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Agricultural Products Industry Informatization in E-commerce Supply Chain Management

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Abstract: With the rapid development of e-commerce, logistics enterprises taking distribution logistics as the basic form must establish and perfect e-commerce supply chain system and vigorously develop e-commerce supply chain logistics by using information technology. At present, there is little research on its application in agricultural products industry. The purpose of this paper is to study the development of agricultural products industry in e-commerce supply chain management informatization. This paper briefly introduces the basic contents and technical principles of supply chain management informatization through literature research and investigation. Based on the relevant experimental data, the development situation is analyzed from the aspects of transportation and talent reserve. The results show that the proportion of rural areas with e-commerce distribution sites in the eastern region is significantly higher than that in other regions, reaching 29.4%. More than 80% of agricultural production and management personnel have only primary and junior high school education. Only 1.2% of agricultural production and operation personnel have college education or above. We need to train corresponding talents from different levels and coordinate the supply chain system of agricultural products. Considering and developing the logistics network system from the perspective of coordinating the social and economic development of urban and rural areas, with the help of the state to coordinate the development of urban and rural areas.

1. Introduction

According to different distribution logistics centers, e-commerce supply chains can be divided

into wholesale supply chains, retail supply chains and storage supply chains. First, the wholesale supply chain, this type of distribution is mainly managed by computers. The business department obtains the order information of member stores through computers at a fixed time, and then sends the order list to the manufacturers and the storage and transportation department. The manufacturers and the storage and transportation department distribute the goods in order of priority according to the types and types of goods listed in the order list. Before distribution, the goods need to be distributed first and then distributed centrally. Generally speaking, the distribution line runs for 2 hours with a distribution radius of less than 50kg [1]. Second, retail supply chain is the most common type. Buyers buy goods on e-commerce websites, and the goods flow into the logistics system of logistics enterprises to deliver the goods to their destinations in a centralized way. It is a form of delivery that is suitable for the scattered goods purchased by ordinary buyers. Third, warehousing supply chain, warehousing supply chain is generally established by e-commerce enterprises in a certain region warehouse center [2-3].

In the structure of e-commerce supply chain, competitiveness is at the highest level, followed by customer service capability, network organization integration and coordination of enterprise information flow, logistics and capital flow, and finally various theories related to e-commerce supply chain [4]. This structural design can realize the optimization of logistics quality, customer service, total inventory, cycle time and total cost. This structure makes full use of information technology and network technology, can effectively coordinate the information flow, logistics and capital flow in the supply chain, ensure the normal operation of the supply chain system, and enable the e-commerce supply chain management to achieve the goal of optimizing and reducing the supply chain operation cost [5-6]. When executing customer orders, materials, personnel, tools, etc. can be effectively combined by using information technology and network technology to form a completed logistics process. From the perspective of supply chain system optimization, the management content of the supply chain can be divided into planning, control and collaboration. The common objectives are to improve the production service level of enterprises and reduce cost expenditure. Although service level and total cost may seem contradictory, they are the core objectives of the optimization management content of the supply chain system [7].

Yu introduced the development status of e-commerce logistics in supply chain management from a practical point of view. The global implementation, corresponding models and supporting technologies are summarized [8-9]. McDonald believes that technology companies entering the fruit industry will bring enthusiasm for new technologies, resources to develop new technologies and means to extract value from them. Orchard and fruit monitoring, predictive data mining and post-harvest condition management will become more and more common throughout the fruit supply chain [10]. Abidi has constructed a three-dimensional SSCM framework and its performance evaluation on Indian information technology product industry by means of comprehensive literature review, empirical investigation and case study. The framework determines the sub-dimensions of sustainability and its relationship with supply chain processes. Management and sustainability performance indicators for the proposed framework were also identified and proposed [11]. Raghunath analyzed the percentage impact of external and internal supply chain risk factors on various supply chain decisions, and proposed various available tools to reduce supply chain risks [12]. Castillo, based on the basic premise of stakeholder theory that business and ethical decisions are intertwined, introduced the concept of supply chain integrity to explore how the interdependence of business and ethical decisions can lead to improvements in the practice of sustainable supply chain management (SSCM) [13].

With the rapid development of information technology, e-commerce has become an important economic activity, winning many loyal consumers with its convenience and low price. The main research content of this paper is roughly divided into five parts. The first part is the introduction of

supply chain management informatization, the purpose and significance of the research and the current research situation. The second part briefly introduces the basic contents and technical principles of supply chain management informatization. The third part is the specific research content of this paper, through literature investigation and collecting relevant data to study the development of agricultural products industry in e-commerce supply chain management informatization. In the fourth part, the data are analyzed theoretically, and the development situation is analyzed from the aspects of transportation and talent reserve. The fifth part is the conclusion, the final discussion and explanation of the experimental results.

