Survey and Research on the Influencing Factors for the Development of Rural Digital Logistics under the Background of the Internet-Based on Observation of H County, Yunnan Province

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Abstract: *Digitization is the mainstream and trend of rural e-commerce development. Yunnan Province needs to analyze various influencing factors for the development, remove development barriers, and improve the quality of development, in order to realize the digital development of e-commerce logistics. This paper sorts out the problems in the digital development of rural e-commerce logistics in Yunnan Province through questionnaire interviews and other forms, and proposes strategies to promote the digital development of rural e-commerce logistics in Yunnan Province through the analysis of self-factors, external factors, and other factors.*

Keywords: *Rural e-commerce logistics; Digital development; Influencing factor*

1. Introduction

In recent years, with the fast development of e-commerce. Yunnan Province has vigorously promoted the development of rural e-commerce based on the strategic requirements proposed at the national level and the actual situation in rural areas, but fails to achieve an ideal effect. One of important reasons is the lagging development of rural logistics. The development level of rural e-commerce logistics can be effectively improved by developing digital logistics, providing support for the economic development of rural areas combined with poverty alleviation and rural revitalization strategies.[1]

2. Necessity of developing rural e-commerce logistics in Yunnan Province

It is of great significance to develop rural e-commerce logistics in Yunnan Province, which is a manifestation of keeping up with the times and in line with the trend of the times. Its changes are mainly reflected in the following aspects: (1) Accelerate the circulation of agricultural products. It is necessary to make reasonable use of e-commerce logistics in the development process of rural areas in Yunnan Province to provide support for the circulation of agricultural products, in order to achieve rapid circulation of agricultural products; (2) Accelerate information exchange and dissemination. E-commerce logistics platforms can be used to timely transmit information during the dissemination of agricultural related information in rural areas, laying the foundation for the development of rural e-commerce logistics, sales of agricultural products, and improvement of farmers' income; (3) Assist in poverty alleviation Yunnan Province has done a good job in poverty alleviation during the period of overall realization of a well-off society, providing good channels for agricultural product sales by making use of rural e-commerce logistics, increasing farmers' income, and removing the stigma of poverty.

3. Survey on the Influencing factors for the Digital Development of Rural E-commerce Logistics in Yunnan Province

The data is sourced from H County in Yunnan Province, a place with good agricultural production conditions and distinctive agricultural characteristics, laying the foundation for the development of

rural e-commerce logistics. Questionnaire survey is a mode of combination of filling out and interviewing. There are 85 questionnaires distributed and 85 collected, with a recovery rate of 100%. In 85 questionnaires, the age distribution is 21-30 years old, 31-40 years old, 41-50 years old, 51-60 years old, and over 60 years old, accounting for 8%, 16%, 52%, 20%, and 4% of the total. Moreover, it is also learned in the interview that over 70% of people have a junior high school education, while only 4% have a junior college or undergraduate degree, indicating that the education level of farmers in rural areas of Yunnan Province is relatively low, which has a great impact on the digital development of e-commerce and logistics.

4. Introduction to influencing factors

4.1. Self-factor

It is found through the questionnaire survey that self-factors will have a significant impact on the digital development of rural e-commerce logistics in Yunnan Province. Farmers in rural areas are generally older, with a proportion of 52% aged 41-50. This group of people has a low understanding of e-commerce and relatively little participation in logistics training. About 84.71% of people have not participated in relevant training, as shown in Table 1. It can be seen from Table 1 that the majority of people have not received relevant logistics training, and they lack the awareness of actively mastering relevant knowledge and technology, unable to provide support for the digital development of e-commerce logistics.

Table 1: Training situation of participating in relevant logistics topics

Option	Subtotal	Proportion
A. Yes	13	15.29%
B. No	72	84.71%
Number of effective respondents to this question	85	

4.2. External factors

This survey questionnaire is mainly aimed at analyzing external factors. Table 1 is not only caused by farmers' self-factors, but also partly due to insufficient training work carried out by relevant departments. Below is a detailed introduction to the external factors in the digital development of rural e-commerce logistics in Yunnan Province:

In the survey questionnaire, 16.47% of respondents believe that the local logistics development is good, 58.82% of respondents believe that it is average, and 24.71% of respondents believe that it is very poor. Most respondents believe that the development status of local logistics is average, but compared to good and few, those who believe that it is very poor are 8.24% higher than those who believe that it is good. This indicates that there is still a great space for improvement in local logistics, so it is needed to make feasible development strategies based on local conditions.

