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Operating Analysis of the Closed Supply Chain of Green Agricultural Products Based on Logistics Center

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Abstract This thesis gives the overview of concept and constitution of the closed supply chain of green agricultural products based on logistics center, and the necessity of regarding logistics center as core enterprise. Meanwhile, it analyzes the function of logistics center of agricultural products, namely functions of exchange, collection, distribution, storage and transportation. It also poses the prerequisites of logistics center. The logistics center of agricultural products must have stable profit expectancy, prominent scale, strong appealing power, capacity of bearing market risk and basic thoughts of supply chain management. The functional design of the closed supply chain of green agricultural products has been discussed in 5 aspects, namely logistics center, production base, providers of means of production, retailer and consumer. The operating thoughts of the closed supply chain of green agricultural products based on logistics center are put forward on the basis of the research of operating objective and service target of supply chain as follows: first, based on local principal agricultural products, the logistics center mainly distributes the massed agricultural products; second, it is necessary to choose appropriate strategic cooperative partners to sign contract; third, the operating procedure of supply chain entails bringing in professional managerial talents of supply chain; finally, the relationships of supply chain should be maintained.

Key words Closed supply chain, Operating mode, Logistics center, China

At present, modes of the supply chain of green agricultural products in China fall into 4 types, which are the modes based on the main body of operation, information chain, core enterprise, and tracking and tracing respectively^[1]. In 2008, establishing the closed supply chain of agricultural by-products to ensure the food security was put forward by Yu Wenmei, who also proposed that all procedures of the supply chain of agricultural by-products should be normalized by technological standard and we should try out closed operation of the supply chain of agricultural by-products to attract more optimal resources to dissociate from the open supply chain. Hence, the closed supply chain by virtue of efficiency advantage, will replace the open supply chain, indicating overall realization of operating mode of the closed supply chain of agricultural by-products^[2]. We conduct the operating analysis of the closed supply chain of green agricultural products based on logistics center, aiming at providing reference for optimization of the supply chain of agricultural products.

1 Structure of the closed supply chain of green agricultural products

The concept of the closed supply chain is first posed by Nankai University Modern Logistics Research Center, which refers to the strict system of admittance and management that the member enterprises must conform to, and a kind of supply chain system with unified operating norm and technical standard that can be put into real-time monitoring and control, dynamic

tracking and tracing^[3].

I maintain that, in the process of production and circulation of green agricultural products, the supply chain of green agricultural products is a network structure which stems from the activity of providing green agricultural products and service by upstream and downstream member enterprises to terminal consumers, realizing the real-time tracking, effective control and whole process management in every link of the supply chain of green agricultural products, according to standard of "green logistics" and "recycling logistics" in order to quicken the pace of green agriculture industrialization and attain the goal of safety, quickness and profit^[4].

1.1 Operating mode of the closed supply chain of green agricultural products based on logistics center which is as core enterprise We construct the mode of the closed supply chain of green agricultural products, forming the mode of the closed supply chain of green agricultural products based on logistics center which integrates the main body of operation, information chain, core enterprise, and tracking and tracing. It can be shown in Fig. 1.

The closed supply chain of agricultural products based on logistics center has 5 parts. The first is logistics center of agricultural products mainly comprising processing enterprises of agricultural products, initial and further processing enterprises of agricultural products, and enterprises which specialize in storing and delivering, or transporting and marketing. The second is production base mainly comprising modular and standardized cultivation base, new rural cooperative organization, rural economic cooperative association, farmer broker and the majority of rural households^[5]. The third is the provider of means of

production, namely provider of agricultural materials. The fourth is retailer, mainly including supermarket of fresh food, wholesale market and other distributing network. The fifth is consumer.

This model in nature, realizes the optimization of the

closed supply chain of green agricultural products, on the basis of traditional model of the supply chain which consists of providers of means of production, producer, distributor, retailer and consumer. The detail can be embodied in the following 5 aspects.

