and circulation, and stimulate the growth of rural economies and farmers' incomes (Pratap Singh et al., 2017; Quijano, Quijano, & Diaz, 2022; Wungrath, Khumai, Sutan, Khonchob, & Jongpuk, 2022).

In addition, enhancing the institutional framework of the value chain for the circulation of agricultural goods helps coordinate the division of labor during the production and operation of agricultural products and accelerates the modernization of industrialization for the circulation of agricultural goods. However, the current idea of value chain management focuses primarily on industrial items. Due to the differences between agricultural and industrial goods, the concept is rarely applied to agricultural

products, and theory and practice have not yet effectively converged (Junior et al., 2019).

As the Chinese government has increased its investment in rural economic development, the rural network infrastructure has been more comprehensive, the number of e-commerce platforms in rural regions has increased, and agricultural financing channels have been further streamlined. The production and distribution of agricultural products are tied to people's lives, food safety, and the harvest of hundreds of millions of farmers. China's economy has reached a critical juncture of slow growth and structural reforms beneath the new baseline economy. The government strongly promotes the Internet of Things concept. (Zhou et al., 2020). The Internet of Things has matured into a holistic strategy, becoming the driving force behind innovation-driven development and the driver for new economic growth. (Xiang et al., 2022; Zhou et al., 2020).

China's agricultural industry must immediately discard outdated, inefficient production methods in favor of a high-speed train incorporating modern technologies. Agriculture contributes to the growth and development of the nation's economy. Low power, high expenses, and asymmetric information plague the typical agricultural supply chain.

Additionally, there are additional oddities, such as dramatic changes in the value of agricultural goods and items that aren't marketable (Li et al., 2020). Immediate action is required to enhance the agricultural industry value chain through the transformation of the value network, to enhance the comprehensive efficiency and

competitiveness of agriculture, and to investigate innovative methods and management mechanisms for driving agricultural value-added. In 1985, the American economist Porter explained the value chain from the enterprise's perspective, saying that each enterprise's operations involve production, processing, sales, and circulation. Only by effectively managing each link can a business reach its profit objective (Porter et al., 1985). On this basis, Gait advocated that the agricultural value chain employ a suitable production model to unite the production, processing, and sale of agricultural products, decreasing intermediate circulation links and realizing the value-added of agricultural products (Kaplinsky, 2000). Porter's enterprise value chain theory inspired the agricultural value chain model suggested by Kaplinsky. He evaluates the primary and supplementary agriculture value chain operations (Wei, 2021). In 2016, the Central Committee of the Communist Party of China emphasized the need to reconstruct the agricultural industry value chain, promote the compelling connection between farmers and the market and agricultural modernization, and establish a new mechanism for increasing production

and income (Peng et al., 2016); Integrate the value-added benefits of development and cultivate a new mode of increasing farmers' income" (Zeng et al., 2016); the "National Rural Revitalization Strategic Plan (2018-2022)" also clearly points out that "it is necessary to cultivate agricultural and rural areas and rural revitalization." (As shown in Figure 1). The report of the 19th National Congress of the Communist Party of China proposed to "promote the industry to the middle and high end of the global value chain." Based on this, this paper will focus on realizing the value-added of the entire agricultural industry chain and improving the management mechanism, analyzing the industrial chain, value network theory, and the existing management mechanism, and constructing the whole agricultural industry chain. Hopefully, this paper's innovation path and management mechanism can provide a reference for promoting the value-added management of the entire agricultural industry.



Figure 1 Distribution map of major rural revitalization industries in China [Source: Author]

The agricultural value chain consists of the people and processes involved in getting a core agricultural commodity, such as maize, vegetables, or cotton, from the field to the client via processing, packaging, and distribution operations. High-value chains may increase access, availability, and food quality by improving production levels, diversifying farms, raising wages, reducing post-harvest losses, and creating new technologies to exploit natural resources more efficiently. (Videngar et al., 2021). Adding value to agricultural

products is a lucrative endeavor with higher investment returns due to the possibilities of expanding markets, extending the producer's marketing seasons, and gaining new recognition for the farm. As producers capitalize on high-demand market niches, they gradually provide value-added products to the local marketplace. This is the cornerstone for the success of value-added agriculture: niche products where smaller manufacturers may successfully add value and establish a lucrative business. Product circulation can be evaluated based on the

relationship, cost, and amount of product awareness. The circulation of agricultural commodities requires numerous linkages, and each link is successfully coupled to form the circulation value chain. (Pompeu et al., 2021; Faezi & Alikhademi, 2021; Le, Quang, Bui, & Thi, 2022; Baah-Kumi, & Lee, 2021; Dey, 2022; Rehna & Inamdar, 2022).

However, the circulation and development of agricultural goods are strongly intertwined. They can only be limited to a few locations due to their dependence on their living activities and annual temperature variation. As a result, agricultural goods' circulation value chain is significantly diverse from that of other commodities, as is their method of value addition. China is still mired in creating the agricultural goods value chain, although other nations have made more significant progress in this sector. Blockchain technology, strategic communications, and the usage of consensus mechanisms throughout all stakeholders' networks of supply chains prevent the need for a secure central structure 13. Among the numerous obstacles, farmers face climate change, soil erosion, and biodiversity decline. It is crucial to stay up with the ever-changing preferences of clients. Increase output to meet the rising demand for healthful foods.

Based on these facts, the current study seeks to identify the existing paths of value-added mechanisms within the agricultural industry chain to propose a reconstructed value chain centered on technology integration and innovation, strengthening the supply network for agricultural products in China and enhancing flow effectiveness. Based on the value network, this paper covers the research on the value-added path and management mechanism of the entire agriculture industry chain.

The remaining portions of this article fall under the following headings: The related concepts and theoretical foundation are presented in section two, followed by the analytical concepts and methods of the value-added industry chain in section three, the existing paths of the value-added agricultural industry chain in section four, the system composition and value-added model of the agricultural whole industry chain based on the value network in section five, and the conclusion in section six.

2. LITERATURE REVIEW

The value chain for value-added agricultural products might satisfy the utility demands of circulating subjects, significantly increase the efficiency of producing and distributing agricultural goods, and encourage the expansion of local livelihoods and farmers' incomes. Peng et al. (2016) examined the value-added mechanisms of the circulation value chain of farming goods from five perspectives to encourage the synchronized expansion of various circulating organizations and boost the value chain's economic benefits. The conventional organizational structure has produced outcomes regularly enhanced, promoted, and implemented to increase agricultural productivity in rural areas. Wang analyzed and evaluated the growth state of domestic and global

