

# Research on the Development Strategy of Integrated Seed Sales Industry

Zeyang Ge\*, Lei Liu

School of Management, Shandong University of Technology, Zibo, China

\*Corresponding Author: gezeyang\_dyg@163.com

## Abstract

The seed sales industry has achieved rapid development with mankind entering the Internet era. In recent years, the seed sales industry has developed rapidly, and competition within the industry has continued to intensify. In order to achieve commercial benefits, there are many irregularities in the industry chain. Currently, solving various irregularities in industrial development and achieving industry breakthroughs are urgent problems to be solved. This study proposes an industrial development strategy for the integration of seed sales, which involves the use and combination of information system technology and comprehensive sales platforms to achieve the integration of seed research and development, production, sales, transportation, and after-sales services, as well as value co creation throughout the seed sales industry chain, promoting high-quality and sustainable development of the industry.

## Keywords

Seed Sales; Database; Integrated Sales Platform; Value Co-Creation.

## 1. Introduction

Seeds are the “chip” of agricultural development and the cornerstone of grain production. By mid-2024, the total global population has reached 8.2 billion. According to the “2024 World Population Prospects” report, it is expected that the world population will increase by about 2 billion in the next 60 years, bringing the total global population to 10.2 billion. In this context, the importance of food production is self-evident. Grain production cannot do without seeds, and currently China’s seed sales industry has entered a bottleneck period of development. At present, the supply-demand ratio in China’s seed market is extremely high, and the overall supply-demand situation shows a serious oversupply, leading to a series of problems such as quality decline, seed squeezing, and reduced market profits; In addition, in the international seed trade market, China’s import volume far exceeds its export volume. With such a high overall supply-demand ratio in the seed market, a large amount of agricultural seeds still need to be imported, and there are obvious serious problems in the domestic seed market. Therefore, through the structural reform of the seed sales industry and the implementation of the integrated development strategy of seed sales, the combination of information system technology and comprehensive sales platforms has become a feasible solution for the seed sales industry to solve existing problems, complete transformation and breakthroughs, and achieve industrial chain cooperation and value co creation in seed sales.

## **2. The Main Existing Problems in the Domestic Seed Sales Industry**

### **2.1. Counterfeit and Inferior Seeds Enter the Market and Pass Off Inferior Ones as Good Ones**

In recent years, China has introduced numerous policies in seed quality control and continuously improved relevant laws and regulations, who for the quality control of seeds in the market. However, based on the current market situation, there are many small and medium-sized seed enterprises in China, and many of them sell seeds that cannot meet the national requirements. At the same time, there are some low-quality seed operators, resulting in a proliferation of counterfeit and inferior seeds and the chaos of passing off inferior seeds as good[1]. These seeds with substandard quality entering the market and being purchased by farmers without identification ability will seriously affect the yield and quality of crops. The rights and interests of Chinese farmers will be seriously damaged, and the agricultural efficiency of our country will be severely affected. At the same time, the emergence of such behavior in the international market of bulk trading will also seriously damage the reputation and reputation of our seed industry, and thus have extremely adverse negative effects on China's seed foreign trade transactions.

### **2.2. Market Supply-demand Imbalance and High Homogenization Phenomenon**

According to the data released by the 15th China International Seed Industry Expo and the 20th National Seed Information Exchange and Product Trading Fair held in September 2023, the supply and demand ratio of hybrid corn seeds in China will reach 167%, the supply and demand ratio of hybrid rice will reach 178%, the supply and demand ratio of conventional rice will reach 230%, soybean seeds will increase production by 30%, and the increase or decrease of other crop seeds will not be significant. Overall, the seed market is severely oversupplied and the market competition is fierce, which makes it difficult to sell many seeds and sow them at the best time. Seeds can only be stockpiled by enterprises, resulting in a decline in seed quality and low market seed prices. The continuous decline in seed prices has led to many problems such as reduced profits and decreased survival ability of seed enterprises. In addition, there is a serious homogenization phenomenon in China's domestic seed market. For example, China has achieved complete self-sufficiency in main grain seeds such as wheat and rice, even reaching a market supply-demand ratio of over 150%. However, the quantity and quality of some high-end vegetable seeds produced by China cannot meet market demand. The product structure of China's seed market has problems, and the high homogenization phenomenon exhibited by the market is extremely detrimental to the development of China's seed industry. It is not difficult to see from the market feedback displayed by the supply-demand imbalance that these problems have already had an impact on the quality of sales products, the profitability of related enterprises, and the investment in new product research and development, which urgently need to be addressed.

