Agricultural and Rural Informatization Construction in China

Mao ZHANG *

Department of Business and Trade, Southwest University Rongchang Campus, Chongqing 402460, China

Abstract   Currently, faced with the rapid development of information technology and increasing competition of the global economy, many countries have been very concerned about the issues of informatization concerning agriculture and rural areas. The level of informatization in the developed countries has been universally high, and some developing countries are also highly concerned about how to actively promote the rural market information service. With the increasing level of China's economic development, agriculture and rural economy have placed a growing demand on informatization. From the overall perspective of agricultural and rural informatization, this paper gives a detailed analysis of current situation, goals, tasks and constraints about agricultural and rural informatization construction, and finally makes the corresponding recommendations.

Key words   Agriculture, Rural areas, Informatization

1   Introduction

Over the years, the central and local governments have laid excessive emphasis on investment in urban informatization construction, but there is a shortage of investments in agricultural and rural informatization construction, so that the infrastructure for agricultural and rural informatization is weak. There are some problems in China's agricultural and rural informatization such as imperfect agricultural and rural information network and communication system, shortage of funds for research and development of information technology and backward information security facility and information services. In addition, the informatization input is uneven in various regions, and the input is mainly channeled to the eastern coastal areas. The construction of agricultural information resource database is now still in its infancy and agricultural information resource is not well developed and utilized. The processing, analysis and use of agricultural information is inadequate, and the fostering of agricultural information market is slow. Many rural areas still lack perfect information product market, agricultural information service system is imperfect and information services means is backward. Farmers have insufficient access to information, and the information receiving mode falls behind. China attaches insufficient importance to the cultivation of agricultural information talents, there is a shortage of agricultural information talents, and the training mechanisms are inadequate. There are few grass-roots agricultural information management services personnel, and the knowledge structure is irrational, so that the construction and update of agricultural information database are slow. As of the end of 2006, there were only 220000 rural information officers in China, occupying a small proportion in the farming population. Mean-

while, due to low education level, weak information awareness and low information resource use enthusiasm of farmers who lack knowledge and ability to effectively use information technology, the agricultural information dissemination efficiency is not high, and the agricultural production blindness is serious. The agricultural informatization legislation and institution construction lags behind, and the agricultural informatization construction lacks legal and institutional guarantee, which makes it impossible to achieve standardized, institutionalized and legalized agricultural information collection, collation, screening and dissemination. A lot of agricultural information has the property of public goods, the consumers have " free rider" mentality and there is transaction cost. The spontaneous information market is difficult to effectively allocate agricultural information resources, and the government needs to make information investment, intervene in market information and provide timely, comprehensive and accurate agricultural information services for farmers. However, the Chinese government does not play a role in adequately leading agricultural informatization construction, and it never forms an effective subsidizing, supporting and regulating mechanism for agricultural information service organizations. The agricultural information products are not well developed and not timely promoted and applied, and the information market competition is disorderly. At present, various regions of China develop agricultural databases in accordance with their own standard, and there is no unified national agricultural information standard, which can not meet the data sharing needs in the era of network.

2   Goals and tasks of agricultural and rural informatization construction in China

(ⅰ) Using informatization to improve the facility and equipment level, promote agricultural science and technology, and achieve agricultural modernization. It is necessary to actively promote the application of global satellite positioning systems, geographic information systems and other technologies in agricultural production and management to improve the digital and intelligent level of agri-

