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Research Article

Upgrade Path and Strategy of Logistics Industry Cluster Based on the Internet of Things

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As the economy grows rapidly and IoT technology advances rapidly, the logistics industry as a service industry is growing rapidly around the world. The logistics industry, meanwhile, is the one that can best play the role of IoT. The rapid development of the logistics industry has brought great competition challenges to the logistics industry. To solve the competitive problems of the logistics industry cluster, this article introduces the research on the upgrade path and strategy of the logistics industry cluster based on the Internet of Things and uses the analytic hierarchy process, investigation method, and expert evaluation method to build the IoT technology information model and logistics cost. According to the established optimization model, the following are proposed: analyzing the problems existing in the logistics industry cluster, giving an upgrade path from the four aspects of manufacturing, technology, structure, and service, and giving specific strategic suggestions from the aspects of talents and enterprises. The accuracy rate of current analysis is as high as 90%, and the implementation rate of upgrade paths and strategy recommendations is as high as 95%.

1. Introduction

1.1. Research Background and Significance. The logistics industry plays commodities distribution efficiency by reducing the total economic cost of society. It is a pillar industry of the modern service industry in China. Simultaneously, it has already played a great role to pull the way of the growth of the economy. Accompanied by the progress of information technology, the drawbacks of traditional logistics such as high cost, chaotic management of transportation links, and low efficiency of logistics process gradually emerge [1]. This requires improving the efficiency of logistics management and gradually forming a modern logistics system. Modern logistics is a more scientific management method and can effectively save the enterprise's human and material resources, creating a considerable "third source of profit" for the enterprise. In recent years, IoT technology promotion for the logistics industry has brought new development opportunities. The use of IoT technology; timely, accurate, and intellectual data collection of all aspects of logistics; real-time sharing of such information; and a more integrated and networked logistics industry boost the modernization of the entire industry [2].

1.2. Related Content. With the growth of the IoT and commodities business, the IoT and commodity companies have become our interest. Shin provided a user interface that uses QoE primarily for personal information to show its relationship to other factors. Shin also pointed out that the growth of IoT makes it even more important to meet the expectations of end users [3]. He studied the relationships that exist between consumers and positive ideas on the Internet of Things and then developed the concept of QoE's personal information. His first analysis used qualitative service-based information (QoS) methods and an appropriate evaluation comparing QoS with QoE [4]. Its model lays the foundation for a segment of IoT applications through user-centric heuristic testing tools. Overall, these results form the basis for future IoT applications and QoE requirements and for the development of basic electronic devices (especially wearable technology) [5, 6]. Liu et al. wanted better performance and the TFEE Chinese companies have shown rapid growth [7]. They used the regression discontinuity (RD) method to study the relationship between "corporate tax refund and additional tax" (RBTVT) and total electronic power (TFEE) in retail companies. RBTVT has strongly promoted the development of TFEE in the retail industry, as well as its impact on energy. At the same time, the process of promoting policy in the eastern region is much more complex than the legislative response in the central and western regions. As a result, they stressed that the government should establish green and taxable crops [8–10]. However, in China, a densely populated country, green mind formation is a long process and cannot be implemented in the short term. Lamiae et al. believed that clusters are introduced into the global era in a variety of ways, which contribute to or hinder regional upliftment. In its unique focus are companies from developing countries that sell the largest retailers in the world [11]. They believed that the establishment of global value chains affects the development of industrial groups and that the restorative processes of manufacturers working on international prices are diverse. At the same time, the promotion of business groups also emphasizes cooperation between businesses and promotes promotion by local organizations [12, 13]. However, the imposition of a global chain does not have a significant impact on industrial groups, and the mechanisms for the rise are unknown.

1.3. Main Content and Innovation. Upgrade path and strategy for the logistics industry cluster based on IoT technology. Through the technical support of the Internet of Things, the analysis of the current situation of the logistics industry is carried out through the analytic hierarchy process and the survey method, and then IoT technology is used to establish improvements. In this way, the spillover effect of logistics technology is formed, and finally through the analysis of the logistics industry, a targeted upgrade path and specific strategic suggestions are proposed. The main innovation of this paper is to use the linkage between the IoT technology and the logistics industry to upgrade the path of the logistics industry; especially, the technology upgrade of IoT achieves the main goal for the upgrade path of the logistics industry.

2. Proposed Method

2.1. Fuzzy Analytic Hierarchy Process. FAHP improves the existing problems in the analytic hierarchy process and increases the reliability of the results [14]. It is mainly used to solve complex systems with multiple factors. It forms a system by dividing elements into different levels, multilevel structure model, and then through the pairwise comparison of elements to establish a judgment consistency matrix, to obtain the relative importance of the elements [15, 16].

2.2. Measurement Method of Logistics Industry Cluster. As the mainstream and core of current location theory, new economic geography usually needs to rely on computer simulation to observe the relationship between two variables due to its complex models. Therefore, more and more theoretical viewpoints have emerged in the research of industrial agglomeration, such as the capital flow model and entrepreneur flow model [17]. In theory, there is no research on industrial agglomeration. There is no more mature method to verify the framework of new economic geography. However, economists still construct some indicators and methods to measure industrial agglomeration and its economic benefits and constantly improve them [18, 19]. Here, based on the industrial agglomeration measurement method, five logistics industry agglomeration measurement methods are summarized [20, 21].

