

Study on Third Party Logistics Selection of Fresh Aquatic Products Distribution under E-commerce Environment

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ABSTRACT. *With the development of e-commerce in today's era, e-commerce has penetrated into every aspect of people's life. Many fresh aquatic products enterprises also try to use the trend of e-commerce to open up the network marketing model. In the whole process, the requirements of logistics and distribution services are more stringent, and e-commerce companies with fresh aquatic products choose to outsource the distribution. Therefore, how to choose the third-party logistics service providers that are most suitable for the distribution of fresh aquatic products is an urgent problem to be solved.*

KEYWORDS: *Fresh aquatic products; third-party logistics; distribution*

1. Introduction

With the rapid development of the economy, e-commerce has penetrated into different areas of daily life, and the rhythm of residents' lives has become increasingly tense [1]. In particular, young office workers do not have much free time to go to supermarkets or farmers' markets to buy fresh aquatic products. The busy life makes them want to buy fast, safe and fresh aquatic products from the online shopping channel. On the other hand, the trading of fresh aquatic products through e-commerce can not only determine the demand in advance through online pre-sales, but also reduce the imbalance between production and demand [2]. It can also better organize production, reduce circulation links, reduce circulation costs, improve the benefits of fishermen, production enterprises and online shopkeepers, and make information more accurate [3].

By observing the buyer evaluation of online stores, we can see that most of the response delivery speed is still relatively satisfactory, but the buyer response is mostly delivered on the third day [4]. Buyers complain a lot about the quality of products, such as "insufficient weight", "several dead" and "tasteless" [5]. At the same time, when contacting sellers, most of them settle claims, and a few sellers

have unpleasant disputes with customers. In order to achieve fresh, quality and efficient distribution, the time of delivery and the conditions of insulation directly determine the quality of aquatic products [6]. Therefore, for special products such as fresh aquatic products, outsourcing to third-party logistics can reduce costs and increase professional requirements, so it is important to choose a suitable third-party logistics service provider.

2. Selection of Third Party Logistics Service Providers

2.1 Low level and quality of service

In the fresh aquatic products currently distributed by third-party logistics service providers, there are some problems, such as long delivery period; some increase the speed of delivery, but they are also complained of “lost, wrong, and aquatic products” . And other issues. The customer's satisfaction is not high, and the overall third-party logistics service provider's service level and quality are not high, which leads to serious impact on the operating efficiency of fresh aquatic products companies. In January 2018, there was such a news that a netizen sent an uninsured aquatic crab from Guangdong, worth 300 yuan, and the delivery time was January 16th. However, the shipment was received on February 2, and the aquatic products in the package had deteriorated. However, Yunda Express refused compensation on the grounds that the netizens did not note. Such incidents and news we often hear, not only Yunda Express, but also other express companies often hear the phenomenon of missing and wrong sending.

2.2 Low level of infrastructure

The logistics infrastructure here refers to the hardware aspect. Infrastructure is one of the most basic conditions for the development of logistics. The level of logistics infrastructure also directly affects the scope of business, the perfection of distribution network and the future development of enterprises. At present, the third-party logistics service providers cooperating with fresh aquatic products enterprises generally have the problems of uneven and low logistics foundation, imperfect logistics network planning, and low investment in capital and technology. When visiting the campus express outlets, the Nanning aquatic products wholesale market, and the logistics company warehouse, there is still a lack of basic logistics equipment facilities. If there is no forklift in the warehouse, the phenomenon of damage to the goods is often caused by manual handling. There is no scanner at the delivery point, which makes the work efficiency drop. Most of the distribution companies do not have professional fresh delivery vehicles, and some logistics warehouses choose low-cost rentals, and choose transportation inconvenient places.