2. Proposed Method

2.1. Technical Principle of Supply Chain Management Informatization

Information sharing is the foundation of supply chain management. The coordinated operation of the supply chain is based on the basic intelligence quotient of high-quality information transmission and sharing of each node enterprise. Therefore, effective supply chain management cannot be separated from the support provided by the information technology system. At present, EDI, RFID, GPS, supply chain information system integration and Internet of Things are the mainstream technologies of supply chain information management.

(1) EDI Technology

EDI is an important tool for information integration of supply chain enterprises in the application of supply chain management. EDI is an effective technical means for exchanging information between partner enterprises. EDI is a medium for connecting the commercial application systems of node enterprises in the supply chain, especially in the global cooperative trade. Suppliers and users (distributors and wholesalers) negotiate and determine standard messages together. First, users (distributors and wholesalers) provide the data structure of commodities, and then EDI standard professionals select relevant messages, segments and data elements in corresponding standards. At present, the UN trade data exchange standard UN/EDIFACT is widely used. The manufacturing industry uses EDI technology in the supply chain to achieve high efficiency in the transmission of invoices and orders. EDI applications used by manufacturing enterprises are mainly invoices and order processing, and these businesses represent their core business activities: procurement and sales. EDI has potential advantages in close trade partnership.

(2) RFID Technology

Radio frequency technology uses radio waves to read from and write to recording media. The distance of RFID can reach several tens of centimeters to several meters, and thousands of bytes of information can be input according to the reading and writing mode, at the same time, it also has extremely high confidentiality. Application field of radio frequency identification technology: material tracking, vehicle and shelf identification and other occasions requiring non-contact data acquisition and exchange, especially occasions requiring frequent changes in data content. RFID system is generally composed of signal transmitter, signal receiver and transmitting and receiving antenna. RFID system can clearly know the location, identity, storage and transportation history, destination, validity period and other useful information of the pallets and even individual goods. RFID can thoroughly implement "source" tracking and provide full transparency in the supply chain, thus realizing rapid supply and minimizing storage costs.

(3) GPS Technology

The global satellite positioning system measures the distance between users and satellites to achieve the positioning effect. Using GPS technology, the GPS receiver in the GPS vehicle-mounted terminal receives and processes GPS constellation signals to locate the vehicle to obtain vehicle information, including the vehicle's dynamic coordinate position (longitude, latitude

and height), time, state, etc. GPS technology is widely used in supply chain management in transportation management, including: vehicle tracking, vehicle navigation, dispatching command, anti-theft alarm and fleet management.

(4) Supply Chain Information System Integration

Supply chain information system integration technology is to integrate all kinds of information systems in a more convenient and lower-cost way by using the "standardization" technology of INTRANET, which makes it easier to achieve seamless connection of databases and enables enterprises to make the internal and external information environment a unified platform through supply chain management software. Under the environment of supply chain management, the architecture of integrated logistics information system can be represented by a two-dimensional model. The first dimension is to integrate all levels of the supply chain, that is, to connect the systems between the supply chain executive level and the supply chain planning level. The second dimension is to connect the functions and fields involved in the supply chain. Such as purchasing, warehousing, planning, transportation and other links through, the implementation of information sharing. The integration of information systems is not a simple superposition of personnel, products and equipment, nor is it a once-and-for-all thing. In fact, it is not difficult to integrate several application systems on one application problem at a time. It is rare to keep pace with changes in demand and to support dynamic integration of systems in a timely manner.

(5) Internet of Things Technology

The Internet of Things is a network concept that connects any article with the Internet according to the agreed protocol through information sensing equipment such as radio frequency identification, infrared sensors, global positioning system, laser scanner, etc. to carry out information exchange and communication so as to realize intelligent identification, positioning, tracking, monitoring and management. At present, the Internet of Things technology has not been applied on a large scale, but in the future, the Internet of Things technology has unlimited application potential in supply chain transportation, storage, production, distribution/distribution and retail.

2.2. The Basic Content of Supply Chain Management

Supply chain management aims to optimize the operation of the supply chain and to include enterprise supply chain management in the management education such as MBA and EMBA in all processes of the supply chain from purchasing to satisfying the end customers at the lowest cost. The basic contents of supply chain management are as follows.

(1) Information Management

In the supply chain, information is the communication carrier of all parties in the supply chain. Enterprises in all stages of the supply chain are integrated through the link of information. Reliable and accurate information is the strong support and basis for enterprise decision-making, which can effectively reduce the uncertainty in enterprise operation and improve the response speed of the supply chain. The main line of supply chain management is information management, and the basis of information management is to build an information platform to realize information sharing, to transmit supply and demand information to all enterprises in the supply chain in a timely and accurate manner, and to further realize supply chain management on this basis.

(2) Customer Management

In the supply chain management, customer management is the starting point of supply chain management. The supply chain originates from customer demand and finally meets customer demand. Therefore, supply chain management is centered on meeting customer demand. Due to the ever-changing customer needs and personality differences, true and accurate customer management is the top priority of enterprise supply chain management.