2.2.1. Location Entropy. Location entropy is used to measure the relative degree of specialization of a certain industry in a region. The calculation formula is

$$L_{ij} = \frac{q_{ij}/q_j}{q_i/q_c}. \tag{1}$$

q_c represents the total output value of the higher-level area or the number of employees. Location entropy can reveal the level of specialization of a certain area in a specific industry [22]. The higher the location entropy value, the more obvious the advantage of the agglomeration degree of the i industry in the j area, and the other way, it shows that there is no obvious advantage [23, 24]. Location entropy is widely used in the analysis of regional advantageous industries. However, this indicator only uses a single data, the output value of the logistics industry or the number of employees, which means that the labor productivity of each region is regarded the same. Obviously, this is not consistent with the facts. Factors such as the level of technology in the region, the quality of employees, and the popularity of machinery will cause the gap in labor productivity in different regions. Therefore, the regional entropy is improved [25]. The formula is as follows:

$$T_{ij} = \frac{q_{ij}/q_j}{q_i/q_c} \times \frac{p_{ij}/q_{ij}}{p_i/q_i}. \tag{2}$$

Simplify formula (1) to

$$T_{ij} = \frac{p_{ij}/q_j}{p_i/q_c}. \tag{3}$$

Among them, T represents the improved location entropy. The number of employees p_{ij} represents the output value of the i industry in the j area, and p_i represents the output value of the i industry in the higher-level area. The value of the improved location entropy fluctuates above and below l, greater than l indicates a higher degree of agglomeration, and less than 1 indicates a lower degree of concentration. After adding the labor productivity factor, the value of the improved location entropy becomes the ratio of the output value of the logistics industry in a certain area to the total employed population in the area and the ratio of the high-level regional average.

2.2.2. Herfindahl Index. The Herfindahl–Hirschman Index, (HHI) is the sum of the squares of the industry's market share percentages occupied by various market competitors and is used to measure changes in market share [26]. The calculation formula is

$$H = \sum_{i=1}^{n} S_i^2 = \sum_{i=1}^{n} \left(\frac{x_i}{X}\right)^2. \tag{4}$$

The size of the H index has a positive relationship with the degree of industrial market agglomeration. The larger the value of the H index, the greater the degree of industrial market agglomeration. Otherwise, the smaller the degree of industrial market agglomeration. If $H = 1$, then the amount or sales of the industry are concentrated in one enterprise. If $H = 0$, then there are countless companies of similar scale in the industry, which is like a perfectly competitive market [27].

2.2.3. Space Gini Coefficient. Many economists use this index to measure the degree of industrial agglomeration. The spatial Gini coefficient is the application of the method of measuring inequality in the field of income distribution to the method of spatial economic analysis to measure the inequality of spatial economic distribution. Assuming the premise that an economy (region or country) can be divided into M geographic blocks, the calculation formula of the spatial Gini coefficient is

$$G = \sum_{i=1}^{M} \left(S_i - x_i\right)^2. \tag{5}$$

The value of the spatial Gini coefficient ranges from 0 to 1 and is mainly used to measure the degree of unbalanced industrial spatial distribution. When $G = 0$, an industry is completely evenly distributed in all regions, and when $G = 1$, an industry is completely in one region [28].

2.2.4. Industry Concentration. Industry concentration refers to the relevant values (such as sales, output value, number of employees, total assets) in the entire industry or market share. The calculation formula is

$$CR_n = \frac{\sum_{i=1}^{n} x_i}{\sum_{i=1}^{N} x_i}. \tag{6}$$

Industry concentration is the most commonly used and simple indicator. The industry concentration is usually used to analyze the market share of my country's largest and top-ranked manufacturing, automotive and other companies to reflect the degree of monopoly of the company in the industry [29].

2.2.5. EG Coefficient. The EG coefficient adds the difference of industrial organization to the results of the H index and the G coefficient. The assumption is that there are N companies in a particular industry in a certain economy distributed in M regions, and these N companies divide the economy into M geographic areas. The formula for the EG coefficient is

$$\mathrm{EG} = \frac{G - \left(1 - \sum_{y=1}^{N} x_i^2\right) H}{\left(1 - \sum_{y=1}^{N} x_i^2\right)(1 - H)}. \tag{7}$$

The EG coefficient can clearly indicate whether the agglomeration of the industry is due to the random formation, or the scale benefit or location advantage that the concentration of enterprises within the industry can enjoy, which is more clear than the spatial Gini coefficient [30, 31]. Moreover, the EG index can compare the degree of agglomeration of different industries, as well as the degree of industry concentration of different countries and times, and it is less affected by the size of the industry and the size of the geographical distribution area of the company. The larger the value of the EG coefficient, it means that there is additional concentration, which is far more obvious than random concentration [32].

2.3. Investigation Method. Questionnaire surveys can provide information such as academic qualifications, job titles, employment, and other information for the logistics industry through literature research, labor force population surveys in the logistics industry, and market demand field surveys, through the collection, classification, statistics, and sorting of the questionnaires, business express volume, and freight forwarding. Density analysis provides first-hand information.

2.4. Expert Evaluation Method. The questionnaire is evaluated by 10 experts in the IoT field, and the experts' professional insights and understanding of the IoT technology are used to construct a quantitative scale for the content of the questionnaire, and then the average value is extracted through the results given by each expert. The data of the quantity scale is used to establish the priority relation matrix of the quantity scale.

3. Establishment of the Model

3.1. The Establishment of the Priority Relation Matrix of FAHP Model. Send the questionnaire to 10 experts in this field, use the expert comment method, as shown in Table 1, compare the importance of the two factors, take the average of the results given by the experts, and get the priority relationship matrix.