### **2.3. There are Numerous Enterprises in the Industry, but the Market Concentration is Relatively Low**

The number of seed enterprises in China has undergone significant changes since 2010. In 2010, the number of seed enterprises in China was over 8700, but by 2016 it had decreased to 4316. Subsequently, with the government's implementation of policies such as the "Seed Industry Revitalization Action Plan" to encourage the development of China's seed industry, the number of seed enterprises in China began to rise, reaching 7372 in 2020 and 7668 in 2021. However, the large number of seed companies are mostly small and medium-sized enterprises, which leads to the seed industry being too dispersed and the market concentration being low. Although the market concentration is gradually increasing as the number of seed companies recovers, there is still a certain gap compared to the global seed industry market. In addition,

the large number of small and medium-sized enterprises has led to fierce market competition. At the same time, due to the low risk resistance ability of small and medium-sized enterprises and the high supply-demand ratio in the domestic seed industry market, the profit of the seed industry market is low and the market turbulence is severe. The survival of small and medium-sized enterprises is difficult, and a large number of imitations have led to an increase in seed homogenization. Large enterprises lack sufficient breeding and research and development funds, and the development of the entire seed industry is slow or even stagnant.

#### **2.4. Low Originality and Low Competitiveness in the International Market**

China has the advantage of core technology in breeding in the seed industry. China continuously develops new varieties of seeds. From 2023 to 2024, the and soybean in China will reach 409, 764, and 80, respectively. However, although China's seed industry has achieved remarkable scientific research results, there are very few original new breeding technologies. The newly developed varieties and numerous patents applied for mainly rely on traditional methods such as hybridization and breeding, lacking original high-tech breeding technologies[2]. In addition, China is the second largest seed industry market in the world, with a market supply to demand ratio of over 150% for many staple seeds. However, China has been in a deficit in international seed trade for many years. China's seed export value accounts for only about 2% of the global seed export value, but it needs to import a large amount of seeds every year. In 2023, China's seed trade deficit will reach 340 million US dollars. The lack of original high-tech breeding technology has led to a certain gap in the yield level of many seeds in China compared to developed countries such as the United States, France, and the Netherlands, thereby reducing the international market competitiveness of Chinese seeds and affecting China's international seed trade. This is also one of the reasons why China's seed industry has formed a trade deficit.

### **3. Strategic planning for Integrated Sales Seeds**

#### **3.1. Application Information System Database**

Applying information system technology in the new era to establish a large-scale company database for seed enterprises is an important part of seed sales integration. At present, the mainstream databases in the market include SQL Server, MySQL, etc. By integrating the company's industry data with the industry information of seed sales through databases, various chaos in the seed industry can be regulated to a certain extent. The database contains data information on the allocation and flow of funds for seed companies, helping to evaluate their corporate stability and achieve standardized management; Data information on research and development investment, direction, and progress of seed breeding, which motivates seed companies to increase research and development investment in breeding, improve innovation capabilities, and develop original breeding technologies; Provide data and information on the types, quantities, and quality of products sold as seeds, assist seed companies in analyzing the market share of their products and the production and sales situation of their own products, assist in completing product structure reforms, and improve company efficiency; Provide data and information on the market share of various products of our company and the market share of each seed product, to assist seed companies in self positioning and analyzing market conditions, coordinating product production, and maximizing production efficiency; Contains data information on the transportation of products traded by seed companies, helping seed companies analyze which logistics company has higher cooperation benefits, the problems in product transportation, and the logistics companies that consumers are more inclined towards; Contains data and information on after-sales service after seed company transactions, helping seed companies to identify consumer after-sales issues and propose targeted solutions through analysis, improve customer experience and enhance their own development, and increase customer repurchase rates. By applying information system technology to establish a database,

seed enterprises can achieve information statistics from research and development breeding to product production, market sales, logistics transportation, and after-sales service. Then, through the big data technology of cloud computing, data information can be analyzed to obtain development directions that are conducive to enterprise progress and market standardization. This undoubtedly plays a positive role in the development of China's seed industry.