Table 2: Restricting Factors for the Development of Local Rural Logistics

Option	Subtotal	Proportion
A. Backward transportation	52	61.18%
B. Low level of informatization	44	51.76%
C. Decentralized demand and insufficient supply	47	55.29%
D. Lack of logistics talents	34	40%
E. Insufficient policy support for logistics development	37	43.53%
F. High logistics costs	42	49.41%
G. Lack of industrial support	46	54.12%
H. Low level of rural economic development	49	57.65%
I. Poor rural logistics outflow	46	54.12%
Number of effective respondents to this question	85	

In the survey questionnaire about what are the main factors that restrict the development of local rural logistics, it is found that there are many restricting factors, many of which account for 50% among the survey respondents, such as backward transportation, low level of informatization, decentralized demand and insufficient supply. For details, see Table 2.

It can be seen through the analysis in Table 2 that there are many factors that restrict the development of local rural logistics, such as backward transportation accounting for 61.18%, which is the highest; Secondly, the decentralized demand and insufficient supply accounts for 55.29%, followed by lack of industrial support and poor rural logistics outflow, both accounting for 54.12%. Moreover, other factors also exceed 40%, indicating that there are many restricting factors during the development of logistics in the local area. Especially in the context of digitalization, the digital development of rural e-commerce logistics cannot do without the support of information technology and talent. However, the local level of informatization is not high, and there is a lack of logistics talent, which greatly restricts the digital development of rural e-commerce logistics [2].

It can be seen through the analysis of the bottleneck that restricts the development of rural logistics, as shown in table 3, that the proportion of small, decentralized and weak local industries exceeds 43.53%, indicating that industrialization has not been formed during the development period. It is difficult to form large-scale, standardized, and in-depth development under the development of decentralized and weak logistics industries, let alone inject vitality into the industry development [3]. The probability of risks occurring is high due to the small, decentralized and weak local industries, which will severely impact the development of the entire industry. This indicates that the ability to resist risks is not high, and it is difficult to provide funding, policies, and other support for industrial development in the development process, which cannot ensure the sustainable development of the industry. Moreover, the lack of deep processing of products accounts for 22.35%, and the lack of product packaging and brand accounts for 21.18%, which are also two factors that cannot be ignored.

Table 3: Bottlenecks Restricting the Development of Rural Logistics

Option	Subtotal	Proportion
A. Lack of deep processing of products	19	22.35%
B. Lack of product packaging and brand	18	21.18%
C. Small, decentralized and weak local industries	37	43.53%
D. Lack of cargo distribution and warehousing facilities	11	12.94%
Number of effective respondents to this question	85	

Logistics enterprises also encounter many problems during the operation and management period, such as poor location conditions, high logistics costs resulting in high production and operation costs, insufficient logistics extension, unreasonable layout, reduced circulation efficiency, and a lack of supporting logistics for agricultural products, etc. These are important influecing factors for the development of logistics enterprises and are also the key to achieving innovation in logistics enterprises. [4]. However, in reality, these issues have not been resolved, which has made a significant impact on the operation and management of logistics enterprises.

4.3. Other factors

Other factors can also have a significant impact on the development of logistics enterprises, such as the items listed in Table 4. The main channels for rural logistics outflow within the county are individual transportation vehicles for 77.65% of respondents, acquistioin by external vendors for 45.88% of respondents, and logistics enterprises for 24.71% of respondents and acquisition by leading enterprises for 14.12% of respondents.

Table 4. Other factors

Option	Subtotal	Proportion
A. Individual transportation vehicles	66	77.65%
B. Logistics enterprises	21	24.71%
C. Acquisition by leading enterprises	12	14.12%
D. Acquistioin by external vendors	39	45.88%
Number of effective respondents to this question	85	

5. Strategies for the digital development of rural e-commerce logistics in Yunnan Province

The countryside is the key to poverty alleviation and the overall realization of a well-off society. common prosperity for all can be realized only by leading the rural people to get rid of poverty and become better off togather. Industry is the weakness of rural economic development, and the logistics industry is an important industry in rural areas, so it is needed to keep up with the times and move

towards digitalization during its development period. The following text proposes strategies for the digital development of rural e-commerce logistics based on the summarized issues.

