

The Main Research Tropical Agricultural Information Technology and Internet of Things Technology of Agriculture

Chinese Rural Grassroots Integrated Information Service Model and System Discussion

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Abstract: Lack of grass-root agricultural information, the serious influence farmers with production decision-making ability, constructing basic-level agricultural information service model suitable to China's national conditions the important measure to realize the peasants' income. In this paper, the basic organization of agricultural information service mode, service mode, transmission channel, interest distribution mechanism and support security system in many ways, such as the system, to adjust measures to local conditions to build all over the country in accordance with local basic-level agricultural information service mode.

1 INTRODUCTION

Our country farmers scattered, business small, lack of access to information on its own capacity and financial resources, and most of the farmers' cultural level is low, the ability to obtain market changes and forecast of agricultural products is low, lagging behind. Rural economy in our country from the simply resources-constraints into the both market and resources, farmers changed by single workers into both producers and decision-makers. In recent years, the state of agricultural information service more and more attention, raise rural information technology to benefit an innovative project under the new situation of farmers, it is to solve the "three rural" issues, providing timely guidance for the rural economy and agricultural production (Bao Shi tai, Li Ru xin, Liu Li, 2010), promote agricultural production efficiency. Rural integrated information service station in China's current comprehensive rural information technology base and implementation choices. Integrated rural information service stations may open a window leading to the outside world for the farmers.

2 SITUATION ANALYSIS OF RURAL INFORMATION SERVICE MODEL

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2.1 Domestic Situation

About the provincial agricultural information service model in our country, study more, as I have the rapid development of agricultural information, establish various forms of agricultural information service mode, combined with their actual situation, around the formation of the combination of traditional and modern information service mode (Zhao Jun ye, 2006).

To promote agriculture in Ningxia rural information as the construction of new countryside to carry out a major project. "Ningxia Model" is a classic example of the rural information construction in our china. Through the platform, the information highway, agriculture, agricultural database from five aspects, such as call center, information terminals to achieve resource sharing, connectivity, communication network coverage in ningxia district, sharing the information repository, break information monopoly, to establish a unified agricultural call center, promote the effective docking of agricultural science and technology and capital.

Jilin province countryside information service mode, with the fixed telephone, mobile phone, broadband and Internet business, the 12316 platform, voice platform, network platform and media platform product portfolio to form the integrated rural comprehensive service platform. While the expert team, unified planning, construction and management. Cooperation with telecom operators to obtain preferential information services costs, the realization of farmers through voice communication, text messages interactive approach to agricultural production and business information services.

Sichuan due to the large population, the special geographical position, therefore in the process of build rural information service, through "three nets" mode, basic network, service network, information network, to solve the farmers information services. Basic network is solve the problem of farmers through playing, the farmers with the good service is to solve the problem, information network is to help farmers get rich information.

Zhejiang province adopted the provincial, city and county levels linkage mode, use of Internet technology and the existing agricultural extension service system and network equipment operators, enable farmers to use computer and mobile phone text messages to network communication platform. Use of farmer E-mail to promote the development of agricultural e-commerce, solves the information service of "the last kilometer" problem, to expand the application range of agricultural information.

Hebei comprehensive utilization of the Internet, television, voice calls, SMS, radio, CD, newspapers and other communication way, solve the problem of the agriculture information can smooth delivery. Through the present situation of agricultural information service in China can be seen that the main characteristics of agricultural information service in China: 1 The agriculture information service organization system is gradually perfect; 2 rural information service infrastructure construction has made significant progress; 3 the rural

information service platform remind rapid development; 4 effective utilization of rural information resources development; 5 Agricultural science and technology information service mode diversification development; 6 rural information service revenue growing (Xu Yuan hao, 2012).

2.2 Overseas Situation

American farmers accounted for 1.8% on of the population, but the intensity of the rural information is higher than the industry. Characteristics of American agricultural information service model: One, the rural information service content is extensive. Including agricultural economy information, information of agricultural science and technology, agricultural resources and agricultural related social information. The second is the advanced agricultural information technology (Zheng Guang cui, Wang Lu yan, Li Dao liang, 2012). The US agriculture uses the world's most advanced computer technology and communication technology. 3 The rural informationization system run effectively. Four, establishment of appropriate market economic characteristics of the US market to attract talent and effective incentive mechanism of innovation. Fifth, the establishment of a sound rural informatization regulations.

3 RURAL COMPREHENSIVE INFORMATION SERVICE MODEL ANALYSIS

3.1 Rural Comprehensive Information Service Stations Function

Rural comprehensive information service station with three standard system and four big functions, i.e., the software and hardware standard, management standards, service standards and information release and query function, information service proxy function, information application activity organization, daily maintenance.