(3) Inventory Management

If we can grasp the information of changes in customer demand in real time and organize production when customers need it, then we do not need to hold inventory, i.e. replace inventory with information to realize "virtualization" of inventory. An important mission of supply chain management is to use advanced information technology to collect the information of all parties in the supply chain and market demand, replace physical inventory with real-time and accurate information, reduce the error of demand forecast, and thus reduce the risk of holding inventory.

(4) Relationship Management

Modern supply chain management theory provides an effective way to improve competitive advantages and reduce transaction costs. This way is to coordinate the relationships among the members of the supply chain, strengthen the ties with partners, and conduct transactions on the basis of coordinated cooperative relationships, so as to strive for the overall optimization of the supply chain, thus effectively reducing the overall transaction costs of the supply chain and simultaneously increasing the interests of all parties in the supply chain.

(5) Risk Management

Cooperation between enterprises in the supply chain will lead to various risks due to information asymmetry, information distortion, market uncertainty and other changes in political, economic, legal and other factors. In order to make the enterprises in the supply chain obtain satisfactory results from the cooperation, certain measures must be taken to avoid the risks in the operation of the supply chain, such as improving the transparency and sharing of information, optimizing the contract mode, and establishing the supervision and control mechanism, etc. In particular, various measures must be adopted to implement the incentives through the operation of the incentive mechanism in each stage of the enterprise cooperation, so as to make the cooperation between the supply chain enterprises more effective.

2.3. Problems of Agricultural Products Supply Chain Management Informatization

Commercial activities of agricultural products need to reduce their transaction costs, optimize the operation efficiency of the supply chain system, reduce losses and many unnecessary circulation links and costs through e-commerce, so as to give full play to the advantages of networked e-commerce. The following problems exist in the informatization of agricultural product supply chain management.

(1) Information Problems

The special characteristics of agricultural products determine that they have not only significant differentiation on the supply side, but also individuation and differentiation on the demand side. This feature requires that the problem of information asymmetry can be better solved in the whole supply chain system than ordinary commodities. However, in the whole supply chain system of agricultural products, this information asymmetry problem is difficult to solve due to its lack of standardized features. Trading activities for agricultural products are not only difficult to be symmetrical in objective information, but also have to highlight customer experience and intuitive feelings. However, the development of the traditional agricultural product supply chain system lags behind, making the circulation links of agricultural products often more and the noise encountered in information transmission more. The problem of asymmetric information is prominent, making adverse selection and moral hazard more likely to occur. The result is that good products may be difficult to be recognized and accepted by the market in a timely, true and accurate manner, or bad products may be inferior to good ones and the market may be flooded with inferior ones.

(2) Cooperation

Optimization of supply chain is essentially a cooperation issue. Only through mutual trust,

stability and relatively long-term cooperation can each node enterprise in the supply chain reduce the transaction cost of the whole supply chain, optimize the operation efficiency and finally bring win-win returns to each node enterprise and consumers. However, self-interested market players often do not voluntarily choose cooperation in the market environment, or such unilateral cooperation has higher risks. Contract mechanism is a foundation, but contracts cannot solve all problems. Legal environment, government governance, industry self-discipline, market forces, the ideology of actors and informal culture and customs will all affect the effective formation and effectiveness of cooperation in the supply chain, which will directly affect the operation and efficiency of the agricultural product supply chain system. There is no doubt that in the process of promoting the development of market economy, especially since the 18th National Congress of the Communist Party of China, China has continuously made new achievements in how to improve the legal environment of market economy, promote the government's governance capability, improve the market system and various mechanisms, and promote honest operation. However, these are long-term and continuous systematic projects, and ultimately need to form a good social and economic ecology. In reality, how to strengthen and perfect the self-perfection and self-cooperation of the agricultural product supply chain system as soon as possible is a problem that must be confronted directly.

(3) Logistics

E-commerce of agricultural products cannot be separated from the corresponding logistics system, logistics facilities and logistics services, which is precisely the bottleneck problem of promoting e-commerce in the vast rural areas and improving the operation efficiency of agricultural product supply chain system. Many logistics companies have and are expanding their business outlets and services to the rural market. However, due to the seasonal and differentiated production of agricultural products and the small-scale and decentralized agricultural operations in our country, it is difficult to realize seamless connection between various links of agricultural product logistics at low cost and high efficiency. There are externalities in the construction of logistics systems and logistics services in the vast rural markets. From the perspective of maximizing their own interests, logistics enterprises, of course, lack sufficient motivation or ability to build such a public logistics system. At present, the logistics organization and network spontaneously formed by the market cannot meet the needs of the development of e-commerce for agricultural products, nor can they meet the needs of the vast number of rural residents. From another point of view, the special characteristics and demand characteristics of agricultural products also put forward special requirements for the logistics system, such as refrigeration and preservation functions, information traceability function in the process of agricultural products logistics, standardized sorting, processing, packaging, handling and a series of logistics processing, etc.

