

# *Research on the current situation of rural poverty alleviation and future development innovation in the era of big data*

Yujie Yang<sup>1,a</sup>, Tingting Li<sup>1,b,\*</sup>, Hongyu Zhu<sup>1,c</sup>

<sup>1</sup>Dalian University of Science and Technology, 999-26 Lingang Road, Dalian, Liaoning, China  
<sup>a</sup>3313798792@qq.com, <sup>b</sup>1165686228@qq.com, <sup>c</sup>327950231@qq.com

\*Corresponding author

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**Abstract:** Poverty eradication has always been the focus of national development, along with the development of the times, big data is more widely used in the application, combining big data with agricultural development will bring good effects to rural development.[1][2] Improving farm production, increasing the number of sales and saving costs will be an important way to get out of poverty, and big data plays a great role in agricultural development, combining big data technology with agriculture, introducing market information, planting methods and talent introduction into the countryside to better help rural areas get out of poverty.

## 1. Introduction

With the continuous progress of the times, people should not be prosperous and strong, and it is particularly important for people to live a happy life. Nowadays, poverty alleviation in rural areas is imminent. The task of poverty eradication cannot be delayed. Agricultural e-commerce platforms, 5G technology, artificial intelligence, the Internet of Things, and many more new generation of high technology are all continuing to integrate with agricultural output with the advent of the digital era bringing benefits to farmers. A new model of digitalisation and internet development helps the countryside and serves farmers, accelerating rural poverty eradication through information and digital construction.

## 2. Problems encountered in agricultural development

### 2.1. Information asymmetries in agricultural markets

In the current agricultural planting and marketing process, Most of the farmers' access to agricultural technology updates is only through the experience of villagers and they do not use internet technology to understand, farmers do not have access to timely and accurate information to establish a sound source of information, such as the Internet of Things technology in Figure 1.[3]The whole industrial chain of agriculture in China is not complete, and there is an asymmetry between production and marketing, making it difficult to sell agricultural products.

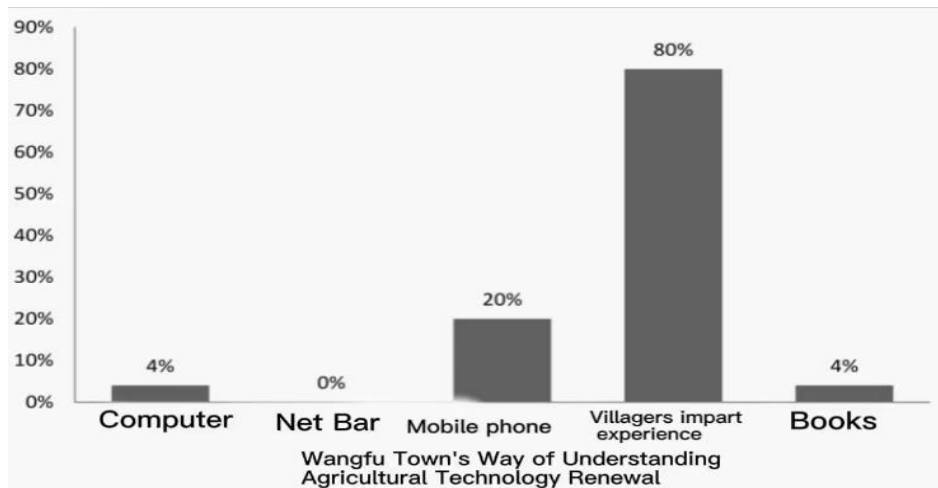


Figure 1: Wangfu Town's Way of Understanding Agricultural Technology Renewal

## 2.2. Crop cultivation issues

With the development of science and technology, the application of big data in agriculture is becoming more and more common, using modern technology to transform traditional agriculture to achieve a higher level of modernisation, while at present, the efficiency of agricultural technology transformation in China is only 30-40%, which is less than one half of that in developed countries such as Europe and America. At the same time, the quality of the soil and the monitoring of the crops during cultivation are not possible by hand, and there are many cases of poor crop yields due to floods and pests in agricultural development.