As shown in Table 1, the degree of the relationship between 0.5 and 0.9 increases in weight, and 0.1–0.4 represents the comparative relationship.

3.2. The Optimal Overall Planning Model of Logistics Cost. The P-median location problem is essentially a facility allocation problem, which refers to a method that can optimize the overall or average performance among P facility locations. The optimal here usually refers to the optimal total cost. The distance mentioned in the example refers to the straight-line distance from the demand point to a certain facility (or the distance under conditions); the demand right distance refers to the demand of a certain demand the amount is multiplied by the closest distance to the facility at the demand point. This demand-weighted distance is often used in the practical application of the P-median problem.

Table 1: Quantity scale.

Scaling	Description
0.5	Two compared factors are equally important
0.6	Two factors in comparison, one is slightly more important than the other
0.7	Two factors in comparison, one is obviously more important than the other
0.8	Two factors compared, one is more important than the other
0.9	One of the two compared factors is more important than the other extreme
0.1–0.4	Represents inverse comparison

The P-median problem can be described as follows: in a given graph, coordinate, or a network, under the constraints of constraints, find a set of points from several points, so that the set of points can reach the performance of the demand point optimal. The integer programming model of the P-median problem is as follows:

3.2.1. Objective Function.

$$\mathrm{Min}Z = \sum_{i\in N}\sum_{j\in M} a_j d_{ij} y_{ij}. \tag{8}$$

3.2.2. Restrictions.

$$\begin{aligned} &\sum_{j\in M} y_{ij} = 1, \quad \forall_i \in N,\\ &\sum_{j\in M} x_j = P,\\ &y_{ij} \le x_j, \quad i \in N,\ j \in M,\\ &y_{ij} \in \{0,1\},\\ &x_j \in \{0,1\}. \end{aligned} \tag{9}$$

Each variable in the objective function represents the meaning: N represents the set of requirements, M represents the set of candidate facilities, a represents the demand, d represents the unit cost from the i-th demand point to the j-th candidate facility, and P represents the point established by the median:

$$\begin{aligned} &x_j \begin{cases} 1, & \text{When } j \text{ is the median point},\\ 0, & \text{Other situations}, \end{cases}\\ &y_{ij} \begin{cases} 1, & \text{When demand point } i \text{ is served by facility } j,\\ 0, & \text{Other situations}. \end{cases} \end{aligned} \tag{10}$$

3.3. Technology Spillover Effects of the Logistics Industry Cluster Model. According to the division of labor structure and competition and cooperation relationship within industrial clusters, technology spillover effects show different forms as shown in Figure 1.

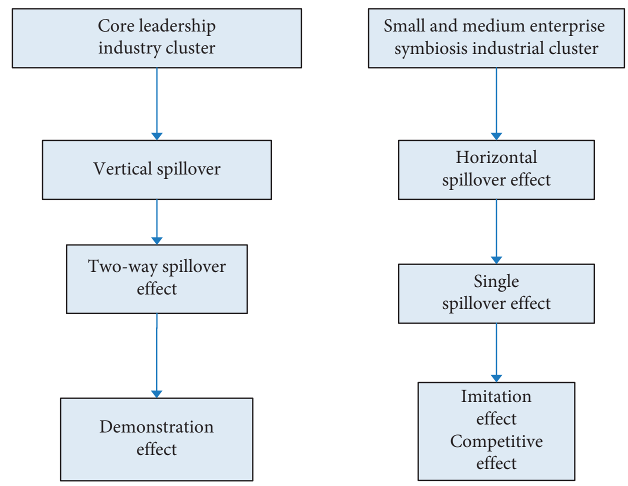

Figure 1: Technology spillover effects of the logistics industry cluster model.

Figure 1 shows that the core leadership industry cluster has a vertical spillover effect on upstream and downstream cooperative enterprises. In the coproduction industry cluster of small and medium-sized enterprises, there is a horizontal technology spillover effect, which is easy to stimulate the imitation and competition of competing enterprises. The greater the effect, the greater the demonstration effect and synergy effect on the overall competitiveness of the cluster. In this mode, the core leading technology of the enterprise can be stimulated. R&D power can also accelerate the diffusion and application of technological innovation in the logistics industry cluster. As a result, the product advantages and technical level of the imitators are continuously improved, and the innovation power is gradually enhanced.

3.4. Application Model of the IoT in Logistics Business. As shown in Figure 2, use the IoT technology RFID to establish an information system for the source of goods, and then interface with the transfer station and the third-party logistics information system, and finally interface with the site and the source of goods, making cargo information controllable and knowable in real time.

4. Status Quo of the Logistics Industry and Analysis of Upgrade Paths and Strategies

4.1. Status Quo and Analysis of Logistics Industry Development. This article analyzes and surveys logistics companies in a certain city. The survey mainly analyzes different types of logistics companies, from the labor population and market demand conditions.