(4) Talent Problem

The development of e-commerce of agricultural products based on supply chain system is a new type of format and a future development trend. Talents dominate and lead this trend. A large number of all kinds of human resources with scientific and technological innovation, management, organization and mobilization capabilities are required to participate in innovation and entrepreneurship in order to meet the needs of the self-operation and future development of agricultural product supply chain system. These human resources also need to practice and experience in the process of industrial development to realize their own value. This requires breaking all kinds of restrictions between urban and rural areas, between workers and peasants, and between industries, as well as system and mechanism restrictions on the free flow of all kinds of resources, creating a fair and reasonable environment for all kinds of talents to enter this field, and changing all kinds of discriminatory barriers including concepts. At the same time, the development of e-commerce of agricultural products objectively requires more people who are familiar with the

countryside, proficient in agriculture and understand farmers to participate in it. Therefore, localization talents are necessary. The question is how to let these localization talents grow up and participate in innovation and entrepreneurship. It is also a problem that must be solved to enable these talents to continuously learn and improve themselves in practice and to have such a platform to effectively interface with the agricultural product supply chain system.

3. Experiments

3.1. Experimental Content

The experiment is mainly divided into two parts. The first part is to investigate and understand the development status of agricultural products industry in e-commerce supply chain management informatization through literature and analysis of relevant industry personnel. The second part is data collection, collecting relevant data of e-commerce supply chain management informatization in agricultural products industry.

The main problem in the inventory management of e-commerce supply chain of agricultural products is the low overall work efficiency. Because many products in agricultural products have short shelf life, it is necessary to store these fresh products in cold storage so as to ensure the quality of the products. However, in the actual management, the e-commerce supply chain of fresh agricultural products does not fully reflect the important role of e-commerce logistics, and still adopts manual management mode, which leads to the decline of overall work efficiency and fails to provide timely and effective product specific information for consumers. Moreover, the main bodies in different links of the fresh agricultural product e-commerce supply chain lack the spirit of cooperation. They only pay attention to their own economic benefits, but seriously ignore the huge benefits brought by the whole chain, resulting in frequent breakage of the supply chain, serious accumulation of fresh agricultural product inventory, failure to deliver goods to customers within the specified time and other problems.

At present, the logistics and distribution hardware facilities in the e-commerce supply chain of agricultural products are relatively backward and cannot meet the actual distribution demand of products. The relevant logistics and transportation systems also need to be further improved. China's agricultural products logistics management has not effectively applied cold chain transportation facilities, thus increasing the proportion of losses in logistics transportation. According to relevant investigations, the loss rate has exceeded 35%, which shows that there is a serious waste of resources in China's agricultural products. Some distributors have clear requirements for the freshness of agricultural products, hoping to ensure the overall reputation and product quality of the store, especially for fresh agricultural products. Businesses hope that the goods can still maintain a certain freshness when reaching the buyers. Therefore, there are strict regulations on the time limit for the delivery of goods. It is necessary to refrigerate the products during the whole process of transportation and try our best to shorten the transportation time. At present, China's agricultural products transportation is still using the previous logistics transportation mode, so it cannot meet the transportation requirements of special agricultural products in time when limited by specific conditions.

The information interaction in the e-commerce supply chain of agricultural products is not smooth, all links of the supply chain fail to realize effective information sharing, and there is a lack of information sharing mechanism for agricultural products, which seriously reduces the overall actual supply chain benefits. In actual work, the information interaction between distributors and suppliers in the agricultural product supply chain cannot be effectively applied to the e-commerce platform, which results in that the agricultural product information cannot be updated in time, and the advantages of the network platform cannot be reflected. At the same time, there will be more

risk problems due to the discrepancy of information. When the market demand for agricultural products continues to rise, the e-commerce platform will correspondingly increase purchase orders, but it ignores the problem that information in the supply chain cannot be shared in time, which will lead to overstock of inventory and increase costs.

3.2. Experimental Results

In order to better study the development status of e-commerce supply chain management informatization in agricultural products industry. We collect data from transportation, the knowledge level of agricultural personnel and the situation of talents. First, we investigated the proportion of rural areas with e-commerce distribution sites, as shown in Table 1.

Table 1. Proportion of villages with e-commerce distribution sites

Area	The Whole Country	Eastern Region	Midland	Western Region	Northeast Region
Percentage (%)	25.1	29.4	22.9	21.9	24.1

In the traditional logistics distribution enterprises, in order to realize the reasonable distribution of a large number of resources to many customers, a large area of warehouse is needed for inventory, and due to space constraints, the quantity and types of inventory are greatly limited. In the e-commerce system, the information integration of the distribution system can enable the virtual enterprise to connect warehouses scattered around and belonging to different owners through the network system, making it an "integrated warehouse". Under the unified allocation and coordinated management, the service radius and the distribution space of goods are enlarged. Under such circumstances, the speed, scale and efficiency of goods allocation are greatly improved, making efficient distribution of goods possible. The existence of e-commerce distribution stations will greatly promote the development of e-commerce supply chain management informatization in the agricultural product industry. It is not enough to only have e-commerce distribution stations. A good road can get twice the result with half the effort. Relevant data on rural road conditions are shown in Table 2.

