The study and the application on the Chinese characteristic agriculture production, supplies and sales (APSS) information service pattern

Zheng yelu¹, Han weiwei¹, Lize¹ and Niuxiaoguo¹
1 Sci-tech Information Institute, GAAS, Guangzhou, China, zhengyelu@caitian.cn.

Abstract

Aiming to the present situation and the existence problems of the characteristic agriculture production management, the agricultural material supplies and the agricultural product sales of the south China. This article takes the characteristic agriculture of the Guangdong province as representative, Enumerates the key factors of the characteristic agriculture production, supplies and sales in details, through the analysis and the study on the key factors and the relation of each factors, basing on the combination of the Chinese national condition and the local character of the agriculture, and with the aid of the modern information technological such as the Web2.0, Web service and so on, the article propose that a set of “the government supervises, the scientific research support, the enterprise operation, the rural civilians benefit” as the characteristic agriculture production, supplies and sales information service pattern, designed and developed the agricultural production, supplies and sales information service platform, and further introduces the application effect of the platform and the next research direction.

Keywords: agriculture production, supplies and sales (APSS); information; service pattern

1 Introduction

Since long, there is the “dissymmetry” problem of the information interactive in China's agriculture production, supplies and sales activity. One of the concrete representations is the dissymmetry in agriculture markets. The information could not be completely exchanged within the producers, the transporters and the processors. As the supervisor and decision makers, the government could not correctly establish the policies and measures which meet practical needs to guide the farmers because of lack of information. It is difficult for the farmers to adjust the planting structure and output quantity in time according to the market demand. The phenomenon of lack of information interaction leads to agricultural product shortage and the surplus appearing alternately, and the most direct reaction of market is that the production price soars and slumps.

Along with the fast development of the computer technology, the newest achievement of the information technology already be used on the agricultural production, management, processing, selling as well as the information gaining and processing. The agricultural informationization has settled foundation to accelerat the transformation of the traditional farming, to raise the decisions level of the agricultural production, management and operation, and also to promot the agriculture development with continually, stably and highly effective. Therefore, the goal of this article is to propose the agricultural production, supplies and sales (APSS) information service pattern which utilize the newest informationization
technology. The information service which contains the decision information of the characteristic agriculture production, technology and the supply-demand in the production chain of the agriculture can support the enterprise and the farmer's operative activity. This research take the demands of the APSS information as the research foundation, utilizes pattern analytic method which based on the application, summarizes the basic relations of the essential factors in the APSS information service, and use the present information technology to realize the information integration management information service pattern.

2 Agricultural production, supplies and sales

2.1 The Present situation analysis of the APSS

Through the investigation and study on the present APSS activity of Guangdong Province, we find that the “dissymmetry” in the information flow block the traditional APSS activity. The traditional APSS information circulation route is shown in Figure 1. First, the government and the scientific research institution supply a great deal of policy information and technology information to the enterprise and the peasant household, but lacks of the way to obtain information which needed badly; Second, the financial organizations might be short of exchange information in the aspects of policy information, enterprise operating information and farmer credit evaluation information when they offer loans to production organizations, under the traditional cooperation mode “leading enterprises + farmers”. In summary, The Guangdong APSS activity lacks one kind of the effective circulation information service mechanism to combine the organization which contains the financial organ, the peasant household, the enterprise, the government, the agricultural science and technology development institution, and to urges the information to flow reasonable and rapid in each part of the system.

2.2 Service pattern statement

Based on the careful analysis on the present situation, we separate the APSS activity into the pre-produces, in-produces and the post-produces three stages according to the time process.
In the three stages of the APSS activity, the agricultural production activity is easy to be informed by the APSS parten. The APSS service pattern will assist the local industry to build an electronic management system of agricultural material supplies and product sales, which is based on the agricultural user community. The APSS parten will also helps the local organization to develop the on-line trade and electronic commerce of the characteristic agricultural product.

Therefore, the core goal of the APSS service pattern is that: The government supervises, the scientific research supports, the enterprise operates, and the rural civilians benefit. Under the government's influence and impetus, The APSS service pattern will achieves the object of cultivating the Leading enterprise, leading each link to realize the 3 stages of the APSS activity interaction, benefiting each part of the system, and coordinating the development of the market.

3 The realization of the Information service pattern

3.1 Basic element

The basic elements of the complete APSS service pattern should include five entities as follows: leading enterprises, farmers, financial organizations, apartments supervised by government and agricultural scientific research institutions.