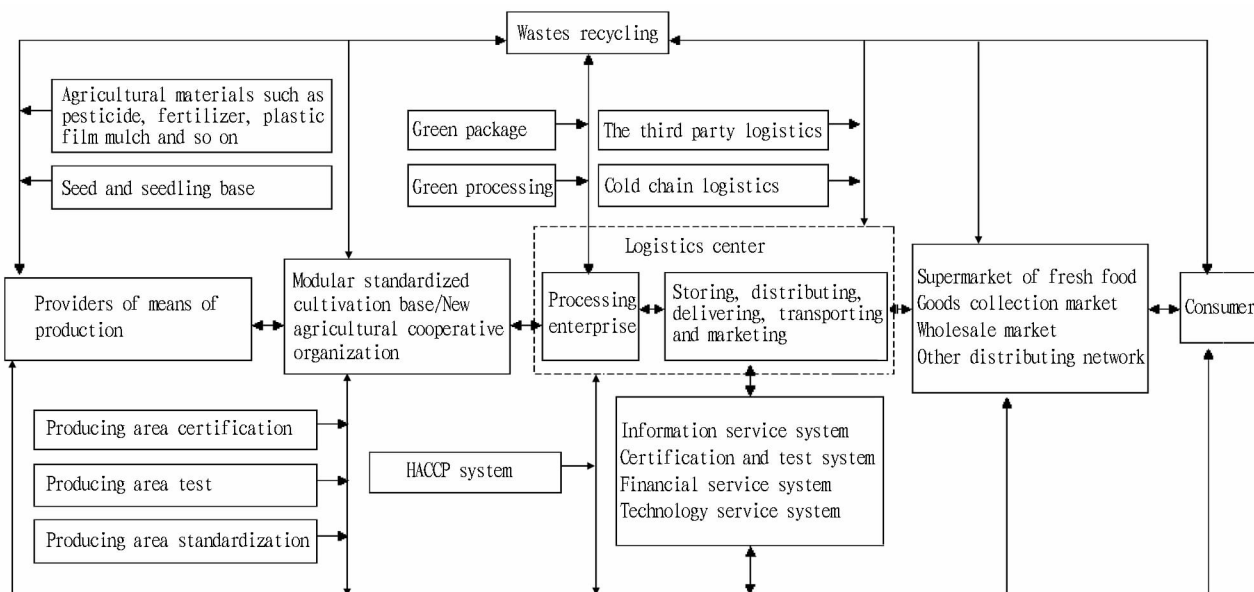


Fig.1 Model of the closed supply chain of green agricultural products

First, this model shows the signification and basic requirements of green agricultural products. According to the law and standard at home and abroad, green agricultural products consist of 3 types of products, namely pollution-free agricultural products, green food and organic food, whose operation must strictly live up to relevant management system, attestation system, test system, production system and so on. Second, this model shows the basic characteristic and requirements of the supply chain of agricultural products. Such model realizes a whole process of supply chain which includes management during pre-production and production, and processing, storing, delivering, transporting, marketing, and consuming during post-production. It contains "four flows"-material flow, commercial flow, information flow and capital flow. Third, this model shows the closed supply chain not only having characteristic of logistics system and commonality of supply chain, but having its own particularity, namely green and closeness. Embodiments of this model are "green logistics", "circular logistics", strict admittance management system, unified operating norm and technical standard, real-time monitoring and control, dynamic tracking and traceability. Four, this model shows a kind of strategic cooperative partner relationship exclusively among main body of supply chain, exclusiveness of channel to providers and exclusiveness of supply of goods to distributor. In comparison with the open supply chain, the closed supply chain has more channel efficiency and much stronger controllability, coordination and anti-risk ability. The concept of the closed supply chain indicates the whole process control of production, exchange, distribution and consumption in every procedure, en-

surging the quality security of products. Making use of the closed marketing channel, the closed supply chain combines advanced information technology and modern logistics technique, and draws on its efficiency advantage of electronic business platform, to realize real-time tracking, effective control and whole process management, which is beneficial to green agricultural industry in every part of the supply chain of agricultural products. Five, this model shows the objective of practising the operating model of the closed supply chain of green agricultural products. It not only researches the distribution and allocation of material flow, capital flow, information flow and commercial flow, but also researches management in the process of production and the scientific flow about logistics during pre-production and post-production of agriculture, resulting in the sturdy connection among providing, producing, transporting, processing and marketing, and the satisfactory optimized operating state rendered by combination between whole process of production and market. Establishing the closed supply chain of green agricultural products, can improve the system controllability and channel efficiency in terms of structure, obviate the Lemon Effect arising from information asymmetry, create more value for the entire supply chain, elevate the quality of agricultural products and curtail the operating cost.