Table 2. Rural road conditions

Main Road Pavement Types in Tongue	Percentage (%)	Main Road Surface Types in the Village	Percentage (%)
Cement Pavement	76.4	Cement Pavement	80.9
Asphalt Pavement	20.2	Asphalt Pavement	8.6
Sand Road Surface	2.3	Sand Road Surface	6.7
Other	1.1	Other	3.8

4. Discussion

4.1. Analysis on Information Development of Agricultural Products Supply Chain Management

As a basic industry, road transport plays a decisive role in the level of economic management. In recent years, due to the continuous improvement of the infrastructure construction capacity of the road transportation industry, various transportation service items and types have emerged continuously, and the degree of diversification of transportation demand has increased. In order to study the current situation of transportation development of e-commerce supply chain management informatization in agricultural products industry, we first made the proportion of rural areas with e-commerce distribution stations into bar charts, as shown in Figure 1.

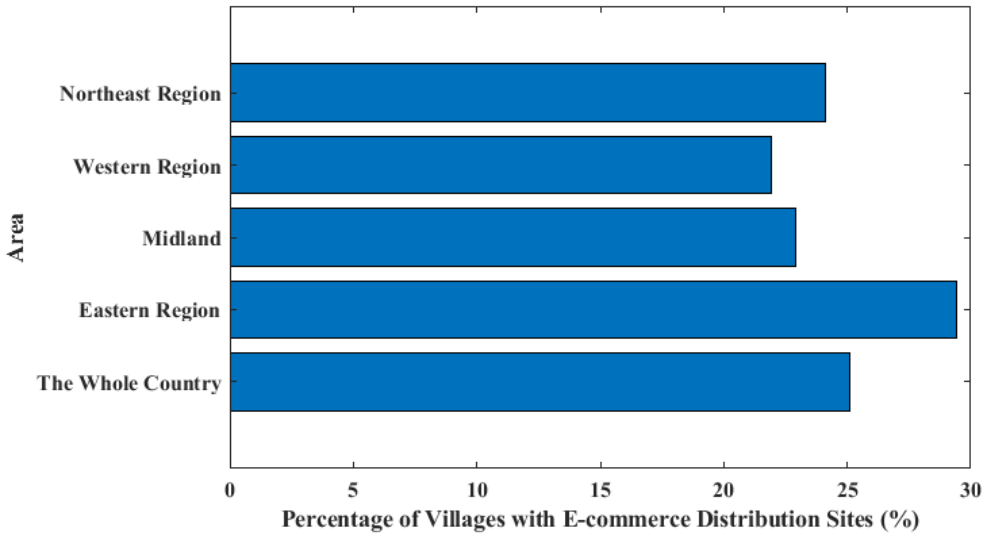

Figure 1. Proportion of villages with e-commerce distribution sites

As can be seen from the bar chart, the proportion of rural areas with e-commerce distribution stations in the eastern region is significantly higher than that in other regions, reaching 29.4%. The proportion of the other three regions is lower than that of the whole country. It can be seen that the development of agricultural e-commerce is not balanced in the regions, but it is closely related to the overall economic development. Next, in order to study the road conditions, the road surface types of Tongue's main roads are drawn into fan-shaped statistical charts, as shown in Figure 2.

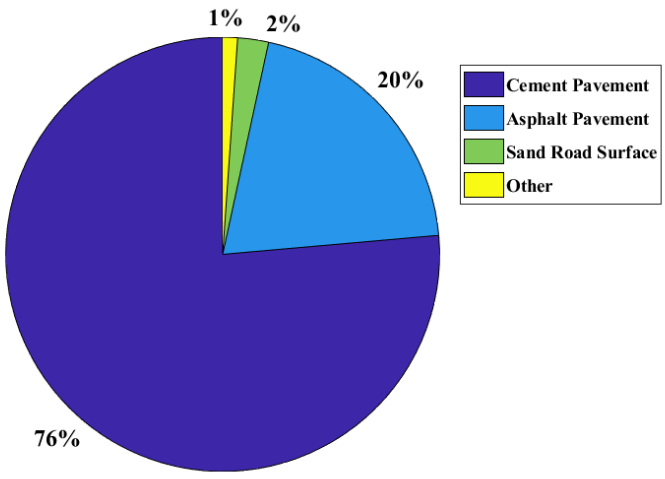

Figure 2. Main road pavement types in tongue

From the fan chart, it can be seen that the cement pavement accounts for the highest proportion of the main road pavement types in Tongue, up to 76.4%, which is very conducive to trade between rural areas and the outside world. However, in order to transport agricultural products out of the village, we must first consider the main roads in the village and draw the relevant data into a fan chart, as shown in Figure 3.