cultural production facilities and equipments; establish farm machinery supervision service information platform to strengthen supervision on farm machinery safety and improve the level of farm machinery services; establish major animal disease surveillance and emergency response information system, animal identification and disease traceability information system and feed safety management information system; encourage agricultural e-commerce practice and actively build agricultural production and marketing information service system. (ii) Using informatization to train new farmers, enrich cultural life in rural areas and promote harmonious development in rural areas. It is necessary to strengthen farmer-oriented agricultural skill and employment training and use modern information technology to cultivate educated and skilled new farmers; rely on agricultural and rural informatization construction achievements to improve the implementation efficiency and monitoring capacity of various policies for supporting agriculture and benefiting farmers; making radio and television programs and electronic publications popular with farmers to enrich cultural life in rural areas; actively establish rural community web pages to promote the exchange of information. (iii) Using informatization to improve the rural market system. It is necessary to improve national agricultural product wholesale market information network and rural market supply and demand information system, and establish the international agricultural market information service system; cooperate with the relevant departments to vigorously promote the development of rural value-added network services, electronic banking, chain management, professional information services and other new services; develop and apply the quality and safety supervision information system for agricultural products and agricultural production materials, and use information technology tools to enhance the quality and safety supervision capacity of agricultural products and agricultural production materials. (iv) Using informatization to promote rural e-government services for rural home construction. It is necessary to establish village affairs information network demonstration platform to publish the information about rural finance, elections, fixed assets, land contract and family planning, and establish the information channel to protect farmers' right to know; set up rural government E-mail to broaden the channels for the expression of public opinion in rural areas and increase their ability to participate in politics; apply information technology and develop rural planning decision-making system to conduct systematic planning of the village appearance according to local resource endowments and socio-economic situation and develop rural construction programs based on the local characteristics. (v) Establishing and improving rural two-level informatization service organizations. It is necessary to build rural information service stations, strengthen the functions of rural information service stations, innovate upon service model of rural information service stations, and actively encourage various rural information service stations to use computer networks, radio, television, telephone and other information communication media to carry out diversified information services for farmers.

3 Constraints on agricultural and rural informatization construction in China

3. 1 Informatization demand (i) Farmers' sensitivity to information and ability to use information are not strong. Currently, some young labor forces in rural areas work in local firms, and some choose to be migrant workers. The elderly and poorly educated women are truly engaged in agricultural production. On the whole, farmers' educational level is not high and farmers' sensitivity to information is low. Many farmers still lack knowledge about the role of information in the new situation and have poor ability to obtain and exchange information. (ii) Farmers' income is low and they invest little in information tools. Farmers' income is not high, so they invest little in communications facilities and information. As for several types of information receiving tools, the popularization rate of TV and telephone is high but the computers are rarely used. Lack of equipment objectively restricts farmers' full use of the existing information service resources. (iii) The degree of organization of farmers is not high, production scale is small, and the information demand is dispersed. In many villages, the degree of organization of farmers is low, leading agricultural products are not prominent, and the farmers' production and operation scale is small. There is multifarious demand for information, and the information services are at low level.

3. 2 Information supply (i) There is a shortage of rural information service personnel. Firstly, in terms of number, the proportion of number of information staff to number of rural labor needing service is very small; secondly, with deepening adjustment of agricultural structure, it places a diverse demand on the agricultural technology, while existing agricultural technicians are difficult to adapt to new and complex needs; thirdly, the rural information service personnel should not only be familiar with agricultural expertise, but also master the knowledge about computer operation and network application knowledge. Currently, these inter-disciplinary talents are very scarce, especially in towns and villages. (ii) It lacks information content and information quality is not high. It mainly lacks market information content. For the market analysis information obtained from various sources, it lacks the predictive information about future trends, and it is difficult to guide farmers to make scientific production decisions. In addition, the information quality is not high, and the information is often untimely and inaccurate. Farmers lack information screening capacity, so they are often taken in and suffer losses. (iii) The grass-roots information service capacity is unbalanced. At present, the rural information service is not developed evenly. The problems of imperfect information service system and inefficient network extension are still quite prominent in some regions. The information services provided by television, radio, newspapers and other media are mainly one-to-many services, and the service effect is not very obvious. (iv) There is a shortage of funds. The constraints of funds for the information service system construction in various regions are obvious. Due to shortage of funds, it can not be equipped with enough advanced hardware facilities, the infor-

mation collection and processing means is backward, and the information service level is still low. The shortage of funds is more prominent in township-level and village-level services.

