



# Innovation of Supply-Side of Agro-Products Under “Internet +”

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**Abstract:** The Action Plan of “Internet +” is becoming an engine for Chinese economic development. In China rural, the Internet development speed is more faster than in city recently, the “New-farmers” continue to spring out, E-commerce of agro-products is emerging. The “Internet + Agriculture” optimizes farmers’ decision-making and investment behavior. Farmers can touch market directly; and outsource their cultivation services. The “Internet +agriculture” make consumers realize their personalized needs, advance bargaining power in the market. It is leading to an innovation of supply-demand sides of agro-products. The “Internet + agriculture” is bringing social welfare improvement. The social welfare comes from five aspects, connection dividend, division-specialization profits, increasing returns of knowledge, expanded value spaces and reduction costs. So, pushing Action Plan of the “Internet +” has a practical significance to build modern agriculture.

**Keywords:** “Internet +”, Supply-Side, Demand-Side, Innovation, Social Welfare

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## 1. Introduction

The Internet, firstly appeared in 1969, has now evolved into a global industry revolution from the initial technology revolution, and is promoting the transformation and upgrade after nearly 50 years of development in the United States. The Internet updates organization’s mental, and reconstruct traditional industry [1]. It can make enterprises achieve precise prediction and prospective development [2]. Companies will have the ability to “connect all” and gain “connection dividend” [3]. The Internet brings profound changes to the China economic development, is implanting to agriculture from accessing 20 years ago. The “Internet +” is a special term, refers to the combination of the Internet with a traditional industry. The concept of “Internet +”, can be traced back to November 6, 2013, Ma Huateng, who is a CEO of Shenzhen Tencent Computer System Co. Ltd, said in the opening ceremony of Zhongan Insurance Company. The Internet with a traditional industry represents is a kind of ability, or an external resource and the environment, a promotion to the industries. There are differences between the “Internet +” and “the Internet”. The Internet is a kind of resource, can improve marketing and production efficiency, the “Internet +” is not only a resource, but also can advance enterprise competitive ability [4]. Chinese Prime Minister Li Keqiang firstly put forward the “Internet +”

Action Plan in the 12th National People’s Congress meeting. The “Internet +” has been becoming a new engine of economic development and innovation in China. Agricultural production, consumption are moving towards the “Internet +” model; gradually taken a high speed ride. The “Internet +agricultural” has more exploration in practice, three kinds of patterns and eight paths in Jiangsu [5]. The “Internet + agricultural” lack of talents, and infrastructure are in deficiencies in Shanghai [6]. The “Internet + agriculture” is the crossover of agriculture and the mobile Internet, big data, cloud computing, and Internet of things, a new product, new model and new format [7]. The researches on the “Internet +”, mainly concentrated on industrial and financial industry, some less for agriculture. The paper is focusing on the changes of agro-product’s supply-side under the “Internet +agriculture”.

## 2. The Situation of “Internet +Agriculture” in Chinese Rural

The rapid development of the Internet, the New-farmers and the rise of e-commerce is bringing the opportunity to the “Internet + agriculture”.

### 2.1. The Internet Development Is Very Fast in Chinese Rural

China Internet Information Centre (CNNIC) surveyed

China's mobile Internet that as of December 2015, there are 688 million Internet users in China, the Internet penetration rate reached 50.3%, half of the Chinese people have access to the Internet, mobile Internet users accounted for more than 90%. As of December 2014, the rural users' scale is up to 178 million people, accounting for 28.6% of all Internet users, compared with an increase of 2013. In all kinds of the Internet terminals, the rural areas the proportion, who used the Mobile Internet, was 84.6% in 2014, and 5% higher than that in cities and towns. The Internet is serving the farmer's production and living, also promoting the development of the "Internet + agriculture".

### **2.2. The New-Farmers Continue to Spring-Out**

The New-farmers refer to farmers who are engaged in agricultural production, circulation, service using the Internet as a tool, its core is "Internet + agriculture". This is different with new types of agricultural operating main body (family farms, farmers' professional cooperatives, agricultural leading enterprises) which was named in the 3rd Plenary Session of the 18th. In 2014, Alibaba and China Post, etc. began to implement the strategy of the "Internet + agriculture". 2015 was the first "New-farmers" year. With the continuous improvement of network communication infrastructure and the use of the intelligent mobile terminal, the New-farmers reach millions in 2015, such as "Young Prince Dishes" with semi-finished raw vegetables, Liutao Rural Extension and Cloud Farm of Legend and so on.