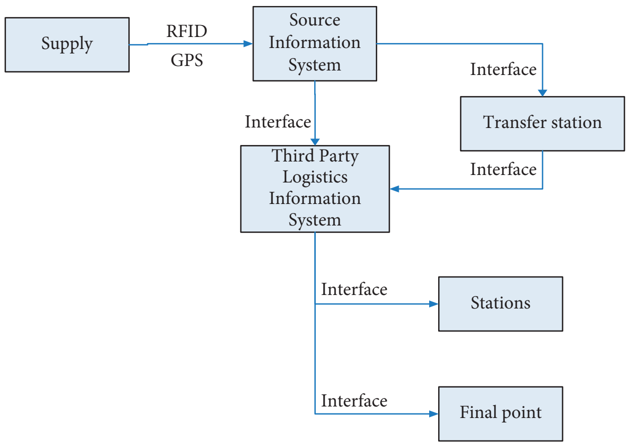

Figure 2: Application model of IoT technology in logistics.

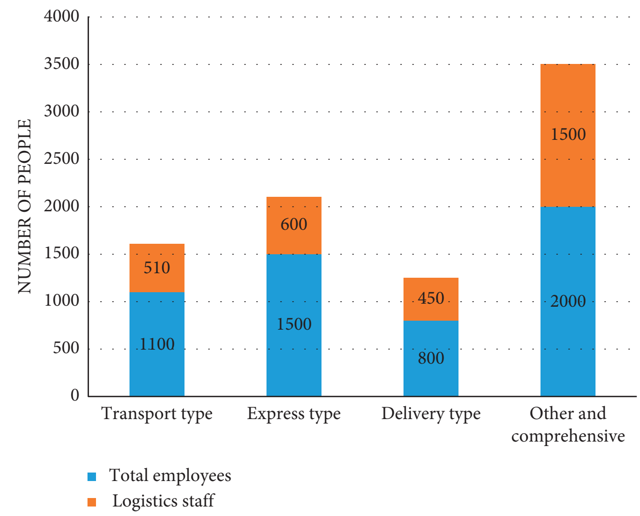

Figure 3: Employees in logistics positions in the first half of the year.

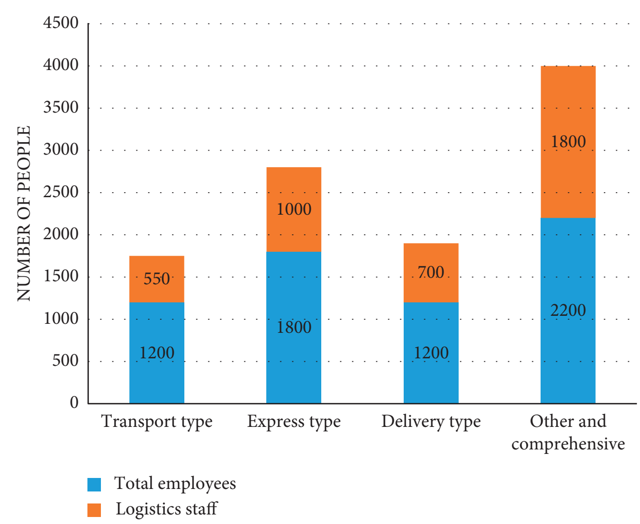

Figure 4: Number of employees in logistics positions in the second half of the year.

4.1.1. Labor Population Survey and Analysis. The investigation and analysis of the working population are based on the aspects of the employees in the enterprise logistics post and the aspects of the academic qualifications and professional titles of the employees.

As shown in Figures 3 and 4, from a general perspective, the number of employees and logistics employees in the second half of the year increased compared with the first half of the year, but transportation companies have a downward trend. The total number of employees in transportation companies rose from 1,100 to 1,200, and the number of employees in logistics increased from 510 to 550. Although the number of employees has increased, the proportion has declined. The number of employees in express delivery enterprises increased from 1500 to 1800, and the proportion of logistics staff increased from 600 to 1800. The proportion of employees in distribution enterprises increased from 800 to 1200, and logistics staff increased from 450 to 700. The ratio in the second half of the year was higher than that in the first half. The number of employees in other and comprehensive enterprises has increased from 2000 to 2200, and the number of logistics personnel has increased from 1500 to 1800. The proportion has also increased in the second half of the year. It can be seen from the figure that, except for the decline in the proportion of logistics staff in transportation companies, the others have increased. Transportation companies are traditional logistics companies. The decline in the proportion is due to the single operation mode of transportation companies and it is difficult to support. Industrial restructuring and upgrading, high operating costs of enterprises, and generally low profits have led to the loss of logistics talents. However, new logistics companies, such as express delivery companies and distribution companies, have seen a significant increase in the number of employees in logistics positions. Therefore, it is necessary to carry out the diversified operation of logistics enterprises to support the adjustment and upgrading of the industrial structure, thereby increasing profits and increasing the guarantee of talents, and retaining logistics talents.

4.1.2. Educational Background. As shown in Figure 5, the number of transportation companies with a bachelor degree or above has increased from 10 to 20, the number of express companies with a bachelor degree or above has increased from 200 to 250, the number of distribution companies with a bachelor degree or above has increased from 2 to 5, and the number of people with a bachelor degree or above in other and integrated companies has increased from 2 to 5, increasing from 600 to 700. It can be seen that there are fewer talents with a bachelor's degree or above in transportation and distribution enterprises. Compared with the weaker informatization and mechanization work, the employees are mainly concentrated below bachelor degree. On the one hand, it may be because the logistics industry is an emerging industry, and the quantity and quality of talents delivered by colleges and universities cannot meet the social needs; on the other hand, it may be due to people's insufficient