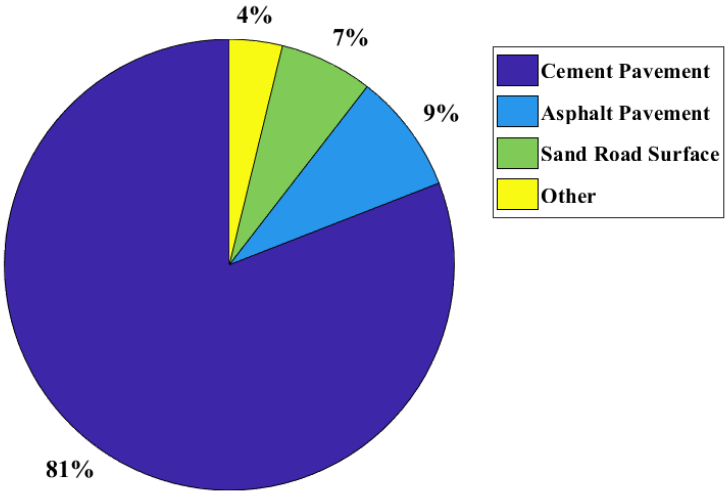

Figure 3. Main road surface types in the village

From the fan chart, it can be seen that cement pavement is the most common type of road surface in the village, accounting for 80.9%, which is very conducive to the transportation within the countryside and the transportation of agricultural products out of the countryside. In road transport production activities, road transport infrastructure is the basis for its smooth development and an important guarantee for continuous improvement of road transport network. While improving the economic management level of road transport, road transport network must be improved. In order to expand the scale of transportation units, it is necessary to expand the scope of transportation services and rationalize the economic management of transportation organizations. Therefore, it is necessary to increase infrastructure construction, which is also the basis of road transport economic development.

The development of e-commerce supply chain management informatization in agricultural products industry requires a large number of talents with scientific and technological innovation, management, organization and mobilization capabilities. In order to study the current situation of talents in rural areas, we have conducted a survey on the composition of the educational level of agricultural production and management personnel. The data are shown in Table 3.

Table 3. Composition of education level of agricultural production and management personnel

Area	The Whole Country	Eastern Region	Midland	Western Region	Northeast Region
Not Attending School (%)	6.4	5.3	5.7	8.7	1.9
Primary School (%)	37	32.5	32.7	44.7	36.1
Junior High School (%)	48.4	52.5	52.6	39.9	55
High School (%)	7.1	8.5	7.9	5.4	5.6
College or Above (%)	1.2	1.2	1.1	1.2	1.4

In order to more intuitively feel the current knowledge level of rural agricultural related employees, we will draw the educational level of agricultural production and management personnel into a bar chart, as shown in Figure 4.

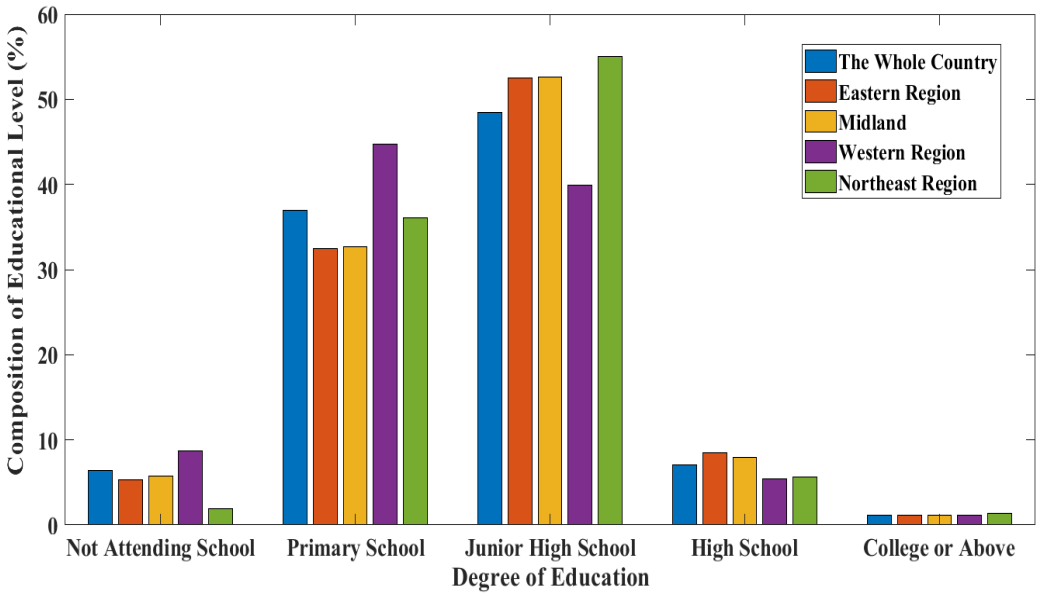

Figure 4. Composition of education level of agricultural production and management personnel

