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Rural Logistics System Based on Rural Informatization

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Abstract Current status of rural informatization construction in China, including the relatively weak rural informatization, asymmetric market informatization, low level of information sharing, dispersedly allocated resources and no cross point among each other are analyzed. The importance of informatization in rural logistic system is introduced: firstly, decision making of logistics system plan is based on information. Secondly, improvement of the overall efficiency of logistics system is based on information. Thirdly, logistics transmission takes the Internet as the carrier. Necessity of rural logistics system is discussed from five aspects of increasing the employment of farmers, enhancing the income of farmers, reducing the blindness of agricultural production and circulation, sharing the risks of agricultural management, and promoting the rural economic restructuring. According to the above five steps, five countermeasures are posed in order to improve the rural logistics system. The countermeasures cover the aspects of deepening the information awareness of government, establishing a rural informatization system suited to the national condition of China, strengthening the information infrastructure in rural areas, promoting the integration of rural information resources and establishing the training system for agricultural information talents.

Key words Rural informatization, Logistics system, Information system, Resource, China

Rural logistics is the new growth point of profit in motivating the rural economic development in China and information is the core of modern logistics. At present, the informational construction of rural logistics is still at primary stage, far less than the need of the modern logistics service. Therefore, the study on the construction of rural logistics system based on rural information is of positive and practical significance.

1 Current status of the construction of rural informatization in China

The concept of "rural informatization" was introduced into China in 1980s. At present, the degree of rural informatization has improved significantly, which played an important role in promoting the development of agriculture and its industrialization. By the end of 2007, in China, administrative villages with telephone access take up 99.5%, villages and towns with internet access account for more than 97% and 92% of towns have access to broadband^[1]. However, in comparison with Japan, America and some other developed countries, the level of rural informatization in China is still poor^[2].

1.1 The infrastructure of informatization is relatively weak

As Table 1 indicated, by the end of 2003, quantity of information equipment owned by residents in rural areas was far less than by residents in urban area. Among the families with internet access, the families form the industries of agriculture, forestry, husbandry and fishery account for only 1.9%^[3]; by the end of 2007, the quantity of information equipment owned by families in rural areas has increased greatly, but compared with families in urban areas, the quantity is still lower^[4].

From 2003 to 2004, the total amount of internet users has increased by 14.50 million cross the country and the growth

rate is 15.4%, while internet users in rural areas has only increased by 0.11 million and the growth rate is 9.9%, far lower than the average growth rate^[5]. By the end of June 30, 2005, China has established more than 17 000 websites related to agriculture and 97% of areas (cities) and over 80% of county-level agricultural departments in China have established the agencies for information management and service. However, only 19% of information service can be provided through the Internet, only 0.8% of families can obtain market and technological information through the Internet, and less than 0.5% of rural families sell their agricultural products through the information provided by the Internet^[6].

Table 1 Quantity of information equipment per hundred urban and rural residents in China

Equipment	2003		2007	
	Town	Rural	Town	Rural
Telephone	95.41	49.04	81.5	76.5
Mobile phone	90.07	23.69	165.0	77.8
Color TV	130.50	67.86	137.8	94.4
Home computer			54.0	3.7

1.2 Asymmetric information As the result of the small scale operation and the geographically dispersed villages, the availability of communications, broadcasting, newspapers and network information in rural areas is poor and effective market information can not be obtained timely. According to the investigation conducted by China Agricultural University in 2005 on the six outskirts (counties) of Beijing city, among the channels from which farmers obtain information, neighbors and friends takes up 27%, newspapers, books and magazines account for 47%, TV broadcasting occupies 42%, network and CD-ROM hold only 11%^[7]. The investigation shows that few farmers get information from the Internet and enjoy the convenience brought by technological development.

1.3 Low degree of information sharing With the improve-

ment of rural infrastructure, farmers' access to information channels has become more and more diverse. 31 provincial agricultural departments, about 80% of regional and about 40% county agricultural departments have established local networks and websites of agricultural information services. Cross the nation, 41% of the rural information service stations in towns and villages have computers and the network is available as well^[8]. All of these efforts have improved the development of rural informatization in China, however, as the result of broad field related to agricultural information, wide coverage of information and the inability of agricultural sectors. A united information management mechanism can not be set up, so a large number of agricultural information can not be shared and the "isolated land of information" was formed.

In addition, networks of many agricultural sectors are tree structures, the contents of the information websites of central government and local governments are almost of the same and have nothing special. Each website only links to its own superior website, but never to other agricultural information websites; there is no data exchange mechanism among websites, the same information is repeated in different websites, the unique information of each website can not be shared and it is difficult to search the information.

