The Study on the Application of the Intelligent Technology in the Sightseeing Agricultural Parks

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Abstract

The construction of the sightseeing agricultural parks is an important part of China's agricultural modernization. The current problems of the sightseeing agricultural parks will be analyzed; Construct framework of intelligent sightseeing agricultural parks’ construction based on intelligence technology; Investigate on the application of intelligence technology on sightseeing agricultural parks’ construction, production, operation and management processes; To put forward the intelligent sightseeing agriculture model, so as to provide reference for the intensive, high quality and efficient, sustainable development of our country's agricultural industry.

Key words: Intelligent Technology, Sightseeing Agriculture Parks, Construction, Strategy.

1. INTRODUCTION

China is a big developing agricultural country and has the age-old agricultural history and the abundant farming culture. Under the influence of the rapid development of the social informatization at present, the traditional agriculture is facing several problems such as the unbalanced development, the low level of productivity, the shortage of resources, the deteriorated environment. Under the background of adjusting the industrial structure in China, the basic position of agriculture is increasingly taken on, and the agricultural innovative forms have constantly been coming out. Sightseeing agriculture parks are a kind of new mode of production and operation under the new situation of the rural economic development of China.

In recent years, sightseeing agriculture all over the country has developed rapidly, and sightseeing agriculture parks have appeared continuously with growing scope, which have played a significant role in expanding agricultural functions and enhancing the added value of the agriculture. Lots of problems also exist with the rapid development of the sightseeing agricultural parks. These problems focus on several aspects such as the lack of the scientific investigation and survey, the unreasonable site selection, the similar settings of projects, the lack of landscape features, and the lagging management. These problems directly influence the parks' demonstration and motivation abilities, so it is not good for the development of sightseeing agriculture in China (Zhou et al., 2007).

By the end of 2009, the concept of "smart city" and its solution were first proposed by IBM company, which emphasized to use the "intelligent technology" to coordinate the functions of the city to cooperate with the operation, assist the administrators of the city in making strategic decisions and plans, improve the efficiency of urban management and so on (IBM Institute for Business Value, 2009). The intelligent technology means mixing computer, information network and artificial wisdom with such technologies as the Internet of Things and the cloud computing together to form the comprehensive technology (Zhang, 2010) of machine "wisdom", which is achieved by four stages of information processing, which are the information acquisition of the sensor, the data transmission of the Internet of Things, the analysis and processing of the cloud computing and the management and issuance of the intelligent information platform (Han et al., 2014). Applying wisdom technology to the modern sightseeing agricultural parks construction, production, operation and management is helpful to realize intelligent management and functional integration, thus optimizing the construction mechanism of sightseeing agricultural parks and increasing operation efficiency (Gao and Xu, 2015).

2. CONSTRUCTION OF THE FRAMEWORK OF THE INTELLIGENT SIGHTSEEING AGRICULTURAL PARKS

The construction of comprehensive application platform of the intelligent sightseeing agricultural parks can be realized through such two steps as establishing intelligent information system and "intelligentization"
comprehensive application platform of the intelligent sightseeing agricultural parks (Figure 1).

First of all, under the concept of Smart City, build comprehensive application platform of the intelligent sightseeing agricultural parks of intelligent information system. This system is made up of the information infrastructure, the information sharing platform, the information processing center, the information interactive terminal and so on. Information infrastructure consists of components like computer software and hardware, Internet system, communication integration and other components. It's the physical platform for operating the whole information system (Cao et al., 2013); Information sharing platform is a collection of giant computer servers which perform mass data collection, storage, classification and visualization processing, and the information processing center is an auxiliary decision-making platform based on the cloud computing technology; The information interactive terminal is the hardware equipment and the software interface which face directly to all kinds of users, and it's also the port with which users exchange information.

![Diagram of Intelligent Sightseeing Agricultural Parks](image_url)

**Figure 1. The Framework of Intelligent Sightseeing Agricultural Parks**

Then, intelligent information system is applied to the whole process of the operation of sightseeing agricultural parks construction, including 4 stages: construction, production, operation and management. The advantages of intelligent information system on the aspects of information gathering, information processing, information exchange and assistant decision making can play a fast, efficient and safe optimization support role on all stages of the operation and sightseeing agricultural parks’ construction so as to realize the “intelligentization” of comprehensive application platform of the intelligent sightseeing agricultural parks.