1.2 The necessity of regarding logistics center as core enterprise Based on cooperation and trust, the logistics center, as core enterprise, forms the supply chain with other participating main body by strategic partner relationship. They establish a kind of interest community to operate.

1.2.1 It is the need of solving contradiction between regionali-

ty of production and universality of consumption. Different regions produce varied types and quality of agricultural products. In addition, the agricultural production concentrates in rural areas, which contradicts the social need of agricultural products characterized by regional universality. Addressing this contradiction depends on the logistics of agricultural products and delivery of products from the producing area to other places for consumption, by processing, packaging, and transporting. Logistics center, can realize the mutual exchange of agricultural means of production and agricultural products among different areas and countries, meet the need of agricultural production and diversity of consumption, expand the agricultural products market, facilitate the optimized allocation of agricultural resources and enhance the comprehensive benefit of agriculture.

1.2.2 The high requirement of logistics of agricultural products entails a large amount of specific assets investments^[6]. The biological attribute of agricultural products puts forward high technical requirements, on storing, fresh-keeping, processing and the like, which must be timely, quick and effective in the process of agricultural products logistics. Because of the freshness and perishability of agricultural products, on one hand, logistics organization must avert agricultural products from producing area to consuming area quickly and timely, spend a certain productive outlay on specific assets investments, and undertake some productive activities, transportation, storage and separation, for instance. On the other hand, it determines that the logistics information should be timely. The regional, seasonal, and concentrated agricultural production, contradict the universal, frequent and scattered agricultural product consumption. In addition, the concomitant asymmetrical information, scattered information, increasing transportation expenditure and so on, will presumably lead to market segmentation, which requires logistics organization to carry out more specific investment on information search and dissemination. For realization of trans-regional transmission and circulation of agricultural products, the logistics center, as professional circulating and operating organization of agricultural products, has 3 characteristics in terms of asset specificity, namely specificity of geographic location, specificity of real-asset, and specificity of goodwill and brand.

1.2.3 It is the need of maximum expansion of value. After plucking, the agricultural products, especially the products of fruits and vegetables, will need the processing work of sorting, cleaning, fresh-keeping, cutting, specification, packaging, labeling and so on. Consequently, the regional seasonal and limited agricultural production contradict the universal perennial and global agricultural product consumption, which inhibits realization of agricultural product value, and indicates immense room of expansion of value. The pivot of maximum expansion of value realization and solution of these problems lies in the development and construction of logistics center of modern agricultural products. Only by the powerful transportation network structure, and matched specific storage and transportation facility of logistics center, can regional producers timely transport profuse agricultural products to all parts of the country for sale,

and circumvent the results that the agricultural products are rotten or fruitful but not lucrative. Only by the service of fresh-keeping, storing and refrigerated transportation provided by logistic chain, can it guarantees the consumers to buy the needed agricultural products regularly all the year round.

1.2.4 Market competition needs an efficient organization. With multilayered structure, the logistics main body have diversity. These diverse logistics main body must have a core enterprise assuming the task of establishing supply chain to ensure the effective and coordinated operation. In other modes of supply chain of agricultural products, such as wholesale market and big retail enterprise, due to various kinds of reasons, cannot effectively organize these diverse and multilayered professional logistics main body and logistics organization. Hence, only by regarding logistics center as core enterprise and drawing on its powerful scale merit and organizing capacity, can it exert collecting and distributing function, form efficient multilayered structure of transaction in order to enhance the organizing efficiency of agricultural products logistics.

1.3 The function of logistics center of agricultural products which is as core enterprise

1.3.1 The logistics center of agricultural products is information exchange center of supply chain. Firstly, the demand information from downstream of supply chain is transmitted to logistics center via regional distribution center, marketing center and retailers. Secondly, after information processing, the logistics center sends those analyzed demand information to upstream cooperative partners, such as rural economic cooperative association and farmer brokers, then such information is finally transmitted to the majority of rural households by these cooperative organizations and economic entity. After cultivation of agricultural products, supply information of products is transmitted to the logistics center of agricultural products, and after processing of the logistics center, feedback is sent to downstream enterprises in order to find sales market.