5.1. Improve infrastructure

As the key to the development of rural logistics industry, infrastructure construction is an important guarantee for the digitalization of the logistics industry. (1) Strengthen support to raise the development level of rural logistics industry and ensure its sustainable development, it is necessary to strengthen support, enhance financial and policy support, and ensure the orderly construction of infrastructure such as roads, factories and networks, providing basic guarantees for the digital development of rural e-commerce logistics; (2) Improve the rural network system. In recent years, with the popularization of smartphones, e-commerce has begun to develop towards mobile clients. Whether it is information browsing, receiving, or online payment and ordering, it can break through time and space limitations to carry out e-commerce related work anytime and anywhere.[5]

5.2. Build a high-quality e-commerce talent team

The rural logistics industry and digital development cannot be separated from high-quality talent teams. It is necessary to recognize the importance of talents, attract more talents to enter rural areas for entrepreneurship and employment, and provide support for the digital development of the rural logistics industry in the development process.

Talents introduction. The digital development of rural logistics industry requires the introduction of talents and the full play of their role. During the talent introduction period, it is necessary to ensure professional alignment, composite talents prefered, who understand various aspects such as logistics, economy and digital technology, increase the salary level of talents correspondingly to attract talents, and let them develop stably in rural areas. The creativity of talents can be activated with the support of a competitive salary system.

Strengthen training. Training is the key to talent growth and development. Talents can continue to grow, and continuously improve their professional skills, practical skills, and summary literacy through systematic and long-term training. Training should combine theory with practice. With the development of the training courses, talents are enabled to learn in the training courses. Moreover, on-site training should also be conducted to simulate practical operations, ensuring that people can master relevant practical skills.

Incentive system. It is necessary to make good use of incentive system, in order to stimulate the innovative ability and enthusiasm of talents, cultivate them in rural areas, and develop e-commerce. Rewards should be given to employees with outstanding performance and innovative spirit, so that they can continue to stimulate innovation and development to meet their development needs. Various welfare systems are implemented to ensure the development of talents in the rural logistics industry, laying the foundation for achieving digital development of the rural logistics industry.

5.3. Build a distinctive agricultural product e-commerce logistics system

It is necessary to actively build a distinctive agricultural product e-commerce logistics system, to support the digital development of rural e-commerce logistics in Yunnan Province. Firstly, it is necessary to clarify the basic operational process of e-commerce logistics for characteristic agricultural products: Place logistics orders → E-commerce logistics service providers receive orders and picks up goods→ Logistics transportation → Distribution allocation → Acceptance and confirmation [6].

Design of logistics network mode. There are generally three types of e-commerce network modes: point-to-point, single axis, and hybrid axis network models in the design. The point-to-point mode is to achieve rapid transportation of agricultural products, which is achieved through transportation between two points. This can effectively reduce transportation time and losses during transportation, as shown in Figure 1:
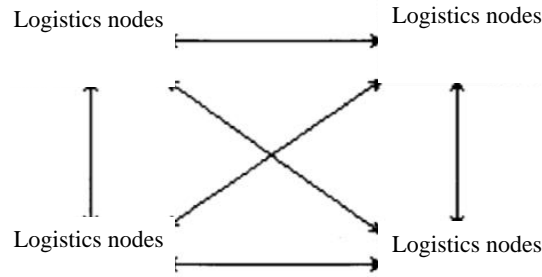
Figure 1: Point-to-point network mode

Singular hub axis radiation mode. This mode adds a transit node to uthe logistics structure, allowing it to be connected to different logistics nodes, enabling various functions such as agricultural product aggregation, preparation, storage, and distribution processing to be achieved at the transit node. See Figure 2 for details.
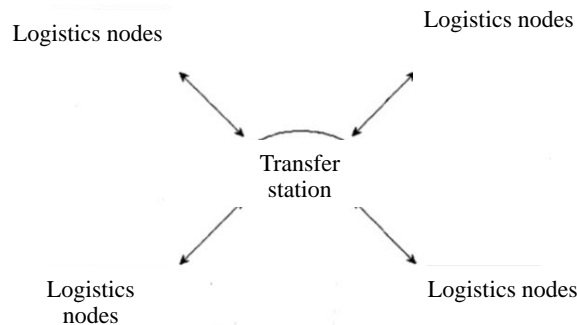