### **3.2. Building a Comprehensive Sales Platform**

Building a comprehensive sales platform for the seed industry using today's network communication and big data technology is another key to achieving integrated seed sales. At present, there are various online sales channels in both international and domestic markets, and the seed industry is no exception. As for China, although there are many ways to sell seeds online, the online sales market has shown an upward trend in recent years. Various clients, apps, and online sales market is chaotic. Due to the difficulty in detecting counterfeit and shoddy online transactions, various fraudulent activities persist, and there are also market chaos such as malicious competition and mutual smearing. Therefore, it is very important to regulate the online trading market conducted through the internet, and the construction of a comprehensive sales platform is an excellent answer to these problems. The comprehensive sales platform referred to here refers to a sales platform that is exclusive to the seed industry. Its functions include the entry of seed companies, the publication of their own product information and qualifications, the real name registration of consumers, the permission to browse and purchase products from different seed companies, and the ability to query relevant information about different types of seeds. At the same time, logistics companies are allowed to establish cooperative relationships with the seed industry, which can enable customers to deliver seed products purchased by seed companies to cooperative logistics companies for product transportation in the first time. The comprehensive sales platform also provides customer service and after-sales functions. Settled companies must have professional customer service personnel to connect with their own consumers and customers, answer questions about company product inquiries, and provide after-sales service for transactions[3]. The sentence is: At every stage of the operation of the comprehensive sales platform, strict supervision will be carried out by the official authorities, and sufficient legal and compliant permissions will be given to enterprises and consumers. Here, enterprises can truly and fully demonstrate their own strength and the advantages of their products. Consumers can also freely browse different products of various enterprises, compare the advantages and disadvantages of various products horizontally and vertically. At the same time, enterprise merchants and consumers can communicate through the platform's customer service and after-sales system to ensure that both parties can understand each other and promote the smooth completion of transactions. In addition, through the platform, both enterprise merchants and shopping consumers can monitor the logistics and transportation of traded products, which is conducive to reducing the pressure of after-sales work for enterprises and also making consumers more at ease. This platform is to some extent similar to the comprehensive e-commerce platforms such as Taobao, JD.com, Pinduoduo in China in terms of commercial aspects. However, on the one hand, it is a professional sales platform that only serves the seed industry, with strong professionalism and convenient supervision. On the other hand, this platform has higher requirements for enterprise qualifications compared to existing comprehensive e-commerce platforms, and requires consumers to register with their real names. It puts forward certain requirements for consumer quality at the legal and ethical levels, to some extent curbing the existence of "water armies" and "keyboard warriors", reducing the commercial chaos of malicious competition in the seed market, and has unique advantages compared to existing comprehensive e-commerce platforms. In addition, the use of comprehensive sales platforms in the seed industry can to some extent increase the market concentration of the seed industry, which will further promote the overall development of China's seed industry. In summary, the establishment of a

comprehensive sales platform for the seed industry can promote the high-quality and sustainable development of China's seed industry.

### **3.3. Achieving Value Co Creation through Industrial Chain Cooperation**

By combining the application of information system technology to establish a seed company database with the construction of a comprehensive sales platform for the seed industry, the systematic, efficient, and integrated construction of the seed industry is achieved, realizing the cooperation of the upstream, midstream, and downstream industrial chains of the seed industry and realizing the value co creation of the industry. The combination of databases and comprehensive sales platforms involves numerous links, starting from the upstream of the industry chain, seed companies and research institutions develop seed breeding technology, use databases to collect experimental data information and archive it, facilitate the comparison of various data information, and assist relevant departments in improving research and development progress; In the midstream of the industry chain, the database collects market information displayed on the comprehensive sales platform and relevant information about our company's products. Through comparative analysis of the data, we adjust the company's product structure and development direction, promote further development of the company, and also ensure the quality of seed products entering the market through two supervision procedures: the database and the comprehensive sales platform; In the downstream of the industrial chain, consumers obtain relevant information about the seeds they want through a comprehensive sales platform, thus completing their ideal seed purchase. Enterprises that have sold products complete order information docking with cooperative logistics companies through the comprehensive sales platform, and logistics companies carry out logistics distribution. During this process, both seed companies and consumers can view logistics information, track the storage and distribution process of seeds in real time, and ensure the quality of seeds and the safety and efficiency of distribution[4]. In addition, the database and comprehensive sales platform will also provide data statistics and analysis of the seed market, as well as other high-quality services such as customer service and after-sales for various enterprises and merchants, thus achieving a complete closed-loop of the seed industry chain.

The creation, integration, and use of databases and comprehensive sales platforms can first expose phenomena such as counterfeiting and shoddy products, and passing off inferior products as good. Consumers can clearly compare the product quality of various seed companies, thereby ensuring the quality of seed products entering the market; Secondly, increasing market concentration, integrating the seed industry, and reasonably controlling the supply-demand ratio of the seed market can reduce malicious competition to a certain extent, making the scattered seed market more systematic and standardized; In addition, it has increased the contrast of seed products in the market, forcing seed companies to continuously innovate breeding techniques and improve breeding capabilities, increase seed varieties, improve seed yield and quality, reduce homogenization, promote innovative development of the seed industry, enhance China's independent research and development capabilities of seeds, develop original disruptive technologies, enhance product competitiveness in the seed market, and achieve a leapfrog development of China's seed industry as a whole.