### **2.3. E-commerce of Agro-Products Is Emerging**

E-commerce of agro-products is a kind of direct-sale model of production and marketing docking, namely F2F, O2O. E-commerce has 3 models mainly which are rising in China. One is the agricultural e-commerce platform, such as Jingdong and No. 1 Shop. According to varieties, brands, producing areas, they searched for all kinds of agro-products to sale on the Internet. This kind of e-commerce platform is largely an agro-product online markets in a region. The second are comprehensive platforms; which integrate agro-product sales and technology extension, while monitoring product capacity, extending standardized technique, tracking product quality, such as Caiyitong in Chengdu, Jiayuan Net in Jiangsu. The third is the platforms for extension and exhibition. This shows agricultural materials, product pictures, videos on-site both at home and abroad. Farmers can learn the application according to the video demonstration by Internet surfing. The e-commerce platform is a production and marketing docking, is no longer the traditional channel like "manufacturer-wholesaler-consumers". Marketing place is no longer a king.

## **3. The "Internet +agriculture" Is Changing Farmers and Consumers' Behaviors**

Farmers can gain more and accurate information for decision-making, even directly touch the consumption demand, outsource their cultivation, and optimize agricultural

investment behaviors.

### **3.1. The "Internet + Agriculture" Is Changing Farmers' Behaviors**

#### **3.1.1. Farmers Can Obtain More and Accurate Information**

Information for agriculture cultivating has been lagged behind in China for a long time. Farmers' planting and decision relied on intuition or information of previous season only, but which was outdated. The phenomenon was relatively common, like "rush, a coax down", and "a bottle of water is more expensive than a bottle of oil", brought loss to farmers. Chinese says that cheaper grain harm the peasants. Under the market-oriented, governments at all levels are often difficult to effectively prevent this from happening. The Mobile Internet can predict in advance by processing large volume data and application in real-time [4]. The "big data + calculation=big business opportunities [8]. Through the use of agricultural big data, cloud computing analysis, forecast, the governments can also transmit the information in a timely manner to farmers. Farmers can make decision earlier and take action in time, after getting the exact information. Large agricultural leading enterprises and other new types of agricultural main bodies can guide planting from the market information, like the differentiation on the customer's demand. Even some of farmers can get information by surfing the Internet. Multiply information optimizes farmer' decision-making. It breaks the barriers of information asymmetry, brings variation in the rationality of structure and process, which originally rely on traditional business value, and creates value in chain of production, sales, and customers.

#### **3.1.2. Farmers Can Touch the Market Demand Directly**

Distribution was once one of the important components of business models. The help of other distribution channels or distributors system were tools for traditional creating value [9]. "Channel was a king". Traditional agro-products marketing channels were that brokers entered into agro-product wholesale markets by the logistics, vendors went to the wholesale markets and then to consumers. An agro-product agent or even a few agents separated consumers from producers. On the Internet, both sides of agro-product supply and demand can have direct interaction, with no help of channels, for example, O2O. Consumers experience a farm through offline, and then purchase online, or buy online after looking for assessment from other buyers; or buy online by online consultation. This doesn't need agent(s), wholesale markets, called disintermediation. The disintermediation of the Internet can have direct interaction between agricultural production, consumption, and market awareness [4]. The Internet contributes to the realization of the trading behavior between supply and demand. Farmers can directly touch consumer's demand. In this kind of direct interaction, shared value emotion and trust between production and marketing, the communities is produced. It reinforces the affection, enhancing the customers' loyalty.

### **3.1.3. Farmers Use More Cultivation Outsourcing**

Production is a heavy manual labor such as seeding, planting, plant protection, water management, harvesting, etc. In Chinese rural, young and strong labors are rare. They immigrated, working in the towns or cities. Most of farmer household tend to outsource planting service. Under the "Internet +agriculture", a family, who lacks of labors, need plant protection, he will look for a servicer on community platforms, choose one to help the family by the servicer's real performances. After the service, the family must evaluate the servicer online, sharing their experiences on the platforms. Even a family lacks of labors to operate the whole plant works, he can choose servicer(s), too. It reduces dependence on the servicer's information and seeking balance between different servicers. It also makes Chinese transferring labors decrease transportation and information cost, and pays more attention on their work. The server's price is cheap with professional works and serving scales. In the light of investigations, outsourcing scale reached 75% of total area in Nantong, Jiangsu, 2015, and the proportion of whole cultivation outsourcing tend to increase in 2016.