## 2.3. Distribution channels and cost issues

Agricultural trade is all buying and selling of agricultural products, traditionally usually involves a number of steps, with the farmer processing the produce, then the buyer buying it, the buyer selling it to the wholesaler, the consumer purchasing it from the retailer after the wholesaler has sold it to the latter. Each stage of the process has a set cost, so by the time the product is purchased, the price will have increased by several or even ten times compared to the market price. And due to some problems such as closed information and poor product quality, the price of the buyer is not as high as the cost of the agricultural products, so the farmers cannot get more profit, so they cannot really get out of poverty.[4]

## 3. Effective ways to solve existing problems

### 3.1. Big Data Technology Analytics Market

We need to tackle the root of the unequal agricultural information problem. Sound industrial chain, create an exclusive website or APP for agriculture, whose content contains the sales volume of various agricultural products in different regions, sales prices, sales methods, etc. Big data analysis is used to analyse sensible and reasonable sales methods for farmers according to market supply and demand. [5]To achieve symmetry in agricultural market information, we should fully utilize the benefits of science and technology to construct an exchange platform and use the big data platform to analyze supply and demand.

### 3.2. Big data technology involved in planting

In the age of technology, agriculture has to be even more innovative. As our agricultural technology is not very advanced, most areas still maintain traditional farming methods. Compared to other countries, we need more agricultural talents. Let the talents for rural revitalization bring technology and big data to the countryside and promote the integration of Internet+ and big data with agriculture. The planting area will be effectively divided, supporting modern agricultural facilities, integrating big data into the wisdom greenhouse, through computer data calculation to accurately control the nutrients required by different crops at different times, to achieve automatic calculation, precise irrigation, automatic fertilisation and effective monitoring. Realise the integrated industry chain project of room temperature seedling raising, large area planting, harvesting and processing, storage and transportation.

### 3.3. Guiding the public to understand the acceptance of big data

The root cause of the inevitable stagnation of products in the general environment is the slow news from farmers. In a market where supply exceeds demand, Farmers need to accelerate the pace of integration into the modernization to protect the interests of farmers. After years of development and accumulation, great progress has been made in agricultural science and technology, agricultural production conditions and infrastructure. [6] It is time to strengthen the exchange of agricultural production and market information. Farmers need to seek solutions through the reliability and authenticity of big data. In the case of balanced information exchange, the producer produces the most appropriate product output to supply the consumer, the society can enter the track of sound development.

## 4. Digital agriculture in the era of big data

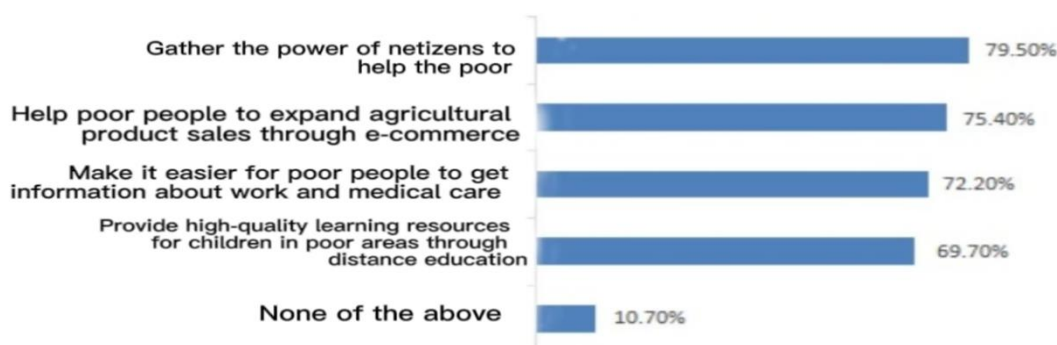


Figure 2: The role of the Internet in helping poverty-stricken areas get rid of poverty

Digitalisation is an important exploration in our development and an inevitable choice in the context of today's times. With the use of big data technology in more areas, we can see that precise poverty alleviation is being better accomplished. Using big data, poverty alleviation in poor rural areas can be made more precise and accurate. When it comes to financial assistance, we can fully utilize the big data platform and financial poverty alleviation policies to increase the access of low-income households to loans, bank credit loans, and insurance protection in order to reduce poverty more quickly and effectively.[7] The size of the global and Chinese agricultural big data analytics markets, respectively, will reach 5.314 billion yuan (RMB) and billion yuan in 2021, according to Bezier Consulting's market research report on the subject. The global agriculture big data analytics market is anticipated to grow at a CAGR of 7.66% from 2021 to 2027 and is projected to reach a total

market value of \$8.273 billion by that year. We can see that the future of agriculture is bright thanks to digital farming. Digital agriculture will continue to help rural development, bringing fresher and more advanced technologies to agriculture and driving farmers out of poverty faster, as shown in Figure 2.