1.3.2 The logistics center of agricultural products is the collecting and distributing center of entire supply chain. In the light of the process of agricultural production, firstly there must be agricultural materials providers of seed, fertilizer and the like, from whom such material flows trickle to the individual farmer; then after harvest, the agricultural products are collected and distributed via logistics center, flowing to dealers and processors at various levels, finally reaching terminal users. Here the logistics center plays the role of collection, distribution, and transportation of agricultural products. It sends directions of production to rural households, and goods-providing information to the downstream dealers and processors, in order to guarantee every node to buy appropriate products in due time, neither resulting in the unsalable agricultural products, nor causing the situation that city residents cannot buy those agricultural products attractive in price and quality. So whether products in supply chain can expand value hinges on deployment of logistics center.

1.3.3 The logistics center of agricultural products is a big storage and transportation center. In terms of the agricultural

product, its production is seasonal while its consumption is perennial. When the season of bumper harvest comes, there are a large amount of products densely on the market, leading to 2 results. First, due to the sharp increase of supply amounts, the price drops and the products are even unsalable, while consumers in other places limited by transportation have no choice but to buy at high price. Second, after the concentrated harvest time, residents can hardly buy these products, such as the fruits and vegetables till harvest time next year. Albeit you can buy those slack-season fruits in many supermarkets, the quantity is so small and the price is so high. Establishment of logistics center of agricultural products, especially the application of cold chain system, can not only carry through the large-scale national allocation and transportation of products to ensure the balanced development of production and sales, but also extend the fresh-keeping time and market time to realize the expansion of value of agricultural products in large quantities.

1.4 The prerequisites of logistics center In order to ensure the sustainable development of supply chain of agricultural products in market competition, the logistics center of agricultural products, as a kind of economic entity in a mode of the third party logistics, which is elevated to core enterprise of supply chain, must have the following fundamental prerequisites.

1.4.1 The logistics center of agricultural products must have stable profit expectancy. The prerequisite of existence and development of an economic organization lies in its ability of profiting. Extending the life periods of agricultural products and augmenting the added value of agricultural products by procedures of processing, packaging, refrigerating, storage, transportation and so on, become the main source of profit expectancy of the logistics center of agricultural products. But due to investments of specific assets, whether the logistics center can obtain stable net profit expectancy rests on the scale-merit level of the logistics center. Consequently, enhancing the scale economy level can guarantee the existence and development of agricultural products supply chain of logistics center.

1.4.2 The logistics center of agricultural products must have prominent scale^[7]. With prominent scale the logistics center of agricultural products has a distinct advantage in terms of the ability of obtaining information, and can judge the market demand, then transmit it to the rural households or downstream enterprise, and exert the ability of coordinating and directing operation of agricultural products supply chain.

1.4.3 The logistics center of agricultural products should have strong appealing power. The appealing power of the logistics center is an important factor which determines the formation of supply chain. If the core enterprise has good reputation, strong appealing power and a powerful control over the upstream and downstream enterprises of supply chain, it will pay to keep stability of supply chain and reinforce the competitiveness of supply chain, so as to realize the effective location and reasonable allocation of core resources which influence the competitive advantage of supply chain.

1.4.4 The logistics center of agricultural products must have the capacity of bearing market risk. The logistics center of agri-

cultural products is characterized by market-oriented agricultural production and operation. There are conspicuous natural risk arising from the freshness and perishability of agricultural products, and market risk arising from contradiction and information asymmetry between regional production and scattered consumption. In addition, some risks, for instance, natural risk, policy and so on, are ineluctable, which require the logistics center to have the capacity of bearing and eliminating risk.

1.4.5 The logistics center of agricultural products should have basic thoughts of supply chain management. The supply chain management is as a new concept of management, of which the biggest obstacle is the brunt of traditional concept of every link of the chain, so the update of concept is the pith of supply chain management. Being built on "win-win" basis, the core enterprise should foster the spirit of cooperation, crystallize the strategic objective of development, seize the core advantage and cooperate with other enterprises to share risk and enjoy benefit. Among cooperative parties it is essential to build full trust and information share mechanism, and circumvent vicious competition arising from information asymmetry.