The infrastructure system of intelligent comprehensive application platform of the intelligent sightseeing agricultural parks is composed of photographic devices, video devices, PC devices, positioning devices, inductors, controllers, decoders and so on. The technical support system consists of 3S technologies (RS, GPS and GIS), communication technologies, sensing technologies, artificial intelligence technologies, multimedia technologies, expert systems, radio frequency identification technologies and so on.
3. THE APPLICATION OF INTELLECTUAL TECHNOLOGIES IN SIGHTSEEING AGRICULTURE PARKS

3.1 Construction Module

3.1.1 Intelligent Resource Management

In the construction process of sightseeing agricultural parks construction, investigations and management of the existing resources are of vital importance. Prior to planning and construction, experts should be organized to investigate resources in planned areas, and RS technology and GPS technology can be utilized to obtain accurate information rapidly. After the treatment of the varieties and distribution of resources, GIS technology can be utilized to establish the data source base to provide full and accurate fundamental data for the query of the resources, the dynamic management and the planning and construction of sightseeing agriculture parks, which can facilitate the protection and utilization of existing resources, thus providing bases for scientific and reasonable planning and construction.

3.1.2 Planning Design Analysis

Basic data information of sightseeing agricultural parks can be obtained accurately, based on the platform of GIS data in the planning and design. Through the analytical processing of the basic data such as terrain, elevation, gradient, illumination, vegetation and water resources, the eco-sensitivity grade and the ecological adaptation analysis in the planned region can be obtained, thus providing scientific bases for the optimization of landscape pattern of the planned region as well as reasonable function division and industrial layout.

3.1.3 Intelligent Tour Narration

Using GPS and GPRS technology to build intelligent tour narration system, it’s a great convenience to tourists. System Gets tourists present position data via GPS localization technology, then taking circular match with the stored classic data. If the matching is successful, corresponding tour descriptions will be triggered. Meanwhile, the position where the tourist is can be provided for the tourist in the form of dynamic display. Moreover, the system offers the functions of preview of scenic spots and record and recall of touring routes. GPRS wireless data transfer technology enables tourists to interact their data and share their positions and travelling situations.

3.1.4 Virtual Reality Demonstration

Use the 3-D modeling technology and 3-D rambling technology to make the related scenic spots of the sightseeing agricultural parks into the interactive virtual reality scenes, which can make people experience the whole process of virtual field tour like that they are personally on the scene. Three-dimensional virtual technology could supply tourists with information of comprehensive scenic spot. Not only could it show the vivid three-dimensional representation of the sightseeing agriculture parks’ scene, but also display the process of sightseeing agricultural parks’ construction and development, and spread the knowledge of scientific agriculture tourism.

3.2 Production Module

3.2.1 Intelligent Monitoring System

The intelligent monitoring system uses the technologies such as sensors, RFID (Qu and Yang, 2011), GPS and RS to collect the data information including temperature, humidity, wind-force, atmosphere, rainfall, plant diseases and insect pests, so as to monitor the situation of crop irrigations and the changes in soil and air conditions, and conduct the forecast and early warning of plant diseases and insect pests. According to the needs of production, it will process at any time to provide scientific basis for comprehensive information monitoring, environment control and intelligent management of sightseeing agricultural parks. It can view real-time environmental data, crop growth and equipment running status of the park, and has remote control over the equipment of sightseeing agriculture parks.
3.2.2 Intelligent Control System

After transforming the parameters and information collected by the intelligent monitoring system in a digitized manner, the intelligent control system transmits them to the network platform in real time for summary and integration. The timed, quantitative and positioning cloud computing treatment is carried out according to various indicators of the growth of agricultural products by utilizing the expert intelligent system as as to control and designate the automatic turning-on or turning-off of production equipment in a timely, accurate and remote manner, such as controlling water-saving irrigation, energy-saving oxygenation, air exhausting and cooling, thus realizing the intelligent and automatic agricultural production process (Li, 2013).

3.2.3 The Intelligent Tracking System

The intelligent tracking system is able to meet the public's demands for the quality and safety of agricultural products. Data collection equipment (MEMS sensor, two-dimensional code, RFID, multimedia massage, etc.) can highly integrate the agricultural product information labels (features, growth, environment, management, etc.) and make it easier for the public to access the data. This can improve the market recognition of the agricultural product and produce extra economic outcome.