(1) The Leading enterprise: Provides the farmers with the agricultural material and the guarantee of purchasing the qualified agricultural product, provides the the money to farmers who needs the fund to buy the agricultural materials and the natural disaster insurance, set up chain service point in all villages to provide agricultural product buying and selling, processing, promotion, distribution, supplies and service.;

(2) The farmer: exert the farm and labor force advantage and carry on product according to technical rules and enterprises’ purchasing demands under the guarantee of sufficient fund and market.;

(3) The financial organ: runs the natural disaster insurance business and provide the farmer with the fund under the safeguard of the mortgage;

(4) The government department: Plays the role on planning the agricultural development, coordinating all aspects relations and guaranteeing all quarters legitimate rights;

(5) The agricultural scientific research institution: Carries on the scientific experiment and the technology dissemination. The institution also implement agriculture informationization engineering construction.

![Figure 2 The basic element of the APSS service pattern](image)
3.2 The analysis of Essential factor relationship

In this pattern, farmers have very close cooperation relationship with the leading enterprise, so they can momentarily get to known about the company’s request on the production, in this way, they can guarantee the production to meet company’s requirement. The farmers also have to pay attention to company’s agricultural material price, the product purchasing price at times, check whether the price is fair, and also care about the policy information issued by the government. As for the enterprises, they have the responsibility to warrant farmers’ loans and assure production risk, pay attention to farmers’ information and set up the product files. Not only the enterprises but also the farmers look forward to enhancing production quality rate and building up the brand. They are concerned about technical information, standardized product information, government policy and rules information and market information and so on. The information needed by each essential factors is show in table 1:

Table 1 The element analysis table of APSS

<table>
<thead>
<tr>
<th>Basic elements</th>
<th>Information received from outside</th>
<th>Information sent out</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farmers</td>
<td>Standard product information, Technology information, Science information, Market information, Policies and regulations information</td>
<td>Personal information, Product information, Agricultural production information</td>
</tr>
<tr>
<td>Enterprises</td>
<td>Technology information, Science information, Market information, Farmer’s personal information, Farmer’s agricultural production information, Policies and regulations information</td>
<td>Standard product information, Agricultural materials supply information</td>
</tr>
<tr>
<td>Financial institutions</td>
<td>Agricultural production information, Financial information, Information of enterprises, Insurance information of customer</td>
<td>Information for loans, Information for insurance</td>
</tr>
<tr>
<td>Government</td>
<td>Market information, Complaints information, Actual production and management information</td>
<td>Policies and regulations information, Standard information of norms, Dynamic information related industries at home and abroad</td>
</tr>
<tr>
<td>Scientific research institutions</td>
<td>Production demand information, Needs of information technology and the needs of the market information</td>
<td>Technology information</td>
</tr>
</tbody>
</table>

The APSS information service system needs to satisfy the demands of the base element within the information service pattern from the following several aspects.

(1) The government can strengthen the initiative to gain the market information, strengthens the ability of surveillance and decision-making.

In order to help the general farmers make reasonable decisions, the government should get real trade information from the agriculture market. It should reduce and then forbid “the converse choice” in the contract signing process. To exert economic contracts’ capacity to solve the asymmetrical information problems, the government should provide fair and strong protect for both trade sides of the contracts.

(2) The farmer carry on the specialized production with the help of the low cost standardization information.

The key to solve asymmetrical information problems in rural markets is to reduce the cost of information collecting for the farmers, with the method of specialized production to reduce the amount of product information collection. Secondly, the precondition and foundation of enlarging production processing scale for leading enterprises also includes agricultural product regionalization and specialized production.
(3) The leading enterprise and financial organ construct the specialization market and innovate agricultural production management. The main method for reducing information dissymmetry in product sales should be constructing the specialized markets. From the operating aspect, it is reasonable for the agricultural enterprises and financial organizations to realize the specialized market construction, because they have more recourse input.

(4) The agricultural scientific research institution establish the mature agriculture information service network. As the effective measure to reduce the information asymmetrical, it is as soon as possible to establish mature agriculture information service network, and the network will enormous promote our country agriculture information dissemination and the popularization. It should enforce the information foundation construction and build the economic and stable wide band high speed information spread network. Beside the network construction, teach the farmers to use is also important. Through publicize of the agricultural professional association, the academic organization, the research board, the specialized household and the model scientific demonstration household to transmit the information of the market and technology to helps the farmer to form the customer of depending on the information and the life-long study, and also can apply the information correctly on the production practice.