2.3 The level of information technology and information security is not high

The service level of third-party logistics service providers is the real-time and dynamic logistics information. Information technology is also a double-edged sword, which brings about the problem of information security. These problems include transaction credit, electronic payment, the integrity system of both sides and the regulation of after-sales service. In short, the low level of information technology and the single mode of transaction, due to the imperfection of capital technology and information, coupled with the high requirements of fresh aquatic products distribution, make the development of China's aquatic products e-commerce difficult. On November 16, 2015, in response to the problem of user information leakage of express delivery, the state also issued the "Express Regulations" specifically stipulating the situation of information leakage, damage and loss of express enterprises or express personnel. If there is such a phenomenon, it should be promptly complained to the supervision department. If there is a leak, it is considered illegal. However, it has not been very effective. Some people are risking breaking the law, and the issue of competing information security between enterprises is still rampant.

2.4 Lack of sense of cooperation

The current era is an era of pursuing win-win cooperation. Only by bringing out their respective advantages can we achieve $1 + 1 > 2$ and share the achievements of cooperation. At present, many service providers regard their peers as competitors rather than partners. When they encounter problems, they want to avoid them rather than actively solve them. They lack the sense of cooperation and can not jointly promote the healthy development of the market, which makes the development of third-party logistics slow. On May 18, 2013, Ma Yun's "Rookie Network" invested a total of 100 billion yuan and entered the express delivery industry. Originally through the shares, Taobao and "three links and one" and SF Express as a community, but the "novice" to join, making other courier share holding rate of only 1% has no right to speak. In 2017, Suning Hao throws over 4.25 billion yuan to acquire Tiantian Express. The rapid development of the times is changing every day.

2.5 Inadequate transport capacity

Overemphasizing the timeliness of distribution of fresh aquatic products, coupled with the imperfection of professional distribution vehicles and equipment, leads to the decline of product quality. On the contrary, it increases the cost of distribution and loses the interests of fresh aquatic products enterprises and customers. Aquatic products distribution has the characteristics of high risk, high loss and high professional requirements. If the transportation volume is too large, because a large number of oxygen deficiency will lead to the death of groups of fresh aquatic products. If refrigerated transportation is adopted, however, how to maintain the sustainability of low temperature refrigeration is a difficult problem. There are also different packaging for different aquatic products. For example, shellfish should be placed under the foam box with a sponge material, and water

should be added with a partition. Fresh seafood should use professional ice bags to make the ice building last for hundreds of hours. If the preservation technology used is not in place, it will cause a large loss rate. At present, China's technology and overall level in this area are still lacking. Therefore, the distribution of fresh aquatic products generally has serious shortage of fresh transportation capacity.

3. Third Party Logistics Choice of Fresh Aquatic Products Distribution under E-commerce Environment

The basic ideas of third party logistics selection based on factor analysis are as follows: selecting evaluation index system, collecting initial data, analyzing data reliability, using SPSS software to carry out factor analysis calculation, and then calculating its evaluation score. According to the evaluation score, enterprises can choose the third party logistics reasonably. The specific process is as follows:

3.1 Establishment of Evaluation Index System for Third Party Logistics Selection

In the e-commerce environment, the selection and evaluation system of fresh aquatic products distribution needs to select scientific and reasonable evaluation indicators, and the selected indicators are required to be operational and there are obvious differences and differences between the indicators. The indicators should reflect the evaluation objects. Specific requirements. At the same time, it has the characteristics of satisfying test, simplicity and interrelation. On the basis of referring to the existing research results and considering the characteristics of the third party logistics synthetically, the selection index system is constructed. The specific index system is shown in Table 1.

Table 1 Evaluation Index Table of Third Party Logistics Selection for Fresh Aquatic Products Distribution in E-commerce Environment

Selection of Evaluation Index for Third Party Logistics Companies	Level I Indicator Layer	Secondary Index Layer
	Basic Strength of Enterprises	Enterprise Size (X1)
		Product quality (X2)
		Informatization Level (X3)
		Employee Professional Qualities (X4)
		Professional Vehicle Equipment (X5)
		Freight (X6)
	Fresh Transportation Capacity	Distribution Loss Rate (X7)
		Timeliness (X8)
		Packaging Level (X9)
Delivery Accuracy (X10)		

	Service evaluation	Information traceability (X11)
		Order Acceptance Speed (X12)
		Freshness (X13)
		Distribution Service (X14)
		Remedial Satisfaction (X15)
		Ratio of acclaim (X16)
		Collection of goods (X17)

3.2 Raw evaluation data

In the third-party logistics selection index system, the impact of each index on the final evaluation results is different. In the evaluation process, the relative importance of the indicators and their role are scored from 2 to 7 points, including excellent (7 points), good (6 points), qualified (4 points) and unqualified (2 points). According to the expert experience method, industry experts can be invited to form an evaluation team to score according to the relevant importance between the indicators.