As can be seen from the bar chart, although the overall level of culture and education in China is getting higher and higher, more than 80% of agricultural production and operation personnel have only primary and junior high school education. Only 1.2% of agricultural production and operation personnel have college education or above. The supply chain system of agricultural products e-commerce has huge development space, and the demand for related human resources is also very urgent. It is necessary to train corresponding talents from different levels, including local talents who connect grassroots farmers and spread all over the countryside. Logistics professionals and technical personnel trained by colleges and universities, and management personnel who understand good management; Talents capable of solving various technical problems in the supply chain system; E-commerce of agricultural products and operational talents needed for the operation of the supply chain system.

4.2. Analysis of Suggestions on Agricultural Supply Chain Management Informatization

With the rapid development of e-commerce, logistics enterprises taking distribution logistics as the basic form must establish and perfect e-commerce supply chain system, and use information technology to vigorously develop e-commerce supply chain logistics, so that the development of distribution logistics can meet the needs of rapid development of e-commerce and provide guarantee for the further development and growth of e-commerce. Based on this research, the following suggestions are put forward for the development of agricultural products industry in e-commerce supply chain management informatization.

(1) To Build a Multi-level Network Information System

E-commerce of agricultural products has great potential for development, but the development of information system corresponding to it lags behind. It is necessary to build a multi-level and multi-level agricultural product information network system and agricultural product e-commerce information system from the national level to the local level. When it comes to public platforms, the government should assume corresponding responsibilities and strive to build, standardize and perfect this information system. Relevant government departments at all levels should take their respective responsibilities and carry out their respective duties. A complete set of information management system and operation mechanism should be formed, even standardized from the

legislative level, so that this complete set of information system can meet the needs of agricultural product supply chain system and agricultural product e-commerce development from the information release, update, management and supervision, and minimize the negative impact brought by information problems. When it comes to the market level, the participating parties shall perform their respective information responsibilities on the basis of relevant laws and regulations.

(2) Development of Urban and Rural Logistics System Architecture

Considering and developing the logistics network system from the perspective of coordinating the social and economic development of urban and rural areas, with the help of the national policy of coordinating the development of urban and rural areas and pushing forward the development of urbanization, on the basis of the overall planning of the development of the logistics network, encourage the development of various types of logistics organizations, promote the competition and cooperation among logistics enterprises, optimize the logistics operation mechanism, reduce the overall logistics cost and improve the operation efficiency on the basis of continuously improving the logistics service capability and the level and level of logistics service. Using information system platform, big data technology and other modern scientific and technological means, optimize the logistics operation system and realize intelligent logistics. In this process, logistics will gradually be systematized, standardized, intelligent, integrated and modularized so as to better connect the commodity circulation and material flow between different individuals, different communities, different regions and even different countries.

(3) Formulating the E-commerce Talent Strategy for Agricultural Products

The supply chain system of agricultural products e-commerce has huge development space, and the demand for related human resources is also very urgent. It is necessary to train corresponding talents from different levels, including local talents who connect grassroots farmers and spread all over the countryside. Logistics professionals and technical personnel trained by colleges and universities, and management personnel who understand good management; Talents capable of solving various technical problems in the supply chain system; E-commerce of agricultural products and operational talents needed for the operation of the supply chain system. For these different types of talents, each with its own expertise needs to have a corresponding training plan for future needs. Because the accumulation of human resources takes time, not overnight. The current education system in our country has the problem of uncoordinated and uncoordinated between the education system and the socio-economic system. It requires the education system to make corresponding changes so that it can meet the practical needs of the market and provide the quantity and quality of talents required by the market.

(4) Agricultural Products Supply Chain System Coordination Strategy

Supply chain is a network chain structure and an open system running dynamically. In this system, each participating element has a dynamic relationship that is interrelated and interdependent. Each enterprise must complete the value creation process between upstream and downstream through mutual cooperation, effective communication and docking. All elements of the supply chain, especially logistics, capital flow and information flow, must flow efficiently and reasonably among all nodes of the supply chain based on mutual cooperation and trust. The supply chain is an open system. The internal and external of the system are constantly exchanging materials, energy and information. The cooperation relationship and partners of the supply chain are also constantly interacting, exchanging and changing with each other. In the process of promoting the development of e-commerce supply chain system for agricultural products, we should not only ensure the efficient operation of the system, but also coordinate the relationships among various elements within the system, between the system and the external environment, and between the system and other systems, so as to make it a green, coordinated, open, shared and continuously dynamic and innovative organic whole.

5. Conclusion

(1) The introduction of supply chain management informatization, the purpose and significance of the research and the current research situation. Information sharing is the foundation of supply chain management. The coordinated operation of the supply chain is based on the basic intelligence quotient of high-quality information transmission and sharing of each node enterprise. Therefore, effective supply chain management cannot be separated from the support provided by the information technology system. At present, EDI, RFID, GPS, supply chain information system integration and Internet of Things are the mainstream technologies of supply chain information management.