3.3 System model construction

The APSS service information pattern's external performance is to establish characteristic public agricultural product information website by the government or the government supported industry field, and though the usage of the website to broadcast related industrial development information of the local characteristic agricultural product, which including tendency price of the local characteristic agricultural product industrial, policies and regulations, standard scientific technology information, market information, tendency price of the domestic and foreign related industry, these information is used as the authority basis of the industrial development and each behavior standards. According to the service model, this public open-door information network will be the key point to set up the local characteristic APSS service information system. It benefits to build up the brand, supervise the enterprises’ behavior as for the government and spread the application to the farmers. The system model realization is shown in Figure 3:

![Figure 3 The realization of the APSS information service system model](image-url)
When be applied by the basic unit level of the government, the APSS system may depend on the government's information platform, and its service function can displays on the public information website. Moreover, the different rank of the government agencies and industrial organization, can adjust the disposition of the APSS service information system in need, customize APSS service information subsystem suiting for local situation. It could compose a application network as “Province-city-town” and form a APSS service information system network with the center of province.

4 The system plans and the platform design

The important taget of building the APSS service information system is to provide a “scientific, highly effective, fast reflection and fast decision-making” software management platform for the characteristic APSS related units. Through “the flexibility” managment, adapts the need of the industry scientific management, and meets the need of the enterprise business change and the entire industry development.

In the basic of general APSS system design, it is possible to develop the APSS service information platform with the characters of local agriculture, according to the local production planting, processing and selling, the main service of the information service platform provided is shown as follows:

![Figure 4 APSS information platform design](image)

4.1 Standardized information service of the agricultural technology

With the purpose to improve the industrial management of the local characteristic agricultural production, the system carry the standardized production technical information of the characteristic agricultural product. The information service also customize the leading enterprise with the rank mechanism and price rank mechanism. Thus, the service pattern can guid, help and restrain the peasant household according to the standardized request, and promotes the industrial management of the local characteristic agricultural production.
4.2 Comprehensive agriculture information service

Through monitoring the synthetical information, find out the market opportunity and the risk to provides the information for the strategic decision. Use other platform to embark synthetical agricultural product-technical information for planting vegetables, fruit tree, grain and other crops, and also provides the practical technical support for the farmer to enhance the local production technical level. The information servise guides the farmer to use the land to raises the benefit in the agricultural production.

4.3 The agricultural material and agricultural product sales, supplies information service

Through monitoring the information of the agricultural product, agricultural material marketing, compare the information with the internal stock situation to find out the disparity, and can raise the enterprise achievements and the benefit continually. The information service centralism realize the data management of the main shop, and also keep the material supplies data of the chain-shop. The statistics of the agricultural material sale data, supplies data also supplied by the information servise system.

4.4 Agricultural product finance information service

Based on the related information collection and analysis, the information servise system can discover the market risk early, help people to take the right strategy, and avoid the finance risk. Realize information flow of “the step of production (the farmer), the step of processing (the enterprise) and the step of payment(the bank)” to flow freely. Along with credit relations established, the system realize the agricultural product transaction, payment and realize the agricultural product futures transaction on the network.

4.5 Information service for the government supervises

Through the highly effective information processing, analysis and broadcasting, the servise system can raises the policy-making efficiency, makes the market respond quickly and accurately. When the system is applied by the basic unit level of the government, the external service function will be shown on the public information website. Aiming at the demand of the different level's government agencies, the system can adjust the disposition of the information by anytime, and customize decision information which suits the local need.

5 Conclusion

The establishment of the APSS service pattern information system will guarantee the agricultural production, supply and market supervision. The APSS service pattern also advance the information using and the knowledge sharing, promote the characteristic agricultural product production, the integrated management, the socialized service and the commercialized management. The pattern causes related element on each production operation chain to be linked together to realize the industrial integration. The most significant achievement is to form a comprehensive producing management system between agriculture and rural economic, to trace in the self-develop, self-accumulate, self-control and self-adjust
way, and to accelerate the course of modern agriculture industrialization, rural industrialization and urbanization.

References

Zhengyelu, Lize, The ponder of development sweet orange production and marketing service system based on the informationization “Promotes the Guangdong economic development by the Guangdong science and technology information service” the comprehensive seminar collection. (6~11). 2007


Lulina. The policy choice of eliminates the agricultural information asymmetrical. Guangming Daily, 2006, 9