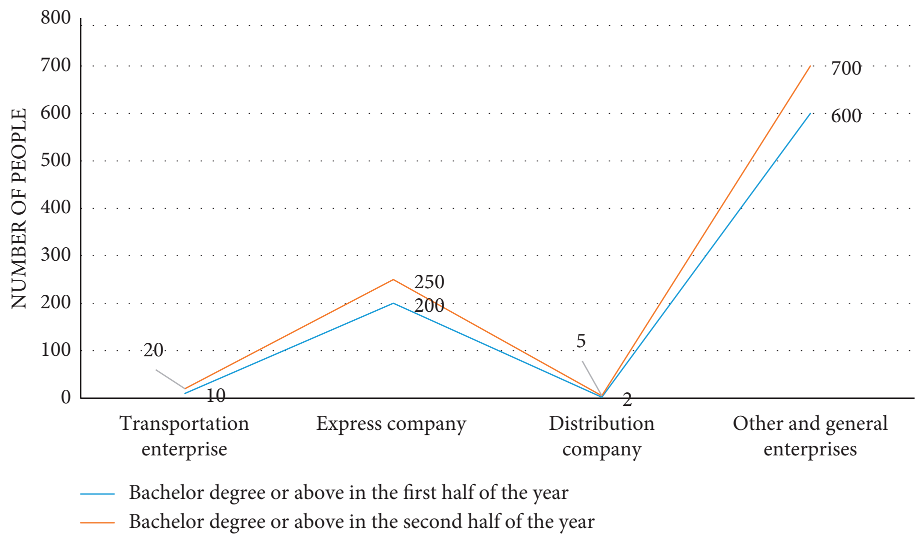

Figure 5: Number of people with bachelor's degrees or above in the first half and the second half of the year.

understanding of the logistics industry, thinking that the logistics industry is hard and its social status is not high, unwilling to work in the logistics industry. Therefore, the logistics industry should speed up the construction of technical transportation in this industry, so that high-tech talents can use it. In addition, it is necessary to increase the social recognition of the logistics industry, improve social status, and promote the importance of logistics services.

4.1.3. Staff Titles. As shown in Table 2, transportation-type technical personnel accounted for 32% of the total, express-type technical personnel accounted for 30%, distribution enterprise technical personnel accounted for 17%, and other and integrated enterprise technical personnel accounted for 36%. It can be seen that there is a shortage of middle and senior logistics talents in logistics companies today. Among them, the most lacking are senior technicians and senior workers, followed by intermediate and senior logistics engineers. In addition, companies still lack talents with intermediate and senior technical titles. For logistics, a new industry that relies on the development of the e-commerce Internet industry, there is a shortage of high-end comprehensive personnel with solid theoretical knowledge and rich practical experience. The current quantity and quality of logistics professionals exported from universities are compared with the needs of the industry. There is still a big gap. Therefore, the training of high-tech personnel is very important.

4.1.4. Density of Goods Generation. As shown in Figure 6, the global and national production density of goods is showing a decreasing trend, from 8 to 5.5 globally, and from 7.5 to 4.5 nationwide. This shows to a certain extent that economic growth has gradually shifted from extensive development to intensive development, and the freight category has also begun to transform from a "weight type" with high strength and low value-added to a "quality type" with low strength and high value-added. Therefore, the logistics industry should begin to gradually transform the freight category to a quality type to ensure the upgrade of logistics enterprises.

4.1.5. Consumer Logistics Demand. As shown in Figure 7, the retail sales of products sold have increased year by year, from 2,500 in 2017 to 2,800 in 2018, to 3,100 in 2019, and finally to 3,500 in 2020. It can be seen that the consumption-driven economic model has taken initial shape, laying a solid foundation for the upgrading of the logistics industry cluster.

4.1.6. International Logistics Demand. As shown in Figure 8, international logistics demand is increasing year by year, from 660,000 in 2017 to 1.3 million in 2020. The increase in international logistics demand provides a broad market space and development for the international logistics business of the logistics industry cluster. opportunity.

4.1.7. E-Commerce Logistics Demand. As shown in Figure 9, the express delivery volume of e-commerce platforms has increased year by year, and the number of increases each year has increased exponentially, from 10 million in 2017 to 54 million in 2020. Due to the unusually rapid development of electronic shipping services, it has been boosted, with multiple growth of e-commerce express delivery. Therefore, logistics industry clusters should attach importance to e-commerce platforms and use the development of e-commerce platforms to bring blowout development to the logistics industry.

4.2. Analysis of Factors Affecting the Development of Logistics Clusters and Strategy Research. Through reading a large number of documents, summarize the influencing factors of the agglomeration development of the logistics industry at

Table 2: Proportion of logistics talents.

Type of enterprise	Intermediate and senior technical titles (%)	Senior worker, senior technician (%)	Middle and senior logistics division (%)	Practitioners in other positions (%)
Transportation enterprise	8	5	10	77
Express company	10	5	15	70
Distribution company	5	4	8	83
Other and general enterprises	15	6	15	64