3.3 Data reliability analysis

Reliability analysis is the reliability analysis of evaluation scores. In general, the reliability analysis greater than 0.7 is good, and the closer the test result is to the higher the reliability, which is the stability of the test itself. Reliability analysis can be performed using the Cronbach's alpha coefficient of the statistical analysis software SPSS 2.1.

3.4 Data processing analysis

The statistical analysis software SPSS is used to analyze the score data by factor analysis, including test data, extracting the main factor by calculating the variance contribution rate and cumulative variance contribution rate of the factors, calculating the weight of the main factor, calculating the regression coefficient, and finally calculating the final result of the evaluation.

4. Example analysis

In order to select a satisfactory third-party logistics company from the four third-party logistics companies A, B, C and D, 15 logistics experts and professionals are invited to grade the secondary indicators of the three suppliers and calculate their average scores, as shown in Table 2.

Table 2 Evaluation Index Score of Four Third Party Logistics Companies

Index	Logistics Company A	Logistics Company B	Logistics Company C	Logistics Company D
Enterprise Size (X1)	0.65	0.76	0.3	0.5
Product quality (X2)	0.79	0.5	0.61	0.6
Informatization Level (X3)	0.5	0.67	0.3	0.45
Employee Professional Qualities (X4)	0.64	0.51	0.32	0.21
Professional Vehicle Equipment (X5)	0.5	0.36	0.4	0.36
Freight (X6)	0.27	0.75	0.2	0.3
Distribution Loss Rate (X7)	0.23	0.69	0.97	0.52
Timeliness (X8)	0.74	0.73	0.54	0.56
Packaging Level (X9)	0.25	0.53	0.43	0.31
Delivery Accuracy (X10)	0.67	0.75	0.2	0.76
Information traceability (X11)	0.63	0.4	0.6	0.58
Order Acceptance Speed (X12)	0.78	0.85	0.61	0.35
Freshness (X13)	0.9	0.89	0.8	0.7
Distribution Service (X14)	0.8	0.99	0.99	0.67
Remedial Satisfaction (X15)	0.7	0.2	0.34	0.71
Ratio of acclaim (X16)	0.78	0.68	0	0.83
Collection of goods (X17)	0.61	0.52	0.11	0.32

Through data reliability analysis, it is concluded that Cronbach alpha = 0.809, the reliability analysis value is greater than 0.7, so the reliability analysis is good. Using statistical analysis software SPSS21 to calculate and analyze the data in detail, the variance contribution rates of the three common factors are 28.405%, 24.715%, 22.945%, and the cumulative variance contribution rate is 76.065%, which are named F1, F2 and F3. Then calculate the regression coefficient and the weight value according to the relevant data and weight formula, and obtain the specific weight equation. See Table 3 for details.

Table 3 Regression Coefficient and Weight Value

Level I Indicator Layer	Weight	Secondary Index Layer	Factor coefficient	Contribution rate	Weight
Basic Strength of Enterprises (F1)	0.373	Enterprise Size (X1)	0.221	0.18824532	0.0702155
		Product quality (X2)	0.21	0.17887564	0.06672061
		Informatization Level	0.209	0.17802385	0.0664029

		(X3)			
		Employee Professional Qualities (X4)	0.211	0.17972743	0.06703833
		Professional Vehicle Equipment (X5)	0.128	0.10902896	0.0406678
		Freight (X6)	0.195	0.16609881	0.06195486
Fresh Transportation Capacity (F2)	0.325	Distribution Loss Rate (X7)	0.242	0.19917695	0.06473251
		Timeliness (X8)	0.243	0.2	0.065
		Packaging Level (X9)	0.233	0.19176955	0.063251
		Delivery Accuracy (X10)	0.233	0.19176955	0.063251
		Information traceability (X11)	0.202	0.16625514	0.05403292
Service Evaluation (F3)	0.302	Order Acceptance Speed (X12)	0.013	0.01069959	0.00347737
		Freshness (X13)	0.049	0.04032922	0.013107
		Distribution Service (X14)	0.239	0.35198822	0.10630044
		Remedial Satisfaction (X15)	0.236	0.34756996	0.10496613
		Ratio of acclaim (X16)	0.204	0.30044183	0.09073343
		Collection of goods (X17)	0.125	0.10901824	0.0403613