In particular the rural informatization integrated service features include six aspects:

- Open and release of information. Information disclosure and open service object has two kinds, one kind is a programmatic public and release; one is a kind of issuing information.
- Information consulting and query. Information consultation refers to provide timely information, face to face information refers to

the user accesses please check or to service point self-service query.

- Establishment and maintenance of information resources. Information of sorting, recorded, the summary output, etc.
- Application guidelines Information Resources. The function must rely on individuals to complete; Second, through the website, the information demanders completed independently.
- Information transfer. Between government departments and users, to transfer information between users and user.

Five auxiliary function: auxiliary functions of government information statistics, auxiliary party remote education, auxiliary public service platform, auxiliary farmers gathering information online training function, auxiliary village affairs management.

Four agent function: postal business agent: the agent letter, parcel, etc. Telephone, mobile phone top-up, banking business agent.

3.2 Rural Comprehensive Information Service System

Rural comprehensive information service station is an important part of rural comprehensive information service system, it is interconnected with other parts contact each other and combined effect. Rural comprehensive information service system including service, website construction and management of construction management, construction and management of public service platform and information officer training management. Among them: service station construction including house construction, house decoration, and facilities configuration; Website system, village comprehensive rural information service is a comprehensive information service station electronic window, it is an important part in rural users access to information services; Organization and management system, management system is overall rural information service function of the steering wheel. Due to the complexity of the rural comprehensive information service station construction design content, many department, need strong management institutions to strengthen management, at the same time need reasonable department coordination mechanism, including responsibility division, division of tasks, financing, supervision, evaluation and incentive and so on several aspects; Public service support system, information service is the main function of rural comprehensive information service, quality and quantity of information is a key factor in determining

the quality of information service ;Feedback team system, the researcher is service station operators, is the main part of the information service, the researcher team construction including the researcher's selection, training, examination, certification, and the researcher incentive mechanism construction.

4 RURAL COMPREHENSIVE INFORMATION SERVICE MODELS CLASSIFICATION

4.1 According to the Pattern Classification Technology

- Traditional technology mode; The Midwest and inaccessible mountainous countryside in our country, now still is given priority to with the traditional model. The traditional technology mode usually refers to the use of newspapers, magazines, books, blackboard, cable radio, telephone and television and other media to provide information service mode of a technology.
- "Three nets unite" technology model: In the process of rural information service, three net separation into information resources sharing, Three nets separated is the biggest obstacle of information exchange and information service process, and three nets unite will greatly save the user's network construction investment, the solution to the rural information service in the network data transmission is important way. The so-called "three nets unite" refers to the telecommunication network, computer Internet, radio and television transmission network resources integration.
- "Three-electron unite" technology model: The organic combination of phone, TV, computer, connectivity, integrated, rural information service. At present, the ministry of agriculture to promote "Three-electron unite" technology model as an important way of rural information service, applicable to the network infrastructure condition good, user information demand urgently, and information technology is relatively developed area or the crowd.
- "Heaven and earth unite" technology model: The information transmitted by satellite and satellite ground stations. This model information wide coverage, low operating

costs, not restricted by time. Therefore, "Heaven and earth unite technology mainly for the rural transmit high quality teaching resources, education training, effectively promote the balanced development of urban and rural education and improve the comprehensive quality of peasants.

- "3 G mobile phone" technology model: Use of 3 g mobile phone to voice communications and multimedia communication combination of a new generation of mobile communication system. The third generation mobile technology information services varied, including images, voice, web browsing, telephone meetings, information query, and other information services.

4.2 Source of Farmers Access to Information Service Classification

- Government department + Technology Demonstration + Ombudsman mode: Mainly through the establishment of agricultural technology demonstration parks drive the spread of agricultural technology, implementation of projects or to promote Village dispatching ombudsman drive information technology services, as well as the temporary Village information service of science and technology demonstration driving. This pattern is generally applicable to the widely used all over me (Service process as shown in figure 1).

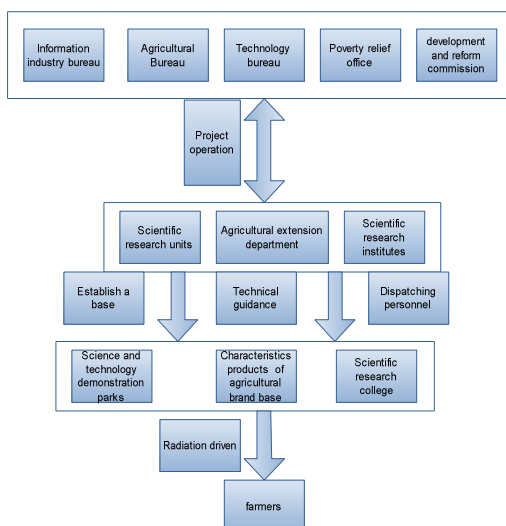


Figure 1: Government department + Technology Demonstration + Ombudsman mode.