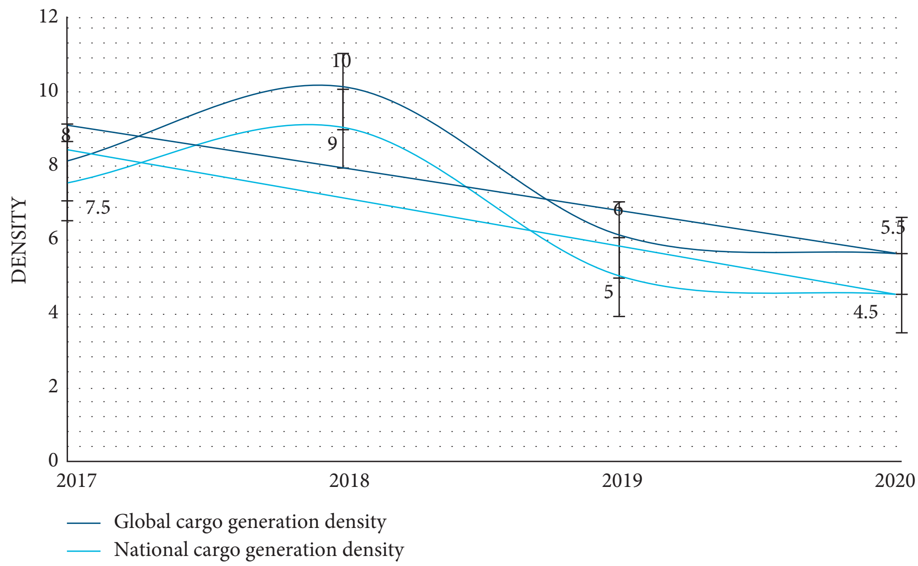

Figure 6: Global and national cargo generation density from 2017 to 2020.

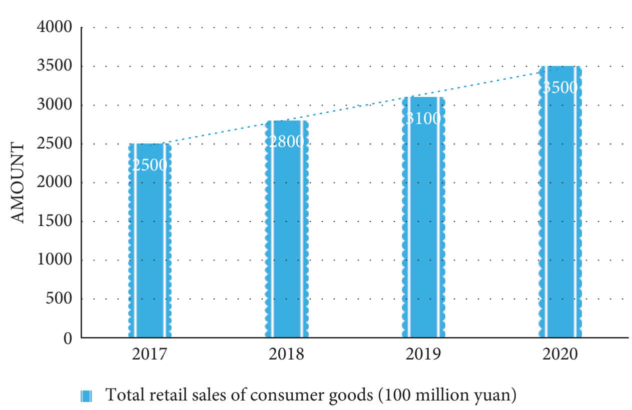

Figure 7: 2017–2020 total retail sales of consumer goods.

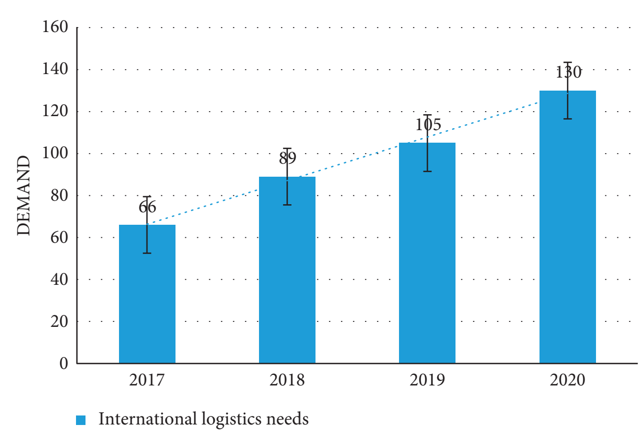

Figure 8: International logistics demand.

home and abroad; combine the development status of the logistics industry, based on the principles of comprehensiveness, relevance, timeliness, and differentiation; and summarize the impact of the development of the logistics industry. The factors are classified into inductive factors, main driving factors, and supportive factors. Among them, inductive factors mainly refer to the regional environment, the main driving factors are from the perspective of logistics enterprises, and the supporting factors are from the government's perspective set off.

It can be seen from Table 3 that the inductive factors are divided into an industrial environment, market demand, labor cost, logistics infrastructure, logistics infrastructure, logistics information platform, and transportation environment. The active factors are the cooperation between enterprises and the scale and strength of enterprises. Supporting factors include the maintenance of the market environment and the provision of public goods and services.

4.2.1. Weight Analysis of Influencing Factors. As shown in Table 4, the overall inductive factor weight is more important than the main motivation factor and supportive

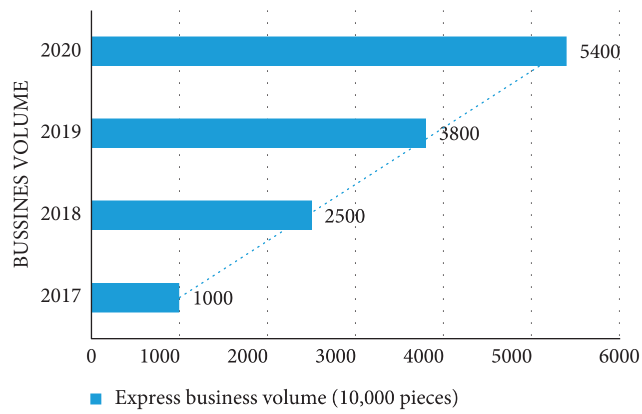

Figure 9: E-commerce express business volume.

Table 3: Influencing factors of logistics industry cluster.

Factors influencing the development of logistics industry cluster	Inducing factors	Industrial environment Market demand Labor cost Logistics infrastructure Logistics information platform Traffic environment
	Main driving factor (logistics company)	Cooperation between enterprises The size and strength of the company
	Supportive factors (government)	Maintenance of the market environment Provision of public goods and services

Table 4: Ranking table of the relative importance of each factor.