## **5. Effective ways to use digital agriculture to help alleviate poverty in agriculture**

### **5.1. In-depth promotion of big data technologies**

Farmers won't be able to fully appreciate the value of digital farming for agriculture until they are informed about and exposed to big data's function and advantages. The development of digital agriculture is a priority, but the most important thing is to introduce big data technology into agriculture. The state and relevant departments should promote big data technology into agriculture, so that farmers can understand big data, become skilled in the role of big data technology in agriculture, improve yields, gain more income and get out of poverty better. With the continuous development of big data, business operation models and profit-making models based on certain technologies have emerged, and there are currently five main types of e-commerce: B2C, B2B, C2C and O2O. Under these models, the sale of agricultural products has also gradually transformed to form a new supply chain, with specialised agricultural products being established and traded on different platforms. Reducing transaction costs, increasing returns and lifting people out of poverty.

### **5.2. Build a big data exchange platform**

China's agricultural talent is relatively scarce, blocking is better than unblocking, instead of letting talent running around the country, why not build an exchange platform, through online communication to teach farmers to use big data to find resources, self-learning how to use big data analysis and find the right kind of farmland planting and ways and means. In this way, agricultural talents can be spared the exhaustion of travelling and better develop their planting techniques, and farmers can be taught a great deal of technology. [8][9]The content of the platform should include weather forecasts, general knowledge of pest and disease prevention, what is grown each year around the world, the current most common crop varieties and other specialized information like communication windows.

## **6. Conclusion**

Big data is a long-term process, but it has undeniably given agriculture a fresh boost. At this point, big data has helped paint a more positive picture of the state of agriculture. In light of this, we should pay closer attention to the growth of digital agriculture, respond favorably to national policies, speed up the talent introduction strategy, concentrate on the expansion of the market economy, and gain a better understanding of the function of big data. In this context, we should focus more on the development of market economy, respond positively to national policies, speed up the talent introduction strategy, and gain a deeper understanding of the function of big data in order to better promote the development of rural economy and better assist farmers in emerging from poverty as soon as possible.[10]

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## Development of Agricultural Wealth"(202213207015)

### References

- [1] Li Cuiping. *Exploring the implementation path of electric business to help agriculture and poverty alleviation in the context of rural revitalization* [J]. *Commerce and Exhibition Economics*, 2022(14):56-58.
- [2] Ye Weidong, Li Bo. *Research on the application of big data to promote digital construction of farmland* [J]. *Rural Agriculture. Farmer (B)*, 2022(07):63-64.
- [3] He Qin, Yang Zhengdan, Yin Dezhi. *Research on the path of big data to help revitalize rural talents* [J]. *Modern Agricultural Research*, 2020, 26(11):17-19
- [4] Meng X. *The former poor village of Yanchi is now out of poverty for a new novelty* [N]. *China Business News*, 2019-08-20(04).
- [5] Wang Jiafang. *Research on the development trend of big data in the era of intelligent agriculture* [J]. *Technology Economics and Management Research*, 2020(02):124-128.
- [6] Xu Who, Wang Dongjie, Li Zemin. *Research on the application of big data to promote agricultural modernization* [J]. *China Agricultural Science*, 2015, 48(17):3429-3438.
- [7] Chu Wenhong, Kong Xiangbin, Liu Ying, Sun Xiwen, Zhang Lianxiao. *The current situation and countermeasures for the development of intelligent agriculture in Weifang* [J]. *Modern Agricultural Science and Technology*, 2022(03): 221-223.
- [8] Jin Songlan, Jinjin Li. *Big data to help rural poverty alleviation in ethnic areas* [J]. *Journal of Yanbian University (Social Science Edition)*, 2020, 53(04):100-107.
- [9] Xie K, Yi F M, Gu F T. *Big data-driven digital transformation and innovation in agriculture* [J]. *Issues in Agricultural Economics*, 2022(05):37-48. DOI:10.13246/j.cnki.iae.2022.05.010.
- [10] Li M.K., Sun T.T., Hou H.T. *"Internet+human society" helps poor households to find employment and promote precise poverty alleviation and rural revitalization in agriculture and rural areas* [C]// *Proceedings of 2021 Education Science Webinar (II)*. [publisher unknown],2021:55-58.