industrial value chains based on the interpretation of the agricultural product industry's value chain and value flow and ultimately suggested an upgrade path to boost the stream of the Chinese agricultural industry's value chain. The technical agglomeration effect of the firm determines the enhancement of the agricultural commodities industry's value chain flow. By comparing the domestic and international development of agricultural product value chains, it is possible to construct a specific plan to increase the industry's value addition and provide advice for a long-term strategy to increase China's industry's value flow. Xu (2019) discussed their uses in agricultural safety monitoring in this review, including agricultural film production, agricultural sewage treatment, and the targeted identification of hazardous residues in agricultural goods. Song et al. (2022) examined the development of land consolidation in China, then looked at its present status, traits, and potential effects, as well as the driving forces behind land consolidation's promotion of rural revitalization. It then described a realistic strategy for using land consolidation to revitalize a specific rural area. Wingreen et al. (2019) analyzed the growth and changes in Internet technology in the agricultural industry chain from source to operations, production, service, security, and sales & studied a production experience model iterative upgrade to enhance the development quality of agricultural e-commerce and broaden the integration model of e-commerce. A blockchain-based system for tracking agricultural products is also suggested at the same time. (L. Zhang et al., 2021) thoroughly examined the primary funding sources and the primary needs of Chinese family farms. The survey's findings indicate a significant financial gap and a high demand for modern agricultural equipment among family farms. Vidhate et al. (2023) discussed the idea and features of the agricultural industry chain's vertical coordination mode, and an analysis of the purpose and role of vertical collaboration in that chain was conducted. The research was done on the variables affecting agricultural players' decisions about vertical coordination mode. An evolutionary game model based on governments, telecom companies, and agricultural firms was created to examine the model's equilibrium stability and evolutionarily stable strategy. The model was inspired by blockchain in an agricultural scenario. From a supply chain management perspective, the primary goal of this research is to try to increase trust among agricultural supply chain parties to guarantee food quality, safety, and sustainability. The key issue is using a decentralized technology that is not dependent on the trust of a central authority or organization for the entire supply chain (Zutsara, 2021). Zhang et al. (2021) constructed a financial coordination model for the agricultural supply chain and introduced the Shapley Value Method income distribution model. The findings demonstrated the economic viability of agricultural supply chain financing and showed how it might significantly increase the participants' revenue in the agricultural and industrial chains. Presented a general introduction to blockchain technology and discussed its

possibilities for creating a trustworthy and secure agricultural supply chain. Systems for managing the agriculture supply chain are essential for moving food items from producers to consumers. Supply Chain Management in the Agricultural Industry is covered in study (L. Zhang et al., 2021). Customers and supporting members comprise the two kinds of supply chain members managed by supply chain management (SCM) (Devi et al., 2021).

Agricultural farm wastes generated during crop harvest constitute a significant source of concern due to issues with environmental contamination, village sanitary, recycling, and usage. By using microorganisms with specific functional features, such as biological control, plant development stimulants, phosphate emulsifiers, and nutrient organizers, researchers (Pratap Singh et al., 2017) have standardized a method of biomass conversion of commercial agriculture waste at the farmer's farms into bio compost for field application. After the process had been standardized, 456 farmers in various villages in Eastern Uttar Pradesh, India, were shown how to use it. Numerous farmer groups have embraced the biomass conversion technique to create bio compost and value-added bio-farm supplies and market the products for monetary gain.

2.1 Value Chain Theory

A value chain is a concept that incorporates every step of a company's operations in developing a product or service, from acquiring raw materials to the ultimate shipment to the client—value chains aid firms in offering the most significant value for the least amount of money. The ultimate goal of a value chain is to provide a company with a competitive edge by increasing production and reducing costs. With the changes in the competitive environment, the organizational form of the industrial chain, and other factors, the majority of businesses are beginning to understand that the value network is the relationship and structure of value generation, distribution, transfer, and use of the participation and mutual influence of various stakeholder's form that. To realize the goal of realizing value creation and value appreciation together 9.

David Bovet argues in his book "Value Web: Breaking the Supply Chain to Discover Hidden Profits" that the Value Web explains the relationship between all participants in a business activity and that the Value Web consists of customers, suppliers, competitors, and complementary composition (Kaplinsky, 2000). The value network is a value management system developed by collaboration and led by customer value. Realize the complete integration of the value network's functioning, respond rapidly to client requests, and deliver individualized value. Create more customer value. However, businesses should focus on value activities with inherent advantages and the management of the industrial chain's value system. The value network is a platform for optimizing and enhancing firms' core resources and competitiveness, which can minimize the transaction costs of the industrial supply chain and enhance the efficiency of customer value

transfer (Wei, 2021).

Virtual enterprises, technology, and operations will influence the value network's resource allocation and added value. Modularization, knowledge innovation, and efficient synergy can result in value innovation and additional value (Zeng et al., 2016). Integrating multi-industry value chains and value systems are fundamental to the value network. It is possible to create competitive advantage effects such as network economy, scale economy, risk confrontation, stickiness effect, and speed effect; developing a customer-centric value creation network is the most recent trend in the evolution of contemporary enterprise organizations (Vidergar et al., 2021). By developing a vertical, horizontal, cross-industry, and three-dimensional value network system, the matching and selectivity between the core bodies of the industrial chain will be improved, as will the correlation and innovation of technology, knowledge, and information between industries. Expand the vitality of the industrial chain, create space for innovation and development, improve the ecological value attributes of interaction, evolution, expansion, and symbiosis amongst various entities, expand synergy capabilities, and increase value-added.

The value network is a value-added perspective based on variety, openness, innovation, and dynamism that emphasizes the value added by innovative activities. In his famous management book "Competitive Advantage," Harvard professor Michael Porter coined the term value chain, stating, "All of these operations can be represented by a value chain." His emphasis on enterprise management is not limited to a single management action or connection but rather a dynamic and holistic approach along the enterprise value generation process. These seemingly unrelated activities coexist. All management actions are intimately tied to the creation, transmission, increase, and exchange of value, with the continuity of management building a dynamic chain and passing it on to the terminal market to complete the value; this is the enterprise's value chain. As people's comprehension of the value chain increased, numerous academics and businesspeople began to expand their tentacles in all directions. According to the current value chain theory, the industrial chain is the process of value generation and creation from the standpoint of the industrial chain (as shown in Figure 2).

3. VALUE NETWORK

A value network outlines the connections between departments and agencies in which employees develop strategies or market goods and services that improve corporate performance. The value network comprises corporate employees, their employment, or a combination of both. The network can be represented graphically to illustrate the social and technological resources available to the company and how they are utilized to its advantage. The nodes in the diagram represent persons (actors or roles in the network), and the links connect them. The connections can be created with objects, cash, or knowledge. The value

network is the structure and relationship of value production, transfer, and realization resulting from the interaction of

network nodes. Customer demand commences and concludes the value network (as shown in Figure 3).