2 Functional design of the closed supply chain of green agricultural products

2.1 The logistics center of agricultural products

2.1.1 Transportation node. There are 2 kinds of transportation ways of agricultural products in the logistics center. First, it is the way of invariable collection state of products. After vehicles carry the products to logistics center, in the light of original loading and unloading unit, the products are unloaded, and then again loaded on the carrying machine to warehouse, or by carpooling, the products are transported to consumption area. In the process, only the transportation unit changes, loading and unloading unit invariable. Second, it is the way of variable collection state of products. After vehicles carry the products to logistics center, the old loading and unloading unit is dismantled and subsequently combined into new loading and unloading unit. Then the products are transported to consumption area. In the process, transportation unit, and loading and unloading unit both change. Needless to disassemble goods in transportation area, the first way is a more efficient way, not only avoiding goods losses, but also saving time. But only the second way can be adopted due to the agricultural products in bulk entering logistics center. In view of the trans-regional and trans-boundary transit of those agricultural products in the logistics center, it is necessary to unitize the agricultural products, in order to facilitate carrying, transportation, storage, management and distribution, resulting in more logistics efficiency.

2.1.2 Storage node. After entering the logistics center, agricultural products need to be stored for circulation, or slack-season sales. Storage is one important function of the logistics center. In the plan of warehouse, on one hand, the location of warehouse should be arranged well in order to make goods more conveniently enter or exit warehouse. On the other hand, the storage condition required by goods should be considered. In view of the special requirements of storage, building various

kinds of warehouses for the purpose of storage should be considered.

2.1.3 Circulation processing node. In order to store and transport conveniently, enhance logistics efficiency and decrease redundant links of logistics, goods that enter the logistics center need to be processed. The content of processing comprises 3 parts. First, separation. According to attributes of volume, form, color and so on, the products are assorted for storage and graduated sales in the light of different needs. Secondly, package. The products are packaged in the form of bottle, carton or bag, to facilitate storage and transportation, protect products and raise the products levels. Finally, unitization. The products are sorted into a specific unit for storage and transportation. This unit will not be ruined and the products are smoothly carried to destination. Unitization not only can enhance logistics efficiency and reduce workloads of loading, unloading and portage, but can guarantee that goods are not to be missed and allay logistics losses.

2.1.4 Information platform. The modern transaction of agricultural products is more and more inclined to a large amount and minute division, which elevate the status of information. The logistics center should collect, analyze, predict and transmit the information of every link of logistics, to provide demand forecast of agricultural products for upstream enterprise, and information of list and safety of products for downstream enterprise. Information function of logistics center is not so simple a transmission, but information integration of entire supply chain on which all enterprises are the members of such information platform. They release supply-demand information and industry information on this platform as soon as possible to share and reduce time for information transmission. When technique is advanced enough, internet transaction needs to be reinforced step by step, in order to make the information platform of logistics center become a most timely, precise, credible and all-around information hub. Only by establishing this information platform can we strengthen core competitiveness of logistics center.

2.1.5 Initial processing enterprises of agricultural products. Initial processing enterprises of agricultural products fall into 2 kinds. One is the processing enterprise that cooperates directly with farmers and rural household organizations. Original agricultural products, from farmers and rural household organizations, are processed with no alteration of the inner ingredients, leading to the change of quantity, not quality. The initial grain and oil processing, livestock products cutting by grade, cleansing, separation, packaging and so on, fall within this kind. The other is the processing enterprise that cooperates directly with logistics center. It undertakes a part of initial processing businesses of logistics center and realizes initial processing of agricultural products, decontamination, cleansing, separation and packaging of the massed products in bulk for instance. As the processing enterprises are so many and close to logistics center, after processing the unitization procedure will come immediately. The products are for temporary storage or distribution.

2.1.6 Deep processing enterprises of agricultural products. In

this mode of agricultural products supply chain, deep processing enterprises of agricultural products are those enterprises which are small and incompetent of becoming core enterprises of supply chain, or those subsidiary companies or limited companies dominated by the logistics center. Such 2 kinds of deep processing enterprises of agricultural products operate thoroughly by request of logistics center. The third party deep processing enterprises provide OEM service for center while subsidiary companies can have its own brand. In addition to building brand of core enterprise, these enterprises can carry through deep processing in order to store value of products when products are unsalable.