1.4 Dispersed allocation of resources Although the agricultural networks system in China have been built and have basically covered the agriculture and rural economy in all aspects, the number of the websites takes up relatively lower proportion of the total amount of websites all over the country. By the end of December 31, 2005, there are 0.694 2 million websites in total throughout the country, but only 0.66% of these websites are agricultural websites. Meanwhile, the agricultural information service stations are mainly concentrated in big and medium cities and economically developed eastern regions, the gap between eastern and western areas as well as rural and urban areas is obvious. Even in the agricultural information service websites of the same place, the valuable information resources belong to different agricultural sectors, agricultural enterprise and relevant research institutions without points of intersection^[9].

2 The role of informatization played in modern logistics system

informatization is the core of modern logistics. With the further enhancement of the rural market, the amount of rural logistics has doubled, which increasingly highlights the importance of information to modern logistics system. In order to demonstrate the concept of modern logistics in rural logistics, the informational connotation of modern logistics must be explored.

2.1 The decision making of logistics system plan is based on information In logistics management activities, information collection and management plays a key role. During the process of logistics management, a large number of timely, accurate information and the feedback information applied to coordinate the operation of logistics system are required. Any omission and errors of information will directly affect the operational efficiency of logistics system, thereby affecting the economic efficiency of enterprises^[10].

2.2 The improvement of the overall effectiveness of logistics system is based on information The application of electronic data interchange system in modern logistics system allows the express and batch transmission of data among each sector of transportation, storage, loading and unloading, carrying, packaging and so on, especially the horizontal exchange of data among departments, means of transportation and various types of units. Thus the functions of logistics in each sector are linked and integrated effectively, giving play to the comprehensive advantages of modern logistics.

2.3 Logistics transmission takes internet as the carrier Internet is the greatest carrier in modern logistics activities, people can get various kinds of information of logistics goods through the Internet. The users only need to order and pay through the Internet, then the remaining work will be completed by the logistics distribution center of enterprises. In the meantime, some goods can be acquired by simple way, for instance, music, films, games, pictures, electronic books, software, teaching programs; goods stored in standard form of electronic information and so on can be downloaded directly from the Internet.

3 The necessity of establishing rural logistics system

3.1 The demand of increasing the employment of farmers There is a large number of surplus labor forces in rural areas, the phenomenon of unemployment and hidden unemployment is serious. The development of rural logistics is beneficial to the formation of new social division of labor as well as the exploration of new job opportunities; for instance, distributing, warehousing, sorting, repairing, market researching and so on, which is of great importance in solving the problem of surplus labor forces in rural areas and favorable to maintain the social stability of rural areas.

3.2 The demand of increasing the income of farmers Logistics is the basic activities in the field of agricultural production and circulation. At the same time of absorbing the surplus labor forces, rural logistics add the wage income to farmers. The most important point is that the logistics of agricultural products create the time and space value, especially the additional value of further processing. In return for the satisfactory service provided to the customers, the farmers will definitely create reasonable profits^[11].

3.3 The demand of reducing the blindness of agricultural production and circulation The development of modern rural logistics is helpful for reducing the blindness of agricultural production and circulation, inhibiting the agricultural means of production from unreasonable rise in price, ensuring the quality of agricultural means of production, lessening the loss of agricultural products and the fresh products in particular, improving the velocity of the circulation of agricultural products and cutting down the cost of agricultural logistics through reducing the sectors of circulation and providing specialized agricultural logistics service.

3.4 The demand of sharing the risks of agricultural management The construction of rural logistics system is benefi-

cial to promote the formation of strategic alliances of farmers, agricultural enterprises and their raw material suppliers, processors and distributors of agricultural products. The logistics alliance takes the third-party logistics sector as a core and many small and medium enterprises form the incentive logistics partnership with mutual trust and sharing risks and profits, so that the extensive logistics can acquire scale economy and logistics efficiency^[12].

3.5 The demand of promoting the rural economic restructuring The construction of rural logistics system or the reorganization of the existing enterprises with the feature of isolation and logistics (for example the company of fertilizer, pesticide, means of production and agricultural trade) are capable of increasing the proportion of tertiary industry in rural areas. The newly emerged profit-oriented enterprises in rural areas will inevitably lead to information flow, capital flow and the organic integration of related services. Meanwhile, they will motivate the formation and development of the industries of transportation, conveyance, oil supply, repair and replacement and food services, thus promoting the prosperity of the fields with new demands^[12].

4 The countermeasures of the improvement of rural logistic system based on informatization

4.1 The deepening of the information awareness of government In order to accelerate the construction of rural logistics informatization, the government must fully play its function of directing. Governments at all levels and agricultural sectors must fully understand the significance of promoting the construction of modern rural logistics informatization from a strategic perspective, taking the construction of rural logistics informatization as a major strategic measure for promoting the strategic rearrangement of agriculture and agricultural economic structure, laying stress on the building of relevant procedural laws and regulations, directing the development of agriculture and rural areas under the principles of "informational guide, scientific decision-making, macro-adjustment, micro-invigorant". The "Multiplication Plan" of Ministry of Agriculture, which doubles the loan interest subsidy so as to support the application of various types of appropriate agricultural information and technology is the recent market growthpoint.