## **4. Potential Risks of New Developments**

### **4.1. Insufficient Funding for Industrial Reform**

To achieve the strategic planning goal of integrated seed sales, the vast majority of seed companies need to establish and apply their own exclusive databases, and the construction of large databases undoubtedly requires high costs. In addition, in the process of achieving

integrated seed sales, companies will also carry out numerous internal resource adjustments and optimization reforms, which will bring high costs. Moreover, the costs brought by such enterprise reforms are difficult to make large profits in a short period of time and balance accounts. At the same time, a series of problems in the seed market in recent years have posed a threat to the survival of seed companies themselves. In this situation, whether seed companies can complete the strategic planning of integrated seed sales is a significant risk for the enterprise.

As far as the current situation of China's seed industry is concerned, this problem cannot be solved by seed companies and the market in the short term. This requires the national government to introduce relevant preferential policies to help seed companies reduce financial pressure, accelerate the construction of a comprehensive seed sales platform, and also encourage seed companies to make early decisions to achieve self breakthrough and get rid of current difficulties. This not only prevents the possible risk of insufficient funds for seed companies, but also accelerates the development of integrated seed sales strategies.

#### **4.2. Threat of Data Information Leakage**

The leakage of data information in the era of big data is still an unavoidable topic, and the integrated strategy of seed sales is undoubtedly keeping up with the trend of the times, using the advantages of big data for optimization and reform, naturally facing the risk of data leakage. According to incomplete statistics, there were as many as 16011 data breaches in the first half of 2024, an increase of 59.58% compared to the second half of 2023. However, this is only a large-scale data breach that can be queried on the internet, and there are countless individual data breaches that have not been counted. Our planned database and comprehensive sales platform, once put into use, will store a series of important data, including the commercial core data of seed enterprises and the core data of China's seed industry stored and analyzed by the seed comprehensive sales platform. Once these data are leaked, they will pose a serious threat to related seed enterprises and even the entire seed industry in China.

There are many reasons and ways for data breaches, mainly including internal personnel errors, external attacks, system vulnerabilities, third-party service risks, and physical security vulnerabilities. Currently, there is still a lot of room for improvement in global data protection prevention measures. Different solutions are proposed for the above aspects, such as strengthening data encryption strength at the technical level, increasing multiple access control permissions, formulating data security policies at the management level, strengthening employee security awareness, and increasing relevant penalties for data breaches, in order to reduce the risk of breaches, enhance data security, and develop risk plans for data breaches. The occurrence of such situations should be considered in advance and complete handling measures should be formulated for them, I believe that with the standardization of network supervision and the implementation of multiple measures to prevent data leakage, the risk and harm can be minimized.

#### **4.3. Malicious Competition from Individual Unscrupulous Merchants**

It is often said that "the mall is like a battlefield", and as the market grows, there will inevitably be unscrupulous merchants. For example, the chaos of passing off inferior goods as good, counterfeiting and shoddy products mentioned earlier is the behavior of unscrupulous merchants. Unscrupulous merchants usually deceive consumers by selling inferior products in order to reduce costs or maliciously quote prices to increase sales and ultimately increase profits in order to gain profits. After the implementation of the integrated strategy of seed sales industry, unscrupulous merchants may not comply with industry policies and regulations, and engage in product sales through private black networks or secretly engage in some "small actions", ultimately seeking profits through unethical and illegal means. This not only brings

losses to consumers, but also damages industry regulations and violates laws and regulations, and affects the reputation of the Chinese seed market, causing a series of adverse effects.

In response to such unscrupulous merchants, on the one hand, relevant departments need to strengthen supervision, and on the other hand, encourage seed companies to conduct peer supervision. In addition, regular research activities should be organized to conduct consumer interviews, and a multi-pronged approach should be taken to crack down on the malicious competitive behavior of unscrupulous merchants; At the same time, through the strategic planning of integrated seed sales, the sales costs of seed enterprises can be significantly reduced, which can also directly impact counterfeit and inferior products[5]. We believe that we will create and maintain a favorable market environment for the seed industry and establish and stabilize a standardized market order for the seed industry.

## 5. Summary

With the development of science and technology, the application of big data and the Internet has become more and more widespread. China's seed industry has a huge scale but its development has stagnated. Following the trend of the times, the introduction of network technology has become a breakthrough development path. Actively reforming the seed industry, combining databases and comprehensive sales platforms, and implementing a strategic development of integrated seed sales, has practical significance for achieving value co creation in China's seed industry. Utilizing statistical analysis of databases to assist seed companies in achieving self-renewal, and then implementing industry chain cooperation in the seed market through a comprehensive sales platform to complete the construction of integrated seed sales, is an effective practical approach for the high-quality and sustainable development of China's seed industry.

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