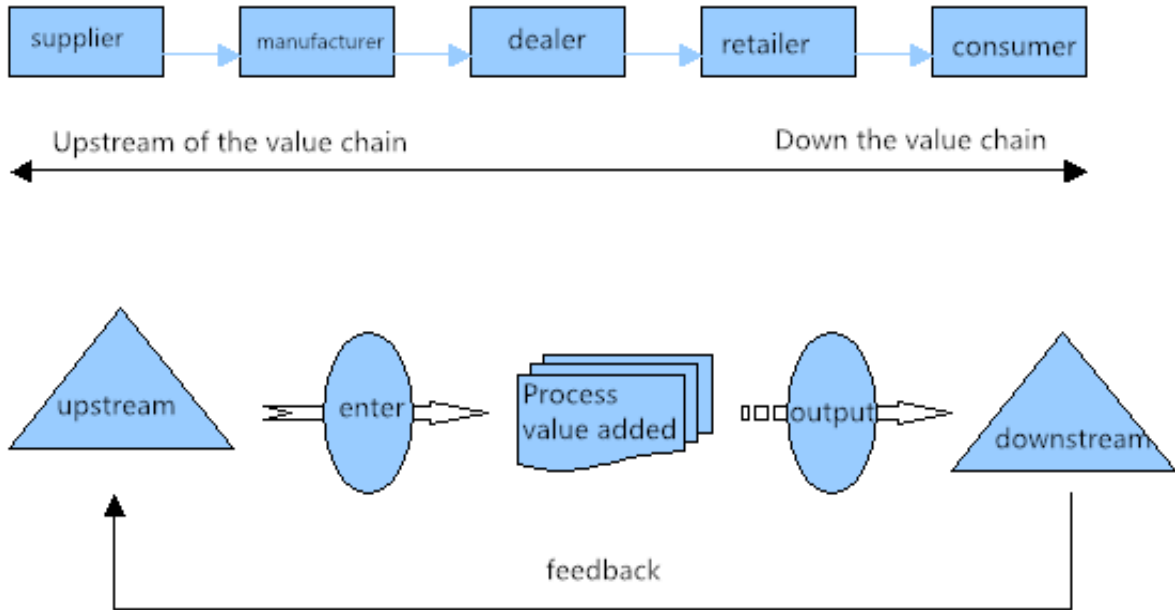


Figure 2: The relationship between the industrial chain and the value chain [Source: Author]

The value network imparts the ecological traits of mutual evolution, growth, and environmental reliance to the relationship between firms. Present network features and dynamic associations, expand the dynamic development area of organizations, encourage value creation, enhance the value identification system, increase resource value, and effect network node interactions. As an asset, it influences the network structure and direction of value creation and realization. Fang Benxin and Zhang Ning investigated the

relationship between value network creation and artistic invention while discussing the innovative relevance of value networks from a cultural perspective. Their value network not only generates a one-of-a-kind enterprise value creation model, but it also generates an open, equal, shared, and creative cultural space, enhances the interaction between enterprises and the external environment, optimize internal processes, and facilitates the exchange of product knowledge.

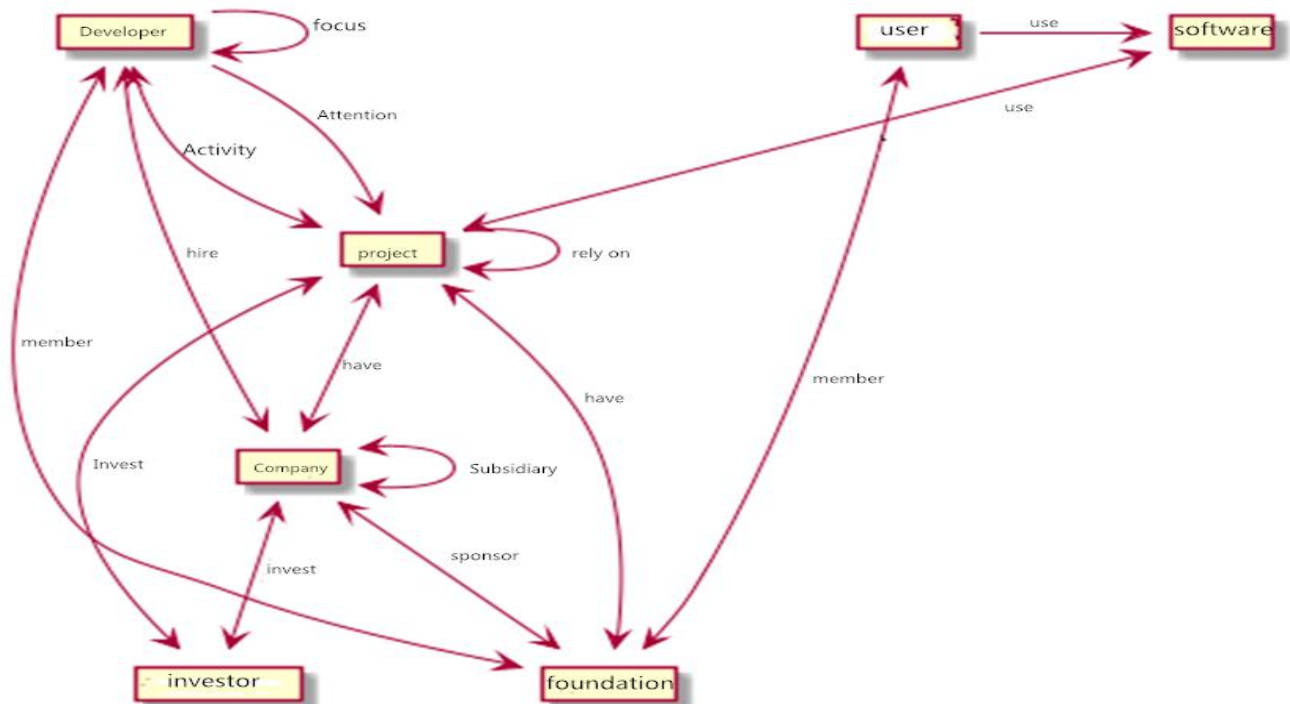


Figure 3: Value Network Node Diagram [Source: Author]

3.1 Analytical Ideas and Methods of Value-Added Industry Chain

According to a report by the Organization for Economic Cooperation and Development (OECD) on multifunctional agriculture, agriculture has economic, ecological, qualitative, cultural, and other roles focused on supplying the basic material life and production needs of humans. Since 2007, the Central Committee of the Communist Party of China's No. 1 document has said that "we must energetically promote an in-depth exploration of the functions and functions of agricultural and rural areas, and cultivate and spread new industries and new business forms in rural areas" (Pompeu et al., 2021). By increasing and leveraging agriculture's multifunctional utility, we may enhance its economic, ecological, qualitative, and cultural benefits.

To study the value-added of the industrial chain, it is necessary to systematically and thoroughly analyze the types, directions, and paths of value-added, focusing on how to create value, what value to create, and how much value to create, to expand the value-added space and path comprehensively, and to release energy value. From the standpoint of value-added types, it is required not only to actualize product value-added but also to consider the coordination of value-added services, scale, technological innovation, brand, and industrial chain; Consider the significance of indirect value-added functions. From the perspective of the scope and responsibilities of value-added subjects, it is necessary not only to realize the local value-added of a particular link or node but also to realize the overall value-added of the entire industrial chain; from the perspective of value-added, it is necessary not only to implement positive value-added, such as value creation and value-added, etc. but also to implement inverse value-added, such as reducing costs, preventing and eliminating waste, etc

3.2 Stock Value Appreciation

Assuming that the transaction subjects in the industrial chain are agricultural production businesses and consumers, the industrial chain's value is indicated by the total corporate earnings and consumer income. It is also the predicted value of consumers minus corporate consumption. Equation (1) can be solved as follows:

Industrial chain value = consumer benefit + corporate profit

= Consumer Expected Value - Enterprise Consumption Value

$$K = (V - P) + (P - C) = V - C \quad (1)$$

Among them, K represents the value of the industrial chain; V represents the expected value obtained by customers from the product; P represents the product's sales price; C represents the cost of the enterprise. The value K in a particular state in the agricultural industry chain is determined by the difference between the

consumer's expected value V and the enterprise's consumption value, C.