	Factor	Weights	Sort
Inducing factors	Industrial environment	0.065	2
	Market demand	0.070	1
	Labor cost	0.058	4
	Logistics infrastructure	0.057	5
	Logistics information platform	0.055	6
	Traffic environment	0.063	3
Main driving force	Cooperation between enterprises	0.055	1
	The size and strength of the company	0.053	2
Support factor	Maintenance of the market environment	0.500	2
	Provision of public goods and services	0.530	1

factor, and the top three inductive factors are market demand, industrial environment, and transportation environment. It can be seen that enterprises maintain the idea that logistics enterprises are labor-intensive industries and ignore the importance of high-quality talents. According to interviews and questionnaire surveys, experts and scholars in the logistics field pay more attention to logistics information platforms, but some companies do not pay much attention to them, leading to such results. Therefore, it can also be seen that the government's guidance to enterprises and the interaction between university experts and enterprises are still relatively important, and the ideas of some enterprises are still relatively mature. Because the weights of these six inducing factors are not much different, these aspects should be paid attention to. From the main driving factor, a strong logistics company can attract the agglomeration of small and medium-sized enterprises, but no matter how strong the logistics company is, if ignoring the competition and cooperation with other companies, failing to keep pace with the times, and losing the opportunity for common progress, then it will eventually decline. The strong cooperation between enterprises can enable enterprises to learn from each other, complement each other, and make enterprises stronger. Healthy competition can stimulate enterprises to continuously improve their strength, thereby eliminating the fittest and improving the overall level of the industry. Therefore, the two complement each other, and the weight difference is very small. From the perspective of support factors, government support is also crucial to the development of logistics industry clusters. Therefore,

Table 5: Logistics industry cluster development strategies and practices.

Factor	Strategic approach
Inducing factors	(1) Attach importance to the development of high-quality talents (2) Make full use of the logistics information platform (3) Develop ideological concepts that keep pace with the times (4) Focus on the construction of logistics infrastructure
Main driving factors	(1) Strengthen cooperation between enterprises (2) Learn from each other and make progress together
Support factor	(1) Correctly guide the cluster development of the logistics industry (2) Create a good competitive environment

development strategies should not only pay attention to inductive factors but also take into account the cooperation between enterprises in the main driving factors and public goods and support factors. The logistics industry cluster development strategy is as follows.

It can be seen from Table 5 that development strategies and practices give specific suggestions from three aspects. The government needs to correctly guide the development of logistics industry clusters and create a good competitive environment. In terms of the main driving force, it is necessary to strengthen cooperation and mutual learning among enterprises and make common progress. In terms of supporting factors and inducing factors, it is necessary to focus on the cultivation of high-quality talents. It is necessary to abandon the idea that logistics companies are boss-intensive industries and make full use of logistics companies. The logistics information platform develops the concept of advancing with the times, pays attention to the construction of logistics infrastructure, and combines the IoT technology with the logistics industry.

4.3. Analysis of the Upgrade Objectives and Paths of Logistics Industry Clusters Based on the Internet of Things. According to the theory of global value chain, the upgrading of industrial clusters means that, along the value chain, from low to high, occupy the high end of the global value chain, to obtain the maximum profit in the whole chain. Therefore, by decomposing the links of the value chain, we can get the target system of industrial upgrading under the guidance of the value chain.

Figure 10 is divided into three targets, namely, technology upgrade, structural upgrade, and service upgrade. This article believes that the upgrade target can be divided into the position where the first main target value curve moves up as a whole. Continue to consolidate the comparative advantages of the cluster in the manufacturing link of the global value chain, enhance the core competitiveness of the production link, combine with the development status of my country's local industrial clusters, diversify from cost advantages to competitive advantages, and attract core leading companies in the global supply chain to enter "manufacturing" "in China," thus driving the overall upward movement of the value curve and increasing the added value of each value activity link. According to the value chain curve structure, we decompose this main goal into two subgoals, structural optimization and manufacturing upgrade. Created in China, combined with the partial labor structure in the cluster, strengthen supply chain management, cultivate core leading enterprises, and strengthen the synergy between upstream and downstream SMEs. The main goal is to enhance the position in the global value chain, from the manufacturing link to both sides, from labor-intensive to capital, technology-intensive, and other high value-added links, through the establishment of a good supply chain organizational structure and the upgrading of the cluster structure operation mechanism, and then promote the optimized management of the supply chain innovation network. Continuously improve the overall upgrade path system of the cluster and realize the transformation of Made in China.

It can be seen from Figure 11 that the upgrade path provides corresponding upgrade methods from four aspects: manufacturing upgrade, structural upgrade, technology upgrade, and service optimization. The first is the manufacturing upgrade route. The competition between clusters should consider not only labor costs but also information costs; in addition to cost factors, we also need to pay attention to service quality and market insights. Supply chain management just solves these problems. The supply chain IoT will rectify the internal structure of the logistics industry cluster, increase the technological leadership through the investment in IoT technology, increase the degree of networking of the cluster's organizational structure, and improve the efficiency of competition and matchmaking. The logistics, capital flow, and information flow among enterprises in the cluster are maintained in an orderly and smooth manner under the operation and management of the supply chain, forming a low-cost, high-efficiency enterprise diversified competitive advantage and enhancing the status of the cluster. The second is the performance improvement brought about by structural upgrades and technological upgrades. The last is service optimization, diversified innovation through diversified integration, and then innovation and upgrade. To sum up, the four paths improve the innovation ability and efficiency of logistics industry clusters, reduce costs, promote the