### **3.1.4. Investment Behaviors Are Changing**

Outsourcing servicers need more agricultural machinery, but it has strong specificity, such as high investment and sunk costs, the short using period, long payback period. More and more servicers are using the Internet, search agricultural machinery online, comparing price and function; sharing the experiences. It declines information asymmetry, and changes purchasing model from past "personal combat group" to "consumption group against the production ". In China, farmers' houses, contracted land etc. cannot be mortgaged, it is not easy for them to achieve loan from banks. So, farmers have no much money to purchase the machinery. They obtain more agricultural equipment information online, and tend to lease agricultural machinery to provide outsourcing service. After that, they arrange service schedules under planning as whole according to the last season demand, and put it online that can ensure not to delay the season. The servicers provide outsourcing service in different place. From the south to north in China, rice maturation period gets later. They harvest rice in accordance with the maturation period. The machines can be utilized fully.

### **3.1.5. Farmers Pay More Attention to the Quality of Agro-Products**

Issues about agro-product quality have been widely concerned of society over the years in China. The events, such as "Duck's Egg Tonyred", "Sanlu Poisonous Milk-powder", made consumers' hearts still be fluttered with fear. Along with the development of "the Internet", especially the Internet of things, consumers with the Internet can supervise the agricultural production, like agricultural chemicals especially. The Internet traceability system is gradually compelling farmers to pay more attention on the quality of agro-product. Mengniu is using Baidu Cloud technology and QR code traceability system to trace milk quality. Iiayuan Net in Jiangsu Province cooperates with off-price stores, distribution

enterprise, carrying out "gathering to plant in upstream, gathering to sale in downstream, docking platform" for the high quality vegetables etc. In fact, the security of agro-products is rising.

## **3.2. The "Internet + Agriculture" Is Changing Demand**

### **3.2.1. Consumers' Demand Can Be Satisfied Fully**

Agro-product markets are close to a perfect competition market. Agricultural production, especially in agricultural commodity production has a strong homogeneity, is basically a low cost to meet the needs of the masses. With the development of economy, the demand for agro-products will present personalization. Many varieties, small batch, fast renovation of personalized demand continue to pressure on agriculture and agricultural production system, push supply transformation to demand flexibility system, like C2B. This is the "Long Tail" driven business model. Under the pull of market demand, and supply behavior will change gradually to meet the personalized needs.

### **3.2.2. Bargaining Power of Consumers Is Surging**

The Internet is mainly information products, and it is easy to outdate, whose life cycle is very short. So the consumer demand for the Internet products is often with real-time [4]. Consumers can see the whole process by the videos, pictures, pastures, factory production through network; determining the quality of state by experiences and related data. They also share and keep the information timely in the consumer community platforms, ensuring the security of agricultural products' consumption, reducing dependence on farmers' information. Agro-products have strong homogeneity characteristics, the consumers search different manufacturer information to reduce conversion and distributor of cost between ago-product producers, realizing balances. Market bargaining power of consumers is surging.

## **4. The "Internet + Agriculture" Realizes Improvement of Social Welfare**

The "Internet+" deconstructs value chain of agricultural industry, restructuring agricultural sectors with the "Internet+" seamlessly, realizing value creation and saving costs. This is a kind of an improvement of social welfare, with innovation to the Value Chain Theory, which was created by Professor Michael Porter in 1985.

### **4.1. The Connection of Production and Consumption with Outside Produces Dividend**

The Internet emphasizes on their own value creation by re-arranging and integrating, and bringing new products, new services and new business models based on the original industry [10]. In agricultural input, farmers gain chemical fertilizers, seeds, film, marketing information in time through the "Internet +", and choose the highest rated products to avoid fake in the community feedback. Farmers' buying connects with the Internet, changing traditional buying model.