3.3 Incremental value added

Following the above calculation formula and code: $K = V - C$, further analysis shows that the incremental value added in the value-added process of the industrial chain is usually manifested in two aspects of increasing revenue and reducing costs (Prashar et al., 2020), as follows: Equations (2) are described below

$$\Delta K = (\Delta V - \Delta P) + (\Delta P - \Delta C) = \Delta V - \Delta C \quad (2)$$

Among them, ΔK represents the incremental value; ΔV represents the value-added part that consumers are willing to pay for the product because they have obtained more new benefits or value redundancy from the cooperation of the industrial chain; ΔP represents the products in the industrial chain, Value amplification effects such as services and opportunities; ΔC represents the impairment of consumption value such as industrial chain collaboration, such as the value increment brought by cost reduction and risk reduction. Specifically, in the value activities of the agricultural industry chain, the change of the expected value increment ΔV can be expressed as the change in income and profit, the change of the ecological environment, the level of industrial development, the influence, the ability and quality, the transformation of the brand image, etc. The evolution of incremental ΔC caused by the loss of consumption value is manifested in the changes in input cost, transaction cost, and management fee of the industry chain, utilization of idle resources, avoidance of waste, risk reduction, etc., both of which jointly determine the incremental value of the industry chain: the change and degree of ΔK .

4. EXISTING PATHS OF VALUE-ADDED AGRICULTURAL INDUSTRY CHAIN

4.1 Technology-Infiltration Path

By introducing advanced technology enterprises or core enterprises with particular strengths, agricultural innovation technology will be transferred and penetrate the agricultural industry. Then the advanced technology resources will be gathered into the agricultural industry chain by imitating, learning, digesting, absorbing, and innovating. The combination of these factors will form a vertical cooperation chain in the agricultural industry, improve the efficiency of agricultural resource allocation, and increase the economic value of inventory (Figure 4). At this time, ΔV increases; the technical level and management level of agricultural enterprises have also been improved; after the vertical cooperation of the industrial chain is deepened, the uncertainty risk and transaction cost of transactions are reduced; that is, the ΔC is reduced. This path generally applies to regions or stages with weak agricultural foundations, backward technology, and weak resource allocation capabilities, mainly focusing on the integrated development of primary and secondary industries.

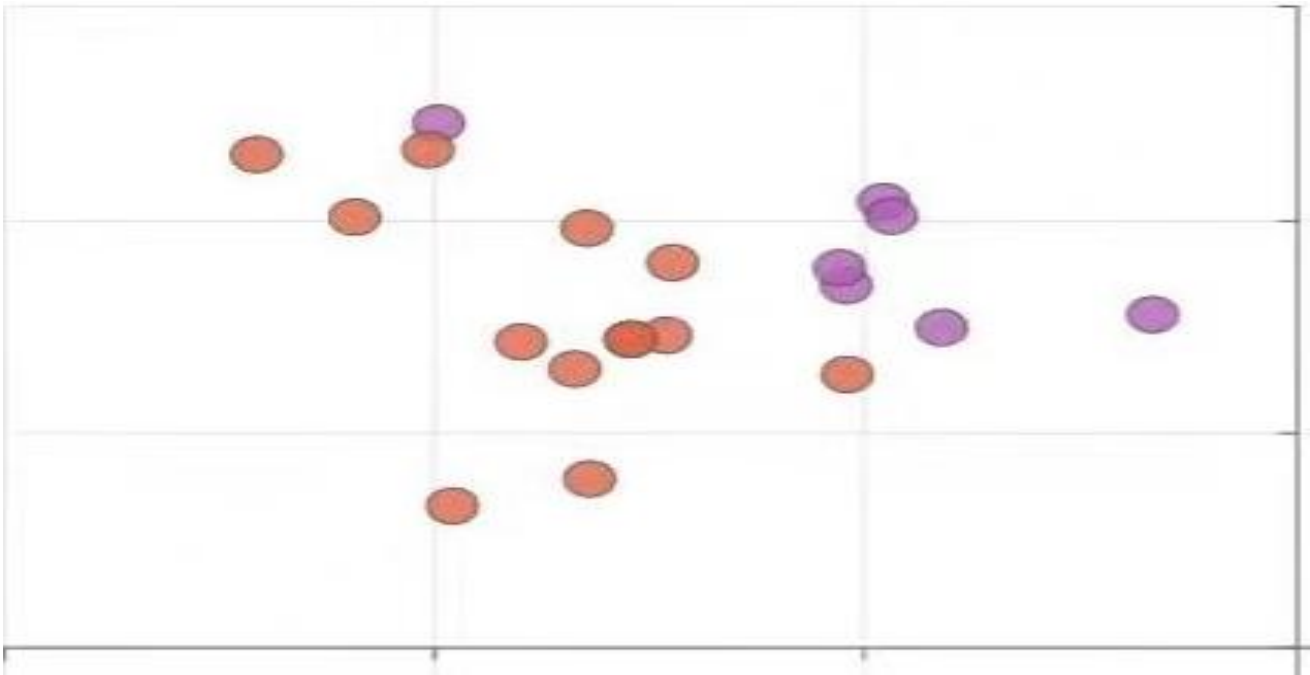


Figure 4 "Technology-Infiltration" Path Relationship Diagram [Source: Author]

4.2 Disassembly – Reconstruction Path

The conventional backward agricultural sector is shattered, differentiated, or destroyed through industrial "collapse" and recreated through innovation and integration to build an innovative and open industrial integration system. It typically occurs between industries or internal sub-industries closely associated with traditional agricultural sectors. Decentralized and autonomous products or services are reformed under the same standard to produce an all-encompassing new corporate structure (Figure 5). Through the rebuilding and integration of the industrial

chain, the agricultural system may accommodate new formats, such as new farmers and dwellings, and linked industries, such as agriculture and aquaculture. This road maximizes the agriculture industry's universality, which is conducive to compensating for the deficiencies of a single operation, introducing resource innovation and market interaction, optimizing resource allocation, enhancing added value, and achieving value-added. In addition, the initial idle agricultural production resources and surplus labor have been fully employed, resource idleness has decreased, ΔC has decreased, and ΔK has increased.