(2) Through experiments and data analysis, it is found that the proportion of rural areas with e-commerce distribution sites in the eastern region is significantly higher than that in other regions, reaching 29.4%. The cement pavement accounts for 76.4% of the main road pavement types in Tongue. Cement pavement is the most common type of road surface in the village, accounting for 80.9%. More than 80% of agricultural production and management personnel have only primary and junior high school education. Only 1.2% of agricultural production and operation personnel have college education or above.

(3) The development potential of agricultural product e-commerce is huge, but the development of information system corresponding to it lags behind. It is necessary to build a multi-level and multi-level agricultural product information network system and agricultural product e-commerce information system from the national level to the local level. Considering and developing the logistics network system from the perspective of coordinating the social and economic development of urban and rural areas, with the help of the state to coordinate the development of urban and rural areas. Training corresponding talents from different levels and coordinating the supply chain system of agricultural products.

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Data Availability

Data sharing is not applicable to this article as no new data were created or analysed in this study.

Conflict of Interest

The author states that this article has no conflict of interest.

References

[1] Ganesh Kumar C, Murugaiyan Pachayappan, Madanmohan G. (2017). "Agri-food Supply Chain Management: Literature Review", SSRN Electronic Journaldoi, 6(8), pp.56-61. https://doi.org/10.2139/ssrn.3093241

[2] Wang, Xiangyu, Chong, Heap-Yih, Kwak, Young Hoon. (2017). "Supply Chain Management in Megaprojects", Journal of Management in Engineering, 33(4), pp.276-284. https://doi.org/10.1061/(ASCE)ME.1943-5479.0000516

[3] He, G. (2021). Enterprise E-Commerce Marketing System Based on Big Data Methods of Maintaining Social Relations in the Process of E-Commerce Environmental Commodity. Journal

of Organizational and End User Computing (JOEUC), 33(6), 1-16. http://doi.org/10.4018/JOEUC.20211101.oa16

[4] Khan, Mohd Imran, Haleem, Abid, Khan, Shahbaz. (2018). "Defining Halal Supply Chain Management", Supply Chain Forum: An International Journal, 2(1), pp.1-10. https://doi.org/10.1080/16258312.2018.1476776

[5] Khojasteh, Yacob. (2018). "Supply Chain Resiliency: A Review", Journal of Information Systems, 8(13), pp.215-235. https://doi.org/10.1007/978-981-10-4106-8_13

[6] Yuan, C., Wu, C., Wang, D., Yao, S., & Feng, Y. (2021). Review of Consumer-to-Consumer E-Commerce Research Collaboration. Journal of Organizational and End User Computing (JOEUC), 33(4), 167-184. http://doi.org/10.4018/JOEUC.20210701.oa8

[7] Reimann, Felix, Ketchen, David J. (2017). "Power in Supply Chain Management", Journal of Supply Chain Management, 53(2), pp.3-9. https://doi.org/10.1111/jscm.12140

[8] Yu, Ying, Wang, Xin, Zhong, Ray Y., Huang, George Q. (2016). "E-commerce Logistics in Supply Chain Management: Practice Perspective", Procedia CIRP, 52(9), pp.179-185. https://doi.org/10.1016/j.procir.2016.08.002

[9] Ahmad Freij, Khalid Walid, Mohammad Mustafa, Deep Learning Model for Digital Sales Increasing and Forecasting: Towards Smart E-Commerce, Journal of Cybersecurity and Information Management, 2021, Vol. 8, No. 1, pp: 26-34 (Doi : https://doi.org/10.54216/JCIM.080103)

[10] McDonald, R. M, Sharrock, K. R. (2015). "Adapting the Fruit Supply Chain for E-commerce", Acta Horticulturae, 11(3), pp.203-210. https://doi.org/10.17660/ActaHortic.2015.1103.30

[11] Abidi, Naseem, Bandyopadhayay, Asit, Gupta, Vishal. (2017). "Sustainable Supply Chain Management", International Journal of Information Systems and Supply Chain Management, 10(1), pp.29-52. https://doi.org/10.4018/IJISSCM.2017010103

[12] Raghunath, K. Madhu Kishore, Devi, S. Lakshmi Tulasi. (2018). "Supply Chain Risk Management", International Journal of Information Systems and Supply Chain Management, 11(3), pp.87-104. https://doi.org/10.4018/IJISSCM.2018070105

[13] Castillo, Vincent E, Mollenkopf, Diane A, Bell, John E, Bozdogan, Hamparsum. (2018). "Supply Chain Integrity: A Key to Sustainable Supply Chain Management", Journal of Business Logistics,doi, 10(12), pp.76-91. https://doi.org/10.1111/jbl.12176