4.2 The establishment of appropriate rural informatization system The construction of rural informatization can rely on rural groups only rather than completely on the urban patterns. The reality of "urban-rural dual structure" put forward at the Sixteenth National Congress of the Communist Party of China must be considered profoundly so as to adopt measures suited to the local conditions to establish the modern rural informatization system.

4.3 The strengthening of the information infrastructure in rural areas Sound construction of infrastructure is the foundation for efficient operation of agricultural logistics. Firstly, the nation continuously improves the construction of rural public information infrastructure and information service through providing financial support. Secondly, the social capital is encouraged and guided into the construction of rural informatization.

In particular, the functions of non-government organizations must be bought into play in guiding the society to show solicitude for the rural informatization. Thirdly, the development of service stations of other forms must be encouraged as well, such as the cooperative groups, chain stores and so on, besides, some additional services can also be provided by combining with some self-operation business.

4.4 The integration of rural information resources The key to integrating information resources is the establishment of cross-region and cross-border information sharing mechanism. Firstly, the information resources should be integrated. A united platform should be set up to provide various kinds of services for farmers, for example, portal-like integration, platform, software integration and so on. Secondly, the service resources should be integrated. There are many channels related to agricultural information services, including the information resources and service channels of the Ministry of Agriculture in terms of information networks and the spreading of agricultural technology, the ongoing experimental education for party members of Central Organization Department is also included. Various kinds of information services and stations should be integrated, thus the comprehensive effects of service can be bought into play.

4.5 The establishment of the training system of agricultural information and technology The stumbling block of accelerating the construction of rural logistics system is the scarcity of resources. Especially in the rural areas, many farmers do not have high cultural quality, knowing little about the modern communication technology, which leads to the lack of carrier for spreading and applying the rural informatization technology. Therefore, the establishment and refinement of the training system for agricultural information and technology talents and the construction of the agricultural information team are needed; relevant universities should be motivated and guided to set up majors in accordance with the demand of market so as to speed up the training of talents; the cooperation of the universities and the enterprises, industrial associations should be conducted to organize various kinds of training courses and provide in-service training; the international communication and cooperation should be enforced, including employ the foreign experts to join the construction of domestic agricultural logistics system to improve the level of the domestic specialized persons over communication and cooperation; the training of talents can be realized through the form of long-distance training, on-line training and so on.

5 Conclusions

At present, the informational construction of rural logistics is still at primary stage, the overall level of logistics informatization is low and far less than the need of the modern logistics service. In order to develop the rural logistics, the construction of rural informatization must be promoted. At the present stage, the improvement of the construction of agricultural informational infrastructure and the supply of public information

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put great effort in developing recycling economy. Dealing well with the problems of environment protection and projects supervision, formulating local regulations controlling the emission of waste and putting into practice of the controlling of CO₂ emission and qualification of waste discharge to build the recycling economy systems in Liuzhou. It should make efforts to solve the problems of industrial development and environmental protection.

3.3 Accelerating the industrialization and commercialization processes of tourism cities Guilin is a city famous worldwide for tourism in Guangxi, which is the pillar industry of Guilin. For a long time, the strategy made by Guilin that having agriculture as the basis and tourism as the leading contributes a lot in promoting the development of economy in Guilin. Therefore, the development of economy of Guilin tops in the list. While the unitariness of industrial structures and the slow development of industries hinder the further development of Guilin to some degree. Guilin City should make full use of the present national Western Development Strategy, in names of accelerating the process of urbanization and industrialization to ask for more beneficial policies, capital and technic services. Guilin should take advantages of its good location and large marketing supply and needs to promote the process of industrialization and urbanization and shape Guilin as an export-oriented industrial and commercial city.

3.4 Promoting the economic development of backward areas Yulin City, Wuzhou City, Hechi City, Qinzhou City, Chongzuo City and other cities are located in remote areas, of which transportation is underdeveloped, backward in industry, dominated by agriculture, the per capita GDP is generally low, the overall economic development level is very low. These cities are in a weak link whether in terms of infrastructure, tech-

nology and education investment, the three major industries development, urbanization, or in terms of enhancing income and living standards of people. Therefore, they need to accelerate the education and training and investment, promote the adjustment of industrial structure, pay attention to the development of regional characteristic economy, steadily push forward the process of urbanization, increase incomes of urban and rural residents based on the development of production.

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service for farmers is the key to constructing the rural informatization.

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