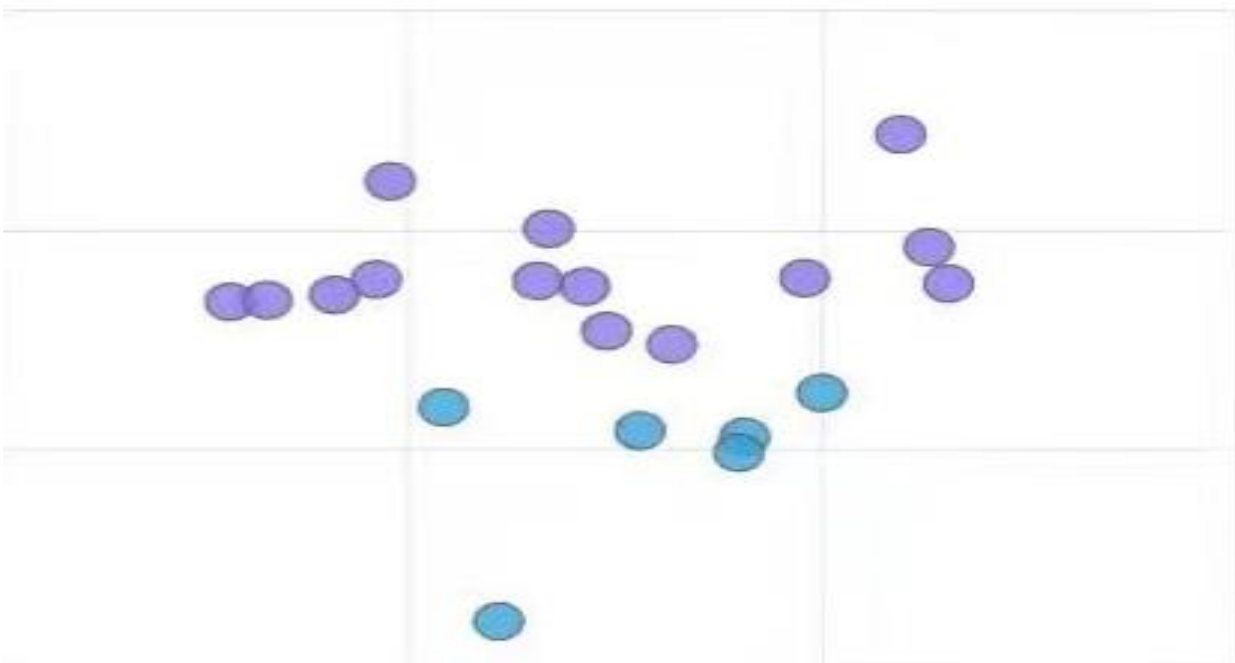


Figure 5: "Disassembly-rebuild" path diagram [Source: Author]

4.3 Interaction-Coupling Path

This road's primary purpose is to bring out the best in various industries, favorably impact products and their environments, capitalize on the complementary relationship across sectors, and break down the obstacles that limit a single industry's supply chain. Forming a new pattern or model in which the primary, secondary, and tertiary industries are complimentary, open, and integrated helps break down mutual barriers and borders across industries while growing value-added sectors, space, and prospects (Figure 6). This enables the interaction and linkage between several sectors to be realized. For instance, the traditional interactive coupling of agriculture,

leisure tourism, the medical industry, etc., has resulted in the formation of a new multi-level ecological agriculture model, such as resort towns, medical and health towns, urban forests, etc., which offers more excellent products or services to satisfy the diverse needs of consumers. Under this path, on the one hand, industrial integration improves the level and efficiency of industrial synergy, obtains an increase in potential quality value and intangible brand value, and dramatically promotes the substantial growth of the industry; on the other hand, it reduces the Without transaction costs and inconveniences, C decreases while K increases rapidly.

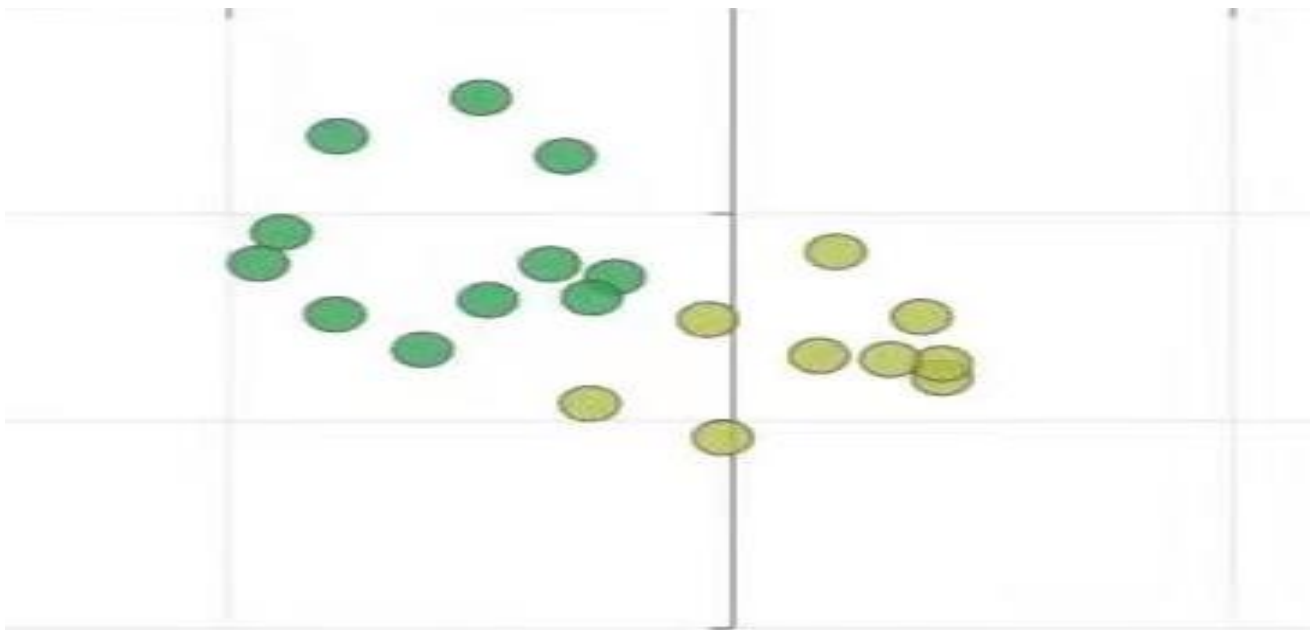


Figure 6: "Interaction-Coupling" Path Relationship Diagram [Source: Author]

5. SYSTEM COMPOSITION AND VALUE-ADDED MODEL OF AGRICULTURAL WHOLE INDUSTRY CHAIN BASED ON THE VALUE NETWORK

5.1 System Composition

The entire agricultural supply chain is in a state of constant growth and ascent. The value network approach focuses primarily on the research and development, planting and breeding, production and processing, and sales of agricultural and ancillary products, including pre-production and post-production activities. 21. Composed of the value chain, the information chain, and the organization chain, the organic whole fulfills the comprehensive value-added activities of every industrial chain link (Figure 7) 22. The internal system consists of the following:

- The middle layer is industry-wide and concentrated on the industrial chain's upstream and downstream operating procedures—logistics direction. Through upstream agricultural technology research and development, midstream processing and circulation, and downstream

selling, a community of industrial destiny is created with vertical and horizontal linkages, industrial chain integration, and networking. Master market circumstances, information, and feedback for upstream decision-making.

- Formulate standardized industry guidelines, standards, and agricultural product quality management systems at the advanced level.

- Downstream refers to the specific standards implementation operations. The external technology and service system comprises big data, the Internet of Things, artificial intelligence, blockchain, an electronic settlement system, a mobile intelligent terminal, and other technical applications, as well as various social and virtual services, such as specialization, industrialization, and a cloud-based innovative service platform. The service system provides technical and platform service support for the value-added of the agricultural industry chain, promotes information transmission and sharing, enhances operational efficiency and level, and encourages the formation of a mutually beneficial and symbiotic value network system for the entire agricultural industry to realize the value-added of the entire industrial chain.