2.2 Production base It mainly includes modular standardized cultivation base, new agricultural cooperative organization, rural economic association, farmer brokers and the majority of rural households. The organizing degree of rural household must be intensified to settle the problem of farmers' access to market on an equal footing. At the urgent request of raising farmers' market negotiation status and lowering transaction cost, rural economic association booms and has entered the market circulation links, to some extent, replacing rural households to become the main body of logistics. Based on voluntary unification and reciprocal cooperation, the new rural economic association is an economic organization stemming from unification of scattered rural household individuals, which provides services, such as technique, information and so on, about agricultural production and operation. It also conducts unified sale and transportation of agricultural products, unified purchase of agricultural means of production and unified management of certain area as its production area. In fact, it is established by institutional innovation on the basis of existing rural institution. In terms of addressing the problem of circulation of agricultural products, in addition to rural economic association, there is another important form of economic organization, namely farmer brokers, specializing in medium activities, such as purchase, storage, transportation, sales, sales acting, information transmission, service and the like in order to obtain commission or profit. In the process of agricultural products circulation, farmer brokers mainly play the role of communication and intermediary agent, who introduce local agricultural products to market resulting in great merchandise advantage in local area, combine market demand and local production, and convert resources superiority into market superiority rapidly. Besides farmer brokers, there are super big producers who have strong economic awareness and organizing ability. The scale of planting more than 33 hm² makes them draw on scale advantage to participate in operation of entire supply chain in the form of production base.

2.3 Providers of means of production Providers of means of production are elevated to a new altitude. They join the information platform of supply chain to share information and arrange their operating strategy according to market demand and farmer's growing plan. Meanwhile, they provide agricultural materials attractive in price and quality for rural households and rural economic cooperative organization by contract. In this

supply chain, providers mainly play the role of offering high-quality agricultural materials to cooperative partners as stipulated in the contract in order to ensure quality and output of products from the source, and realize 'win-win' on the basis of sharing information.

2.4 Retailer It mainly consists of supermarket of fresh food, wholesale outlet and the other distributing network. The network comprises cold chain distributing center and marketing center. First, the cold chain distributing center is built by logistics center, conducting daily distribution for consumption places such as hotel. Secondly, the marketing center refers to the terminal sales places, such as large supermarket, franchised retail enterprises of agricultural products, wholesalers of large farmer's market all over the country and so on. This node mainly realizes the downstream distribution and transit, delivering fresh agricultural products to residents at full speed.

3 Operation of the closed supply chain of green agricultural products

The continuously strengthened market economy and global economic boom after joining WTO, make traditional logistics enterprises of agricultural products in China face a severe challenge. Under this new economic circumstance, modern logistics center of agricultural products takes responsibility to vitalize the whole agricultural market and promote the international competitiveness of Chinese agricultural products.

3.1 Operating objective and service target of supply chain In the agricultural products supply chain of the logistics center, there are 3 operating objectives. The first is to realize trans-regional transportation and national circulation of agricultural products and avoid a kind of small circulation phenomenon that products are produced in one place and sold in the vicinity, in order that farmers can sell their products easily. The second is to build a unified brand of agricultural products. Any product issued from the logistics center should be under strict security and sanitation test. No matter whether the products are initial agricultural products or finished goods processed by deep processing enterprises, the brand regarding the core enterprise as background is needed. The third is to keep the stability of supply chain. Every member organization should centralize resources to develop core business by strict restraint of contract, conforming to terms of contract. They also should cooperate, mutually trust, complement each other's advantages, reduce reuse of resources, and dedicate their limited resources to the development of core business. In the operating mode of supply chain, service target of supply chain is all consumers of agricultural products that the chain covers.

3.2 The operating thoughts of the closed supply chain of green agricultural products based on logistics center Using contract as tie, all member organizations cooperate, forming a kind of long-standing and stable cooperative partner relationship to realize integrative operation by dint of core enterprise scale and market advantage.

3.2.1 Based on local principal agricultural products, the logistics center mainly distributes the massed agricultural products.