In planting, plant protection or harvest sectors, farmers choose outsourcing services, getting Penrose rents. Family farms and other large agricultural main bodies integrate and configure resources, produce Ricardian rents. Of the Value Chain Theory, "Internet +" deconstruct the agricultural industry value chain, and with which restructure other industry chain seamlessly to realize the value creation and cost savings. At the age of the Internet, connection-dividend drives all of the enterprises to change the original business model, and, so to speak, it is the source of the Internet business model [4].

#### **4.2. Specialization Produces Economies of Scale**

Specialization makes industry more and more sophisticated, meanwhile producing opportunistic actions, whose cost offsets increasing returns that is from specialization. But the Internet reduces the information asymmetry, and then inhibits opportunism. The "Internet +" gathers bodies of agricultural production in the virtual space platform, expanding the production scale, increasing scale-effect, reducing costs. The cost of super large scale decreases too, because of the information symmetry. In planting, a manager controls demand information via the Internet, planning overall, letting the mechanicals operate continuously, reducing the search time, expanding the service area, and producing scale return. Further in line with the season, they provide service in different areas to expand areas. Agricultural production operation is subject to Young- Smith Theorem, rather than Smith's Theorem in traditional economic era.

#### **4.3. Knowledge Combination Brings the Increasing Return**

A lot of supply and demand entity communicates in the virtual space platforms, gathering and sharing diversified knowledge and information, realizing the increasing return. Knowledge and information accumulation, combination, and sharing, make up for the farmers' shortage. Agriculture has a very strong externality. All kinds of knowledge, technology and information which is from virtual platform, spreads easily among the farmers. The increasing return of knowledge far outweighs its return of planting scale. Large agricultural leading enterprises interact with farmers by the Internet, guiding a wider range of farmers' learning behaviors, enhancing driving ability for farmers.

#### **4.4. Value Space Has Been Expanded**

In the process of creating the connection dividend between production and consumption, comparing with that of traditional industry, value from the internet is incomparable. Different types of consumer has different demand, the needs has heterogeneity, which brings value. The value space is created while farmers' meeting the individual needs of a certain type of consumer by the Internet, it is much larger than the general production. The families with contracted land in China are still in the majority, and it matches the market personalized demand. It is very difficult for a farmer individual to gain discourse power in the market. Farmers' Professional Cooperatives, who are made of farmers, can

organ their members to plant, meeting the market personalized demand, gaining discourse power in the market and a higher market premium.

#### **4.5. The Cost Has Been Reduced**

The biggest advantage of the Internet is information symmetry. Symmetric information can reduce transaction cost, especially the search and supervision cost. Farmers can avoid fake and shoddy agricultural materials which maybe bring a loss. The "Internet +agriculture" changes large agricultural machinery using mode for rent, and a "share" of agricultural machinery, etc. Thereby it declines cost of agricultural machinery specialized assets such as sunk costs, also decreasing interest cost on capital. Big data, analysis of cloud computing, farmers and consumers gain more and accurate information, production and consumption can be effective coupling. The disintermediation let the wholesale market and agents be gradually abandoned by the Internet. At the same time fewer agents mean less cost to the consumers.

## **5. The Conclusion and Suggestions**

The "Internet +" is a great engine for China's economy, and the "Internet +agriculture" are injecting vigor to China agricultural development. Chinese agriculture and farmers are on the Internet express, there are many "New-farmers" with E-commerce of agro-products. It is changing Chinese farmers' cultivation and consumers' consumption behavior. The "Internet + agriculture" optimizes farmer's decision-making. Farmers can touch markets directly; outsource their cultivation, services change behaviors for agricultural machinery from purchase to rent. The "Internet + agriculture" realizes consumer's the personalized, and consumers' bargaining power is advanced. The "Internet + agriculture" cause connection dividend, division-specialization profits, increasing returns to knowledge, value spaces expanded and decreasing cost. So, pushing Action Plan of the "Internet+" has a practical significance to build modern agriculture. In reality, the "Internet +" still need to increase publicity, build "Internet + agriculture" atmosphere in rural society, guide farmers to establish "Internet +agriculture" consciousness, perfect rural the Internet facilities, support the corresponding talents, especially interdisciplinary talents who know both agriculture and the Internet, etc.

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