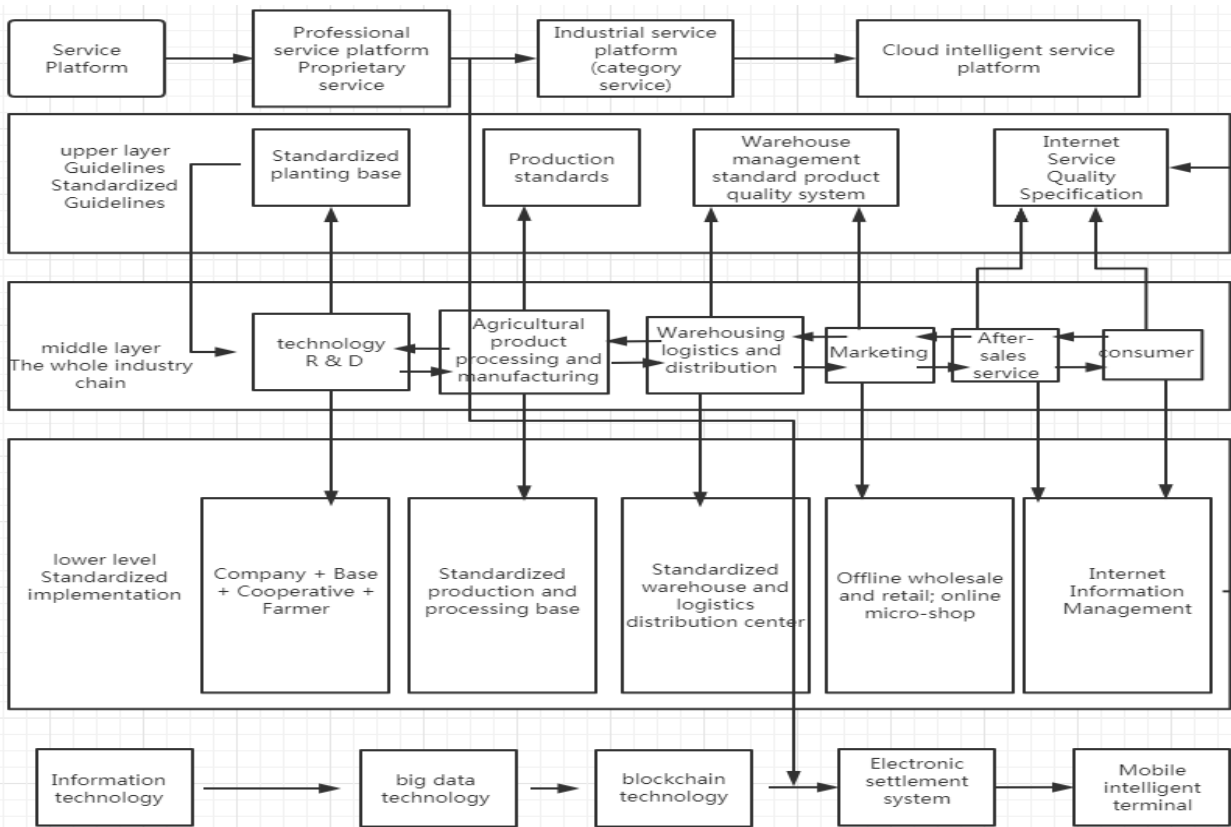


Figure 7: The composition of the whole agricultural industry chain system based on the value network [Source: Author]

5.2 Value-added and New-Type Interests of The Whole Agricultural Industry Chain Based on The Value Network

The agricultural industry needs adjustment and revitalization, and the best way to do so is by enhancing the added value of the agricultural industry chain as a whole (Gao et al., 2017; Tu et al., 2017). This means connecting the value-added process and value-added activities to form an industry chain that covers the upper, middle, and lower reaches (Pratap Singh et al., 2017). By doing this, new interests of different stakeholders can be established (Figure 8). The added value of the agricultural industry chain can be divided into three parts: upstream, midstream, and downstream. The upstream link is responsible for output value, which is increased by sales prices and costs. The mid-stream link processes agricultural products, reducing processing costs and logistics costs. The added value of deep-processing specialty products and by-product income is also increased (Nang'ole et al., 2011). The downstream link is consumption value, which mainly meets the utility value of consumers. This is done by providing unique products and increasing prices to get more premiums (Sun, 2018). The interconnection and cooperation of upstream and downstream links can save costs, improve efficiency, reduce risks and learn value-added.

5.3 The Value-Added Innovation Path of The Whole Agricultural Industry Chain Based on The Value Network

Faced with factors that inhibit value appreciation, such as the

inadequacy of agricultural industry chain operation, it is essential to redesign the entire agricultural industry chain (Figure 9). Customer value drives the industry chain's value-added, which involves all partners' participation and contribution. This study dialectically explores the value-added value realization mechanism, including how to realize the value-added value of the entire industry chain, how to develop a new collaborative connection based on the value network, and how to redefine the role of each topic in the value network. (C. Zhang, 2020). And positioning. Explore the application of big data, the Internet of Things, artificial intelligence, and other information technologies in the agricultural industry chain, construct a value-added innovation path of "Internet + Agriculture," integrate deeply into the agricultural industry chain, transcend industrial boundaries, and transform into an "agricultural industry ecosystem," introduce new partners, boost reverse revenue streams, etc., update the entire agricultural industry chain, develop chain network aggregation and synergy effects, and create new channels and mechanisms for the value-added of the entire agricultural industry chain. For instance: Integrate the agricultural sector with the current information services sector to create new three-dimensional business models, such as intelligent agricultural ecological zones and "Internet + agriculture" industrial clusters. Customers derive value and extra value from more innovative products and services. The reciprocal industrial circle also dramatically minimizes transaction costs and risks; ΔC is significantly lowered, and geometric or even exponential growth of ΔK is encouraged.

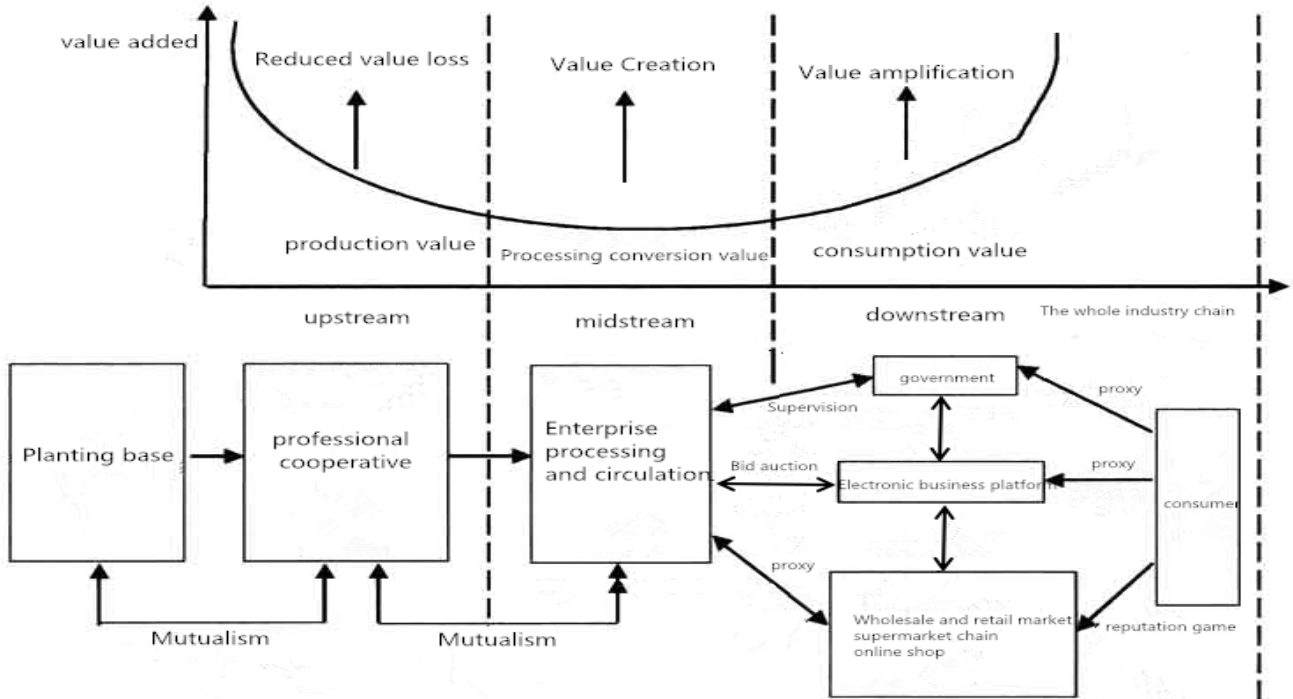


Figure 8: The Value-Added and Interest Relationship Model of The Entire Agricultural Industry Chain Based on The Value Network [Source: Author]