4 Recommendations

(ⅰ) Including informatization cost in public expenditure. In the current development status of China's rural areas, the main body of agricultural information service system construction should be all levels of government, and it should not place one-sided emphasis on revenue-generating function of information services. In addition, to avoid further widening gap between the developed and underdeveloped regions arising from the development of informatization, the central government should put more investments in the central and western regions, and accelerate the pace of informatization construction in the central and western underdeveloped regions. (ⅱ) Developing and establishing the measurement and analysis system for the level of agricultural and rural informatization. It is necessary to focus on the selection of calculation methods for the level of informatization, learn from the international advanced measuring methods for the level of informatization, and focus on the analysis of agricultural and rural informatization level and forecasts for the future. According to the informatization measuring results, we can analyze the overall trend and changes of informatization, and accurately forecast the informatization trends. (ⅲ) Establishing and improving informatization regulations and standards. It is necessary to accelerate research and formulation of relevant hardware and software technical standards, data standards, information collection and processing standards, and focus on the development of information collection, storage, processing, treatment standards and information service standards, and accel-

erate the development of agricultural information classification and coding standards. (ⅳ) Accelerating the integration of information resources and technology development. It is necessary to actively encourage scientific research departments, research institutions and companies to develop cheap, simple and practical information technology products, to provide technical support and protection for agricultural and rural informatization. (ⅴ) Strengthening the talent team building. It is necessary to build a good research team and strengthen information technology innovation, to provide strong technical support. It is also necessary to build a practical and efficient service team and strengthen information service model innovation, to improve the applicability and scientificity of information services for rural areas. (ⅵ) Strengthening information-user training. It is necessary to increase training of all aspects of knowledge, to improve the overall quality of the information services team, enhance the grass-roots information service staff's information identification and analysis capability, and help farmers to obtain true, reliable and useful information. At the same time, it is also necessary to increase education and training for farmers to improve their scientific and cultural quality, foster their informatization awareness, and guide their consumption of information. (ⅶ) Enhancing the level and function of information services and application system. Information services should take into account the actual situation of rural socio-economic development, requirements of the development of modern agriculture, existing basic conditions for informatization, and rural cooperative economy and organizations. Application systems must be prepared to coordinate planning, prevent redundant construction and meet the needs of farmers.

regardless of over-all interest, and multi-department management. Besides, it is recommended to bring into play function of government in making clear of "enterprise as major party and government as service supplier". Specifically, government should constantly improve circulation laws and regulations of agricultural products, reinforce infrastructure construction, set up agricultural product logistics platform, establish the third party information exchange center for agricultural products, and establish agricultural information platform.

4.2 Actively cultivating core supply chain enterprises It is recommended to cultivate agricultural enterprises with certain scale, high prestige and appeal, good commercial reputation, and high integration ability. Alternatively, it is recommended to organize competent supply chain organizers and encourage them to establish unified supply chain management platform. This is a fundamental guarantee for construction and effective operation of modern agricultural product supply chain.

4.3 Enhancing information construction for all links in the supply chain Firstly, it is recommended to accelerate con-

struction of logistics information system, to realize supply chain information integration. Agricultural enterprises should actively develop information management system according to demands of development, make effort to realize integration of supply chain information, and raise the response speed, to ensure smooth operation of various processes. Secondly, it is recommended to establish ecommerce agricultural public information platform. Government department should actively establish modern agricultural product logistic information platform, bring into play advantages of government public information network in reliability and high prestige, energetically develop e-commerce, and completely transform the information system. Finally, it is recommended to connect farmers, suppliers, whole sellers, retailing terminals, and customers through network platform and information technology, to realize real time tracing, effective control, and whole-process management of all links of agricultural product logistics, and realize resource and information sharing.