- Government department+ Grassroots service station+ researcher mode: The model established in county, township and village information service station or send a messenger, accesses from farm to technical training, Internet, newspapers, magazines, mobile phone text messages, television broadcast information channels, such as mobile agricultural product supply and demand information, planting techniques, pest control technology, or employment information, etc., through expert on-site solution, the hotline consulting, journals, newsletters, publicity column for the multiple channels to convey information. The model by the national department of agriculture investment, and establish relevant system to ensure a messenger service performance (Service process as shown in figure 2).

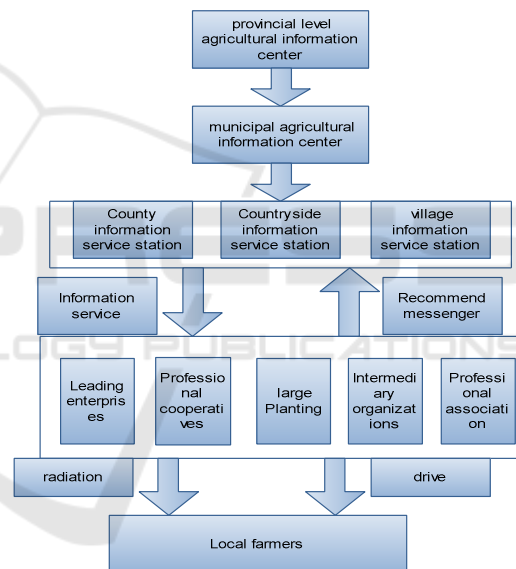


Figure 2: Government department+ Grassroots service station+ researcher mode.

- Social dominant+Cooperative+Professional association mode: The model with the help of industry led by the competent department of farmer cooperative organization, relying on the government or the competent department of agriculture scientific research colleges and universities of technology, information and capital and other resources, to provide customise services for cooperation organization member, including agricultural technology and market information, etc, through the radiating and driving around the vast number of farmers' income to become

rich to members. (Service process as shown in figure 3).

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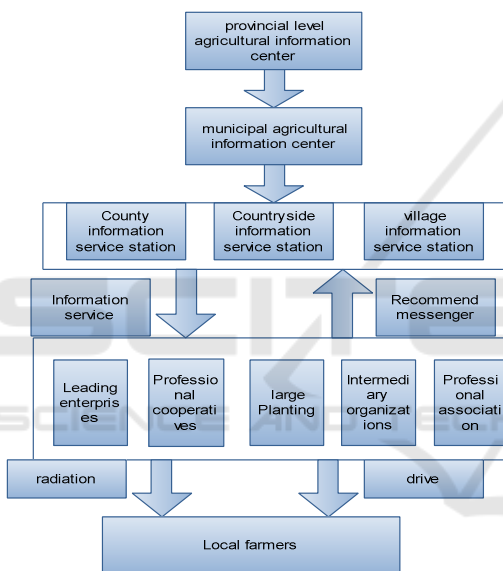


Figure 3: Government department+ Grassroots service station+ researcher mode.

- Social dominant + Leading enterprises + Farmers mode: The model mainly depends on the agriculture leading enterprise, is responsible for the processing of agricultural products, logistics, sales, brand publicity, joint farmers' professional cooperative economy organizations at the same time, in the process of production on-site to guide agricultural production, and provide technical services for farmers, farmers directly to agricultural production and management, meet the demand of leading enterprises of raw materials. Leading enterprises and farmers signed order production agreement, determine the price protection, agricultural products sales again

by association for price negotiations, farmers and enterprises is higher than the market price (Service process as shown in figure 4).

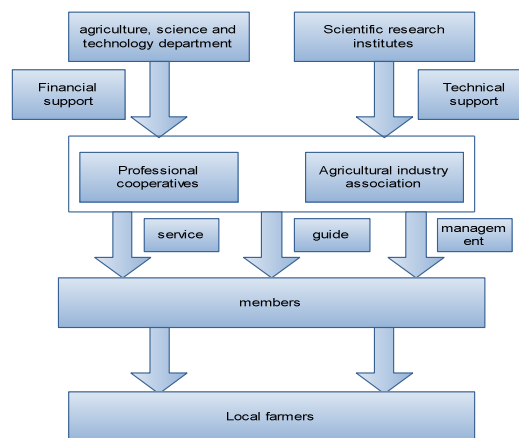


Figure 4: Social dominant+Cooperative+Professional association mode.

- Social dominant + Wholesale market driven model: This pattern with the aid of wholesale markets for agricultural products, mainly in the sales sales of agricultural products for the customers in large to small, small user market sales of the wholesale market for agricultural products information is transmitted to the broad masses of consumers. Wholesale markets for agricultural products generally established by a government or big enterprises, information is equipped with modern facilities, such as large-screen scroll the prices of all kinds of agricultural products market, as well as the relevant state policies and regulations and so on (Service process as shown in figure 5).