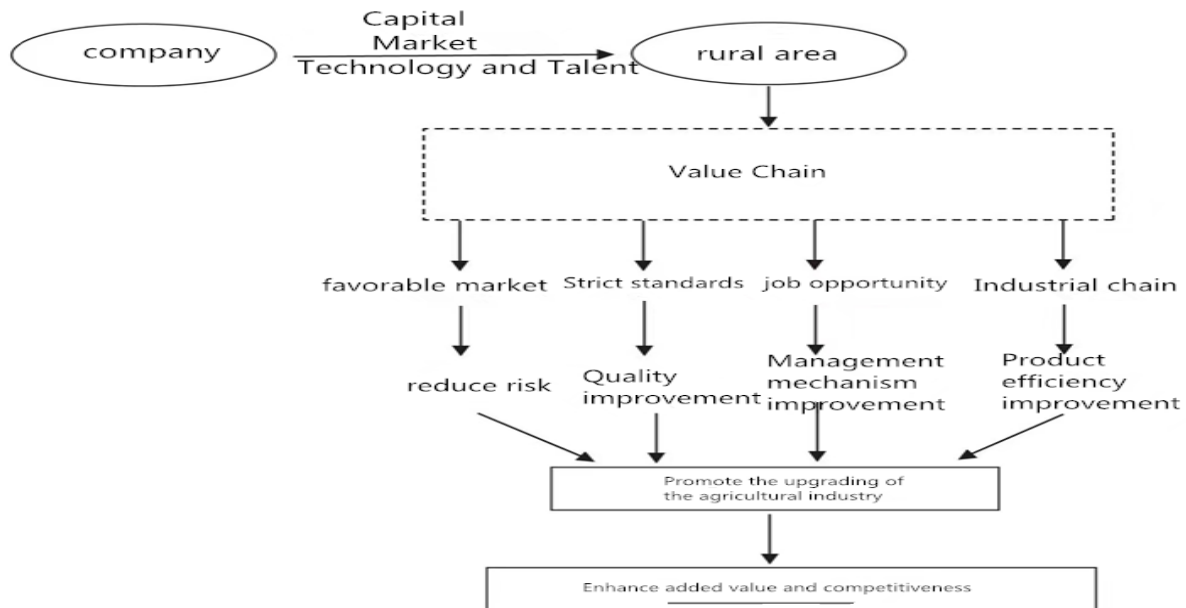


Figure 9: Influence mechanism of value network on agricultural industry upgrading [Source: Author]

6. RECONSTRUCTION OF THE VALUE CHAIN

Reconstructing the agricultural industry chain, realizing the value-added value of the industrial chain, and providing more incremental benefits from the value-added value are essential to rejuvenating and advancing the agricultural sector. The primary issue is how to actualize the value-added of the entire agricultural industry chain, and a corresponding implementation mechanism must be

established and enhanced.

6.1 Improve the Integration Mechanism of Resource Optimization and Competitive Advantage in The Whole Agricultural Industry Chain

The value network is fundamentally a model of group rivalry and resource optimization. Through the complementarity of resources and capabilities of diverse value network members, innovation of technical knowledge, mutual trust, and cooperation, we may produce

more excellent customer value, obtain added value, and achieve a competitive advantage. 27. It is necessary to thoroughly comprehend and identify the mechanism and laws of agricultural multifunction and its interaction, to enhance the optimization and integration mechanism of agricultural multifunction and resources, to establish and enhance national policy support based on the development of agricultural multifunction, and to innovate agricultural formats and business models. 28. Establishing and

enhancing the positive incentive and reverse pressure mechanism for agricultural multifunctional external economic growth, as well as making good use of this mechanism, would encourage the transformation and upgrading of the labor-intensive agricultural industry. Technology-intensive or knowledge-intensive, to enhance the value positioning, level, and image of the agricultural industry chain and strengthen the value-added foundation (industry value-added, as shown in Figure 10).

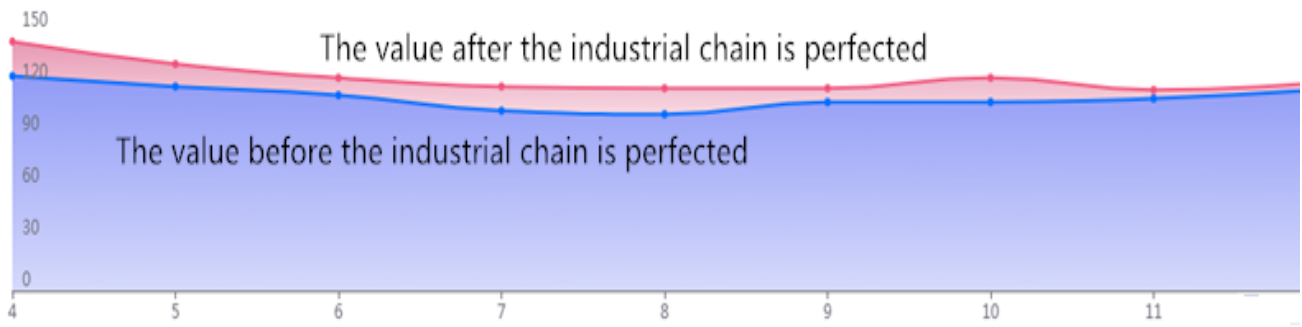


Figure 10: Value Comparison Before and after the Improvement of The Industrial Chain [Source: Author]

6.2 Shaping the Cultural Value Integration and Recognition Mechanism of the Whole Industry Chain

Because the value network transcends the constraints of time and geography, many values and ideologies are intermingled and in conflict, which may result in the depletion of the industrial chain's value. Evaluation and exchange of value comprise the heart of the unified identification system for cultural value. The culture and psychology of the effective use of the overall value network of the agricultural industry chain provide identification, realize the evaluation of value, and pay greater attention to the strategic position of agriculture—value chain, organizational culture identity, knowledge innovation, and business model innovation,

among others. 29. Through knowledge exchange and rewards, attractive and innovative value creation network culture, attracting diverse stakeholders to participate, to develop their value, equality, and openness to innovate the direction and action of shared cultural value comprehensively, agricultural industry, and integrated chain stores will be able to flourish. The spiritual force provided by the innovation and value evaluation of the entire agriculture industry chain is the cohesion of external interactions. 30. Consequently, the agriculture industry chain's added value and competitiveness are substantially strengthened. Figure 11 demonstrates that cultural value has a lower production cost than identical value.