Figure 2: Singular hub axis radiation network mode

Multi-hub hybrid mode. This mode is a combination of the above two modes, achieving economies of scale, complementing each other's advantages, meeting the reqirements for convenience and speed of logistics transportation, and effectively controlling the total cost. See Figure 3 for details.
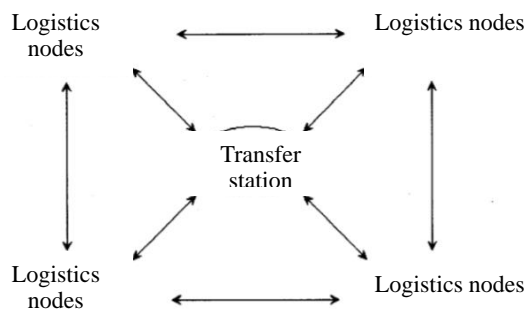

Figure 3: Multi-hub hybrid network mode

5.4. Establish digital logistics

The digital development of rural e-commerce logistics in Yunnan Province is a systematic project involving many technologies, such as computational intelligence and database technology. With the support of various advanced technologies, digital logistics is made more convenient and reliable, achieving intelligence and integration of logistics development. Computer technology and logistics technology are the basis of digital logistics, and further extend bar code technology, electronic data interchange technology, intelligent scheduling, etc. to ensure the effectiveness of digital development. Digital logistics mainly includes the following technologies:

Integrated intelligent technology. Human intelligence can be imitated through the application of

integrated intelligent technology, so as to perceive, learn, and infer the problems encountered in logistics management. Integrated intelligence requires the construction of comprehensive integrated intelligence technology starting from software and hardware. The common technologies of integrated intelligence technology include automated warehousing systems, genetic algorithms, control theory, etc. Integrated intelligence technology is applied to provide support for digital management of logistics.

Simulation and virtual reality technology. The actual process of logistics is reflected on the computer, and the whole process of logistics is simulated by 3D digital model. Logistics technology and computer technology are the basis of virtual logistics technology, which can integrate computer graphics, artificial reality technology, etc., to provide reliable support for managers.

Combination of GPS/GIS technology and digital logistics. It can be achieved through GIS geographic data function and GPS global positioning function in the process of improving logistics analysis technology For example, to optimize logistics transportation routes, warehouse location settings, loading and unloading strategies, etc., can be achieved through network logistics models, allocation set models, etc.

5.5. Strengthen business promotion

The digital development of rural e-commerce logistics is a systematic project, so it is very important to conduct scientific and reasonable business promotion. Therefore, it is necessary to develop a reasonable business promotion plan based on the actual situation during the specific work period. Speak with examples. Propaganda work cannot be carried out without nutrition or a lack of connection with actual life. Otherwise, it not only fails to achieve training results, but also leads to a lack of understanding among the public about rural e-commerce logistics and its digital development. During the promotion period, it is needed to select successful cases of rural e-commerce as typical demonstration cases, and then invite relevant successful individuals or celebrities to give lectures to ensure that people have a general understanding of the digital development of rural e-commerce logistics and can understand the relevant operations and key points after the promotion.

5.6. Application of cloud computing and big data

It is needed to actively apply advanced technologies for the digital development of rural e-commerce logistics in Yunnan Province, such as big data technology, cloud computing, etc., and use advanced technologies to ensure the effectiveness and reliability of digital development. The sharing of logistics information resources requires the use of cloud computing. There will be a large amount of data generated during logistics operation and management, which can be captured and processed through cloud computing. In practical applications, cloud computing and big data can reduce logistics costs, integrate logistics resources, and inject vitality into the development of e-commerce logistics. Nationality Cloud computing and big data play an important role in the construction of rural e-commerce logistics public information platform. In practical applications, the platform can effectively control various links, ensure intelligent decision-making and achieve data sharing. Various types of information can be published on the platform, such as vehicle types, transfer capacity, and routes. These data can then be integrated and analyzed to provide reliable support for decision-making and ensure that it can indicate the direction for the digital development of rural e-commerce logistics.

6. Conclusion

The digital development of rural e-commerce logistics in Yunnan Province will be influenced by many factors. The effective promotion strategies should be adopted to ensure the effective implementation of digital development of rural e-commerce logistics in Yunnan Province. In the future, the digital development of rural e-commerce logistics in Yunnan Province will still be the mainstream. It is needed to continuously deepen the application of various advanced technologies, and improve the digital development quality of e-commerce logistics in the application, so as to meet the needs of rural e-commerce and rural economic development, providing support for rural revitalization.

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