3.2.4 Safety Protection System

360° video monitoring equipment and the pictures taken by high resolution cameras can be used to realize field real-time monitoring of the sightseeing agriculture parks, which can remotely view the visitors’ positions and their behaviors. If emergency circumstances occur and in time of danger in the process of sightseeing, the security system will activate the emergency rescue system in the park, coming to the rescue timely to avoid or reduce the happening of danger.

3.3 Operation Module

3.3.1 Electronic Commerce Marketing

Electronic commerce is a business activity which is carried out by means of electronic data transmission technology, thus eliminating the obstacles in time and space of the transfer of traditional business activities and information interchange. It will be effective to promote agricultural industrialization if we develop e-commerce of sightseeing agriculture and change the traditional way of agricultural trade. Customers can book their tickets and trade the agricultural products and specialties online by choosing officially certified manufacturers or authorized sites and they can select mobile payment or the third-party payment platform for their capital deal, which can not only increase financial security, but save time more effectively.

3.3.2 Brand Planning and Publicity

Brand building is vital for the development of the modern sightseeing agricultural parks, and online media is an important way of branding promotion. With the help of the network media's introduction, the Park's 3-dimensional video and the scenic spot's promotion video, which are based on the virtual reality technology, make potential tourists know relevant information of sightseeing agricultural parks quickly and completely in the information collecting phase before they start a trip, and will make the Agricultural Tourism Parks gain certain advantages in the fierce market competition.

3.3.3 Advisory Information Release

With portable terminal web equipment, tourists can utilize such new technologies as cloud computing and IOT to acquire interrelated information about tourism, products and so on, and make business and tourism consultation through the Internet/mobile Internet. In this case, we can achieve the mutual communication between tourists and parks and reasonably arrange and adjust work and tourism plans, thus reaching the effect of intelligent sensing of various kinds of tourism information and convenient utilization.
3.3.4 Logistics Support Service

Agricultural products have the characteristics of seasonality, regionality and perishability, which have set special requirements on the circulation. The logistics of agricultural products involve multiple segments, such as storing, packaging, transporting and distributing. Utilizing the Internet technologies, RFID technology, sensors, GPS technology, etc., the intelligent logistics system integrates and controls the links of product information, customer needs, storage condition, package and distribution arrangements together, realizing automatic storage of products, classified packaging, intelligent distribution and circulation safety traceability. It has improved the management efficiency of agricultural production and saved production costs. By saving time and reducing product loss as well as maintaining the quality of agricultural products, it has promoted the brand building and enhanced the added value of agricultural products.

3.4 Management Module

3.4.1 Data Statistics and Analysis

The Data Statistics System adopts the intelligent cyber device to automatically collect data with high precision. No human is needed to collect and upload the data, which can avoid the man-made operation errors and ensure a fine management of the park. The real-time examination and the comparison of environmental data and equipment running data in every region in the parks can be carried out from the center of journal sheet. Likewise, the journal sheet of data can be examined according to such time quantums as day, week and month or self-defined time quantum. Excel export, picture export and printing of the journal sheet are all available, facilitating the management of the parks.

3.4.2 Achives and Records Administration

The file management of sightseeing agricultural parks is an important part of increasing the management level. Through recording the entire operation processes and analyzing comparatively, we can find the problems in the production, management, marketing and so on, and provide the scientific basis for adjusting or changing the operation plan. The module automatically generates reports with drawings or tabular form, and it can facilitate managers or specialists to make decisions, improving the efficiency of processing documents, saving office expenses.

3.4.3 Intelligent Decision Analysis

The intelligent decision making includes the automatic decision making and the expert decision. The automatic decision-making management system triggers operations automatically with the help of the data transferred by the automatic sensors. When some information cannot be judged by the automatic decision-making system, the expert decision-making system will evaluate and input operational order of relevant systems.

3.4.4 Coordinated Management of Departments

The automatic office platform based on the internet technology can grasp, analyze and decide problems appearing in such aspects as inner production, operation and management of sightseeing agricultural parks in time, and coordinate the interdepartmental relationship by convenient instant messaging and information interactive technology to improve the operation efficiency.

4. CONCLUSIONS

Currently, Chinese economy and society are in the phases of transformation and upgrading, the traditional agricultural development pattern of extensive style is still in a leading position. Combined with the actual situation of the development of Chinese sightseeing agriculture, in allusion to the existing practical problems in sightseeing agriculture, we apply the intellectual technology to construct the intellectual mode of sightseeing agriculture with "measurable environment, controllable production and trackable quality", which provides references to the intensive, superior, efficient and continuable development of Chinese agriculture.
REFERENCES