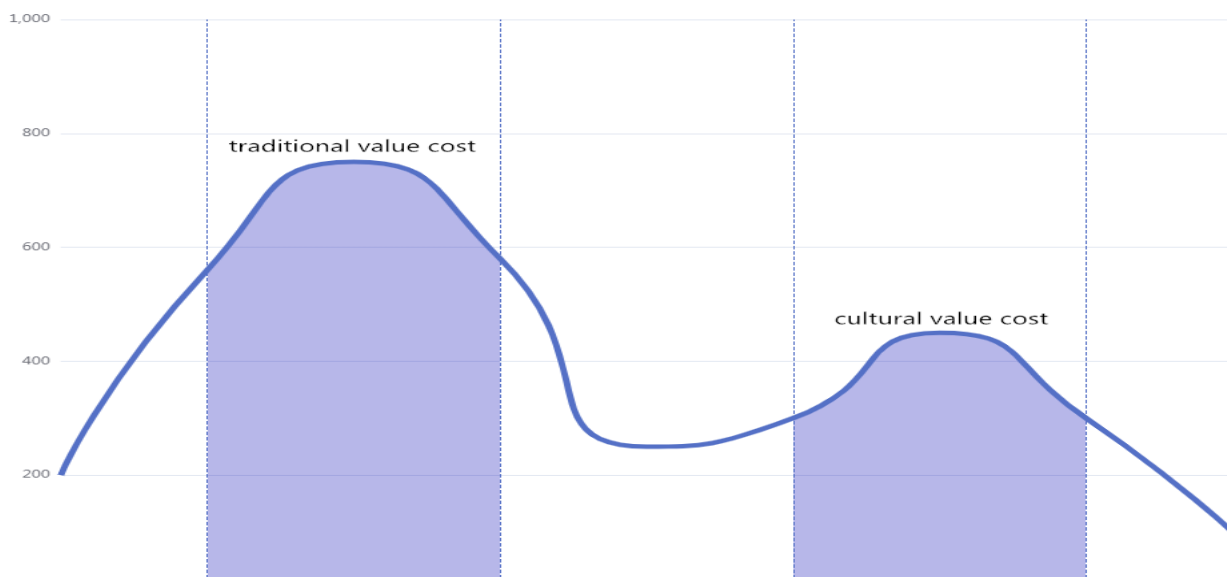


Figure 11: Comparison of Traditional Value and Cultural Value [Source: Author]

6.3 Improve the Resource Allocation, Knowledge Innovation, Information Sharing, And Relationship Governance Mechanism of the Industrial Chain Value Network

Building and enhancing systems for value-added resource allocation, knowledge innovation, information exchange, and relationship governance inside the industrial chain can enhance its power and organizational strength. In this manner, each enterprise inside the chain may continuously innovate and adjust its resources, enhancing its capacity for value creation. A proper relationship governance system may promote and integrate positive adjustment and improvement between firms, eliminate friction and conflict in the industrial chain, and achieve a broader range of products with better-added value. Several mechanisms, such as a value target coordination mechanism, a dynamic organizational mechanism, and an action coordination mechanism, can create value in an industry chain. Each industrial chain's leaders must comprehend the pertinent leadership motives for their actions to represent a value-added, interdependent, and symbiotic interest relationship. The rate of information transmission and service delivery is increased. This can decrease costs, mitigate risks, and generate extra value. 31. The value network is an innovative kind of value chain organization that fosters the innovation of the value network in various ways in terms of technology, management, evaluation, etc.

- Scientific and technological innovation to promote the penetration and application of a new generation of information technology, such as big data, the Internet of

Things, etc., in agricultural production, operation, processing, distribution, and services, etc.; development of a system-wide data management information platform and agricultural industry chain Accelerate the construction and deployment of the agricultural product value network system, enhance data collection and exchange, encourage deep integration, the development of agriculture and information technology, and foster a new generation of information technology firms. It generates higher value addition (Song et al., 2022).

- Technology management innovation through mergers and acquisitions, joint research and development, intrapreneurship, innovative virtual collaboration innovation to strengthen business management modules, etc., the industrial chain virtualis e and use of virtual reality technology, big data, virtual blockchain, and other organizational methods and Information technology, intelligent logistics, intelligent warehouse network marketing, etc., actively promote the construction of the Internet of Things (see Figure 12).

- In response to the complexity and flux of value networks and interests, a value-added evaluation, reward, and punishment mechanism that facilitates dynamic adjustment according to the degree of collaboration and contribution has been established. The value distribution increases the incentive, capability, and competitive advantage of the entire agriculture industry chain to create value.

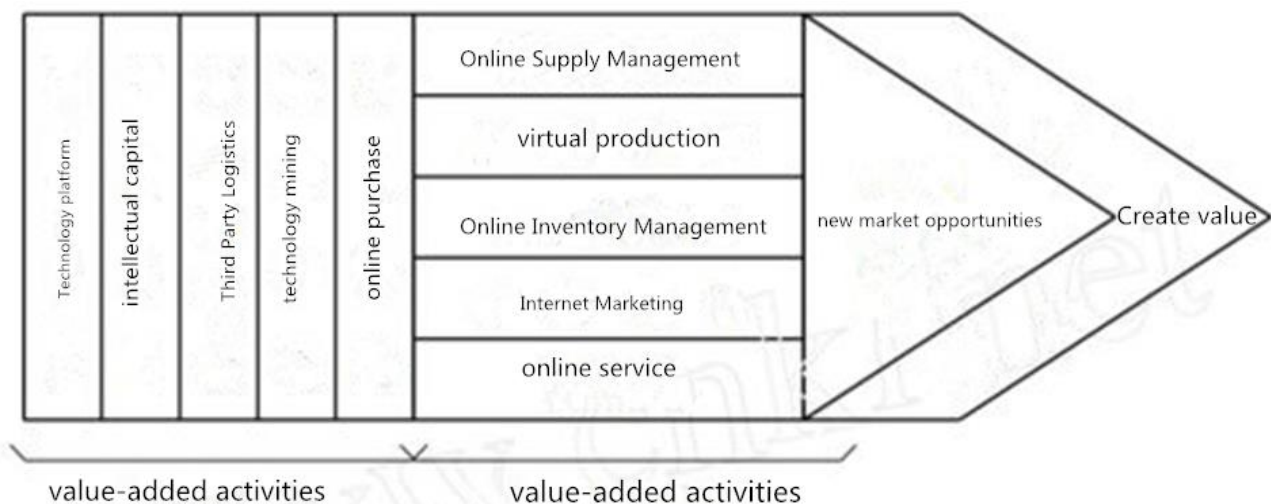


Figure 12: Virtual Value Chain Management Diagram [Source: Author]

7. CONCLUSION

Increasing value and enhancing the management mechanism are the primary obstacles to rural revival promotion. This article investigates how the value network, as an innovative value chain organization, might foster innovation in rural areas. Promoting virtual information value chain management and an innovation-driving mechanism for Internet value technology may

effectively boost the added value and industrialization of information products and revive and develop the entire agricultural industry chain. To actualize value-added for information products and the complete agriculture industry chain, it is required to create value from the value-added subject's perspective, as well as to cut costs, prevent hazards, and create value in reverse from the perspective of added value. This research was conducted to establish a framework for evaluating the level of blockchain

technology development in the agricultural supply chain. It is recommended that future studies utilize multiple maturity models for each supply chain node. This will allow for a more accurate evaluation of the amount of development of blockchain technology at each stage of the agricultural supply chain.

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