Firstly, the center creates core advantage, organizes a large amount of agricultural products to export, attracts lots of famous, good, rare and special agricultural products from other provinces or cities to logistics center, and further consolidates core status. Secondly, the corresponding distribution center is built all over the country in the light of local advantages, resulting in distribution network covering country and strengthened brand advantage.

3.2.2 It is necessary to choose appropriate strategic cooperative partners for establishment and optimization of supply chain of agricultural products. Choosing appropriate cooperative partners is the basis of promoting efficiency of supply chain operation. Those partners have to possess their own core competitiveness, share complementary advantages on the basis of common ground of benefit with logistics center, and comprehend strategic thoughts of supply chain management. The strategic cooperative partners include significant partners, rural economic cooperative association and farmer broker for instance, and secondary partners, providers of agricultural materials and the third party logistics company which undertakes transportation business, for instance. Albeit different requirements for different kinds of partners, their main objectives are identical, namely, to minimize cost of supply chain and make significant partners engrossed in core business. To prevent industry manipulation, you can't choose only one partner within the same type of partners and 3 to 5 will be best. Consequently, they form a kind of cooperative competitive organization, but each party keeps its own independence of production and operation, which is beneficial for core enterprise to evaluate and supervise cooperative partners.

3.2.3 The contract is signed with cooperative partners^[7]. On the basis of equality and voluntariness, cooperative partners sign contract and fulfill obligation according to contract. Any of them will take responsibility if break the contract. Meanwhile, in the supply chain of agricultural products based on logistics center, a flexible contract should be practised, 2 to 4 years per cooperation cycle. According to risk, different cooperation contracts are formulated in different times. As for the problem of purchasing price, in addition to fulfilling the flexible contract, the core enterprise should implement reasonable rewards and punishment system.

3.2.4 The operating procedure of supply chain entails bringing in professional managerial talents of supply chain. According to the advanced managerial thoughts, the objective of drawing up a feasible plan and increasing investments of specific assets, in order to make all of the members of the chain have a definite common interest, can be realized by the whole chain, not any single enterprise. The cooperation of information transmission, technique communication, sales service and so on, should be conducted among cooperative association, rural households, logistics center of agricultural products, sales terminal, and the third party logistics enterprise, in order to realize the timely information transmission and consolidate information platform of supply chain. When purchasing agricultural products, close inspection and assortment are made by rural eco-

nomic cooperative association or farmer brokers. Apart from the possession of relevant inspection and quarantine equipments, logistics center should still yearly require cooperative association and farmer brokers to send the massed agricultural products to professional quality supervision and testing center for inspection. And the test report is also needed as an expression of prestige on quality.

3.2.5 The relationships of supply chain should be maintained. After establishment of supply chain, apart from developing core business with concentrated energy to obtain maximum profit in the process of operation, we should still maintain the relationship with cooperative partners. The details of maintenance are as follows: firstly, core enterprises organize the regular communication among cooperative partners for the purpose of strengthening mutual trust; secondly, communication and training center within logistics center is set up to instruct farmers in cultivation techniques regularly; thirdly, famers directly communicate with terminal sellers face to face, conducting to infinite matching between supply and demand; finally, permanent representatives are appointed to processing enterprises at any level in order that core procedures are supervised and inspected, ensuring quality security of agricultural products. Meanwhile, members of supply chain are to be appraised on performance aperiodically in order to decide whether they are qualified for cooperation as strategic cooperative partners in the next cooperation cycle.

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to study on new deep processing products of fragrant pear, to extend the industrial chain, to reduce market risk, and to promote the industrialization development of Korla Fragrant Pear.

3.3 Adopting various marketing forms and actively developing domestic and international markets

Based on the actual situation of Xinjiang, preferential policy of foreign trade for leading enterprises should be used by learning from the successful experiences in other regions. Enterprises should also set up marketing network at home and abroad, expand international market, help peasant households in the base to win the market, and form the industrialization pattern driven by leading enterprises. At the same time, government should encourage leading enterprises or industry associations to participate in the exposition, seminar, trade fair and promotion conference about special forest fruit products, establish fruit marketing group and long-term fixed points at home and abroad according to the idea of "network, chaining and large scale", improve network marketing, expand market share, actively cultivate agents, wholesaler and other intermediaries,

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introduce fruit auction system and establish futures market for Korla Fragrant Pear.

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