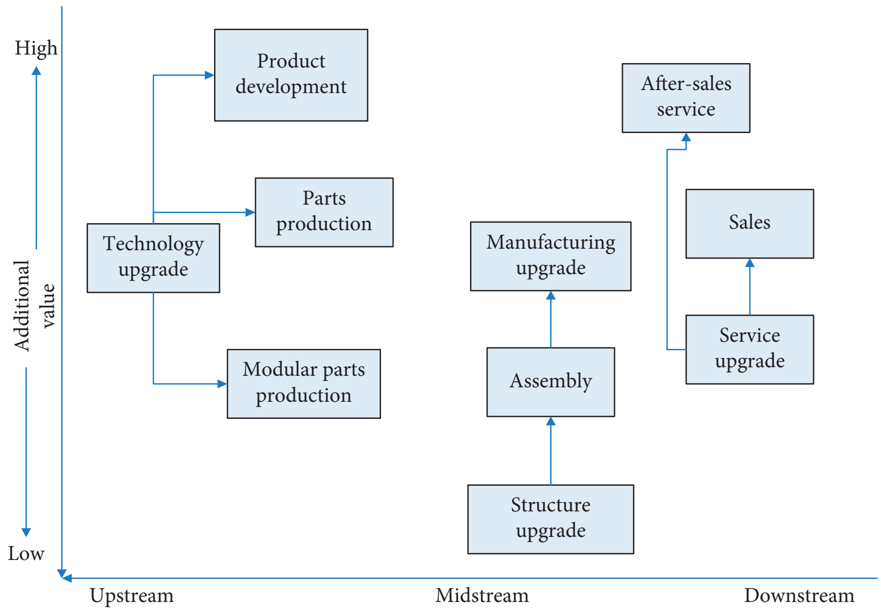

Figure 10: Logistics industry cluster upgrade target system.

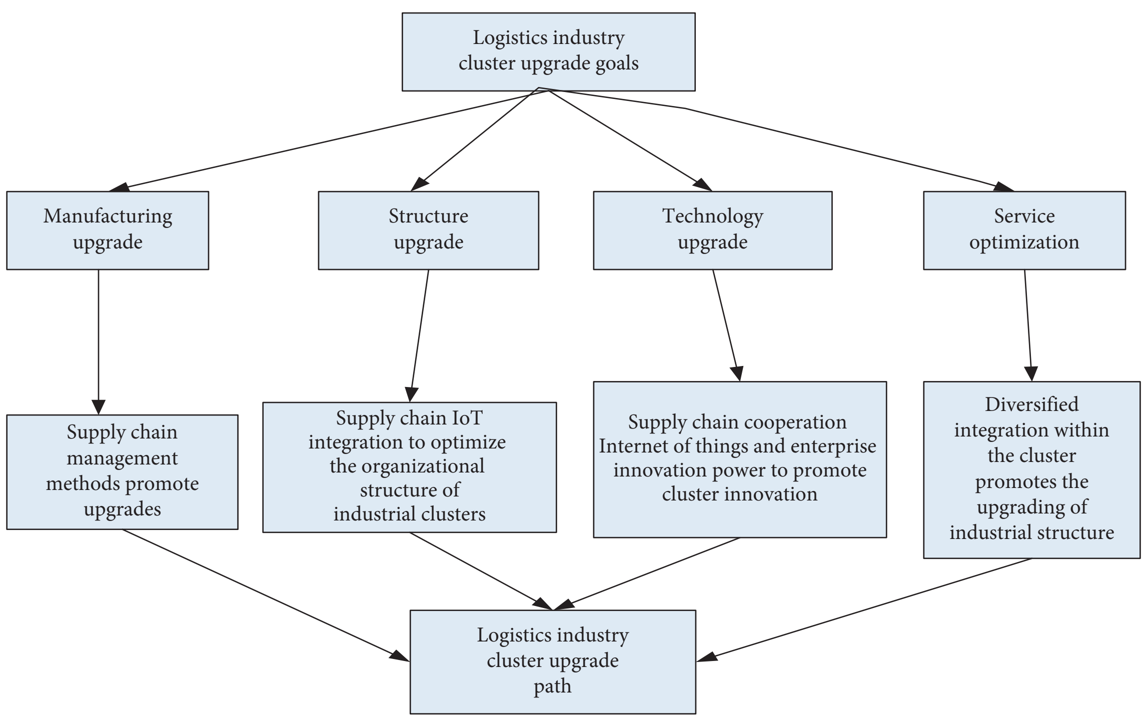

Figure 11: The upgrade path of logistics industry clusters.

migration of logistics industry clusters from low-value chains to high-value chains, and finally realize the upgrade of logistics industry clusters.

5. Conclusion

Through the application, this article concludes that the application of the IoT technology in the logistics industry provides technical support for the upgrade path of the logistics industry and points out the direction of the upgrade path; at the same time, through investigation and analysis of the current logistics industry, there are also some problems in the logistics industry. In response to existing problems, logistics companies must be aware of the importance of cultivating high-quality talents. Only by making full use of the logistics information platform, developing ideas of advancing with the times, focusing on the construction of logistics infrastructure, and strengthening business cooperation, can we truly solve the current difficulties of logistics enterprises and promote the long-term development of logistics enterprises. Make progress together, correctly guide the development of logistics industry clusters, and create strategic suggestions for a good competitive environment. In the future, we will work harder to explore and firmly believe that the logistics industry will bring more convenience and beauty to our lives.

Data Availability

No data were used to support this study.

Conflicts of Interest

The author declares that there are no conflicts of interest regarding the publication of this article.

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