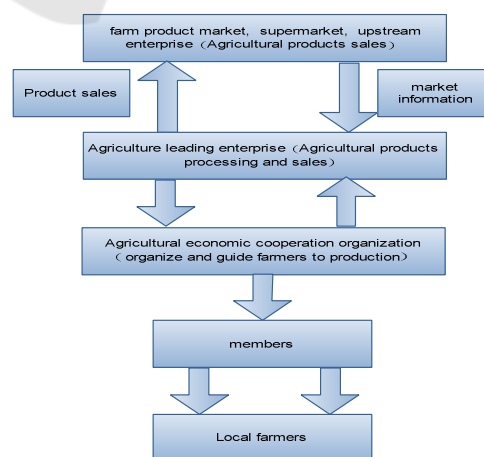


Figure 5: Social dominant + Leading enterprises + Farmers mode.

- Network information self-help mode: The pattern is mainly established by a government department or agricultural enterprise related agricultural website, for the bridge of communication between enterprises and farmers. In this mode, the information provider issued by information services system enterprise or company information, farmers or agricultural enterprises obtain beneficial to their information through the network, with the popularization of computer and network in the countryside, the development of this pattern is worth looking forward (Service process as shown in figure 6).

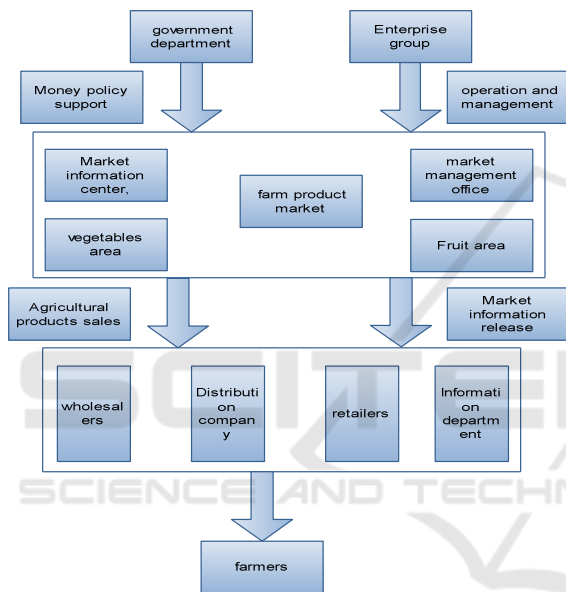


Figure 6: Social dominant + Wholesale market driven model.

5 CONCLUSIONS

In rural grassroots, from the economic structure, natural conditions, planting crop type, crop planting way to has the characteristic of around, so all the standard of peasants' income, ideology, culture, ability to accept and identify new things and ego to protect consciousness, etc, the difference is very big. So build grass-roots agricultural information service pattern should follow the following: 1. According to our country the truth and the situation of a country, cannot copy foreign experience, only toward the road of low cost;2 more Chinese farmers, therefore, grass-roots agricultural information service model in the final analysis, or for the purpose of increasing

farmers' income, only farmers' benefits, to improve the farmers use information service, from passive to active accept information access to information, but also let the agriculture information service pattern to a virtuous cycle;3 the peasant economic strength is weak, cannot afford all information service cost, therefore, the government should provide funding and technical support. Countries also should actively coordinate various departments, enterprises and farmers, the interests of the relationship between scientific research institutions, 4 along with our country economy has been rapid development, market operation is the trend of agricultural information service, always rely on the government to support the works of sustainability is poor, we should actively guide and give full play to the role of the peasant associations and enterprises, to achieve the effect of various benefits.

REFERENCES

- Bao Shi tai, LI Ru xin, LIU Li, models of sustainable business for rural information service, Guangdong Agricultural Sciences, vol.11, pp.289-294, Oct.2010
- Zhao Jun ye, Characteristics and Mode Option of Rural Information Service in China, Journal of Library and Information Sciences in Agriculture, vol.18, pp.26-29, Nov.2006
- Xu Yuan hao, Study on Intergrated Agricultural Information Service System Based on Ontology, Journal of Anhui Agri, vol.40, pp.1887-1888, 2012
- Zheng Guang cui, Wang Lu yan, Li Dao liang, Thoughts the Operational Modes of Grass-root Agricultural Information Services, Journal of Library and Information Sciences in Agriculture, vol.17, pp194-197, Dec.2012

APPENDIX

National 12th fiveyear technology based plan topic from ministry of science and technology of the people's republic of China named the design and application of Cloud-based service management system for rural sci-tech information service station (2013BAD15B01-3).