Total Weight Equation for Third Party Logistics Companies:
 $F=0.373F1+0.325F2+0.302F3$

After the final calculation, the final evaluation scoring table of the third party logistics company is obtained, which is detailed in Table 4.

Table 4 Final Evaluation Score Table of Third Party Logistics Company

Level I Indicator Layer	Logistics Company A	Logistics Company B	Logistics Company C	Logistics Company D
Basic Strength of Enterprises (F1)	0.49255	0.5917	0.2663	0.30688
Fresh Transportation Capacity (F2)	0.52902	0.63612	0.58465	0.59946
Service Evaluation (F3)	0.99772	0.92357	0.71117	0.82357
Total score	0.65696409	0.70636124	0.50411449	0.55800888

It is concluded that the scores of A, B, C and D of the four third party logistics companies are different. The scores of B logistics companies are the highest, followed by A logistics companies, and C and D companies have lower scores. According to the special requirements for the distribution of fresh aquatic products, B Logistics has the highest score of fresh transport capacity, so it is most suitable to choose B company as its fresh aquatic product distribution.

5. Research Countermeasures and Suggestions on the Third Party Logistics Selection of Fresh Aquatic Products Distribution under E-commerce Environment

5.1 Evaluation Index and Method of Third Party Logistics Service Provider Selection

When choosing the evaluation index of the third party logistics service providers, the fresh aquatic products enterprises should complete, flexible, objective and combine their own development conditions. The selection is the first one to fully consider the two most important factors of the third party service level and service quality. The second is to find common interests between aquatic products enterprises and third-party logistics service providers, to achieve mutual benefit and win-win, to ensure long-term stable and effective cooperation between the two. Then we must establish scientific and reasonable evaluation standards and systematically analyze the indicators of third-party logistics service providers. In particular, third-party logistics service providers who are constantly making breakthroughs in their own development, able to continuously update their own equipment, and improve their level of preservation technology should consider such reliable partners.

5.2 Management of Third Party Logistics Service Providers before and after Selection

Before choosing the third party logistics service providers, we should make a comprehensive investigation and assessment. We should consider all aspects and not blindly pursue the lowest cost. If we choose low-cost service providers in the distribution process due to lack of specialization and good service level, the final loss may occur and even affect the reputation of enterprises. After selecting and establishing a cooperative relationship with a third-party logistics service provider, it is necessary to follow up the third-party logistics partners in all aspects of transportation and distribution, and at the same time establish a system for assessing third-party logistics service providers. Therefore, the third-party logistics service providers are urged to improve the distribution service, ensure the quality of the products, and improve the customer satisfaction. At the same time, it is necessary to sign relevant cooperation regulations, and properly constrain the third-party logistics service providers to ensure the quality of products before and after transportation, so that customers are satisfied with the receipt of goods.

5.3 Improving Logistics Information System of Fresh and Live Aquatic Products Distribution

E-commerce enterprises are not perfect when developing systems for third-party logistics service providers. Effective and practical logistics systems need to be improved and perfected. Third-party logistics service providers need accurate distribution routes to reduce transportation time in the process of fresh aquatic products distribution. For customers, timely access to accurate logistics and distribution information, arrangements for receiving warehousing, to ensure the freshness of aquatic products is the key. In this way, e-commerce needs to fully consider the needs of all parties in the development of the system, reasonably consult customer opinions, and timely improve the shortcomings in the logistics information system. E-commerce websites and logistics and distribution personnel need to inform the details of the integrity of the goods, real-time logistics delivery information, prompt reminding users to check the goods, return, etc., to reduce errors.

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