Article

Quality of Jingdong Express delivery service in Longyao County evaluation

Aicong Liu[1], Chenyu Zhao[1], Siqi Jiang[2], Shi Yin[1,*]

[1] College of Economics and Management, Hebei Agricultural University, Baoding 071001, China

[2] Human Resources Department, Liaoning Vocational College, Tieling 112099, China

* Corresponding author: Shi Yin, shyshi0314@163.com

Abstract: This article aims to conduct a comprehensive questionnaire survey and analysis of the current state of express delivery in Longyao, focusing on different population segments. The research evaluates the reliability, validity, and factor analysis of the questionnaire to ensure the data's accuracy and dependability. Findings have highlighted several critical issues with JD Express in Longyao County, including untimely problem resolution, insufficient logistics feedback, package damage, and low levels of informatization in rural areas. Proposed solutions to these challenges involve enhancing employee training, implementing effective measures to minimize package damage, and optimizing distribution strategies to improve service efficiency. By addressing these areas, the quality of JD Express services can be significantly enhanced. Moreover, the evaluation reveals a complex interplay between modern logistics and the county's economy, suggesting that both elements can either promote or hinder each other. Systematic analysis and resolution of the identified problems are essential for improving customer satisfaction, which is vital for stimulating the growth of online shopping in rural regions. This research not only provides insights into the current situation of urban express delivery in Longyao but also offers actionable recommendations for stakeholders seeking to enhance service quality and address existing gaps within the logistics framework. Ultimately, the findings underscore the importance of understanding local dynamics in order to foster more efficient and reliable express delivery services that cater to the needs of diverse populations.

Keywords: express delivery; logistics quality; county economy; rural informatization

1. Introduction

With the development and advancement of information technology and improvements in supply chain management, the courier industry has experienced rapid growth due to the widespread application of these technologies. In the context of domestic macro policies and planning, enhancing the quality of express delivery services is a crucial objective. This study aims to systematically assess the current state of Jingdong Express in Longyao County, identifying challenges in its delivery process. By leveraging modern information technologies such as big data, the Internet of Things, and cloud computing, the study proposes corresponding improvement measures to enhance automation and efficient management within the express delivery sector. These measures aim to elevate the overall level of the industry, reduce costs, and minimize the consumption of natural, human, and market resources.

In recent years, the e-commerce industry has developed vigorously, and people's consumption patterns and purchasing concepts have undergone radical changes. The express industry as a bridge connecting the two ends, has gradually

become an important carrier of the urban and rural economic cycle. China's rapid economic and social development at the same time, urban and rural distribution industry also ushered in the golden period of development, sound, and complete urban and rural express delivery services, for the realization of rural revitalization and urban modernization are of great significance. The establishment of an efficient and professional urban and rural logistics system is conducive to the integration of elements between the industrial chain, and to a certain extent, reduce costs, supplement short boards, and drive the innovative development of urban and rural economies; with the development of science and technology, such as big data, the Internet, and artificial intelligence, logistics with new technology, new models, new industry, new production chain to promote the urban supply chain system to change, and further promote the development of the city [1].

In the context of national policy support, rapid development of science and technology, to achieve the transformation and upgrading of urban and rural express delivery, in line with today's development trend. At present, many scholars at home and abroad have conducted research in related fields. Sun proposed a campus express service quality evaluation based on the SERVQUAL model and conducted a survey and analysis within the school to determine the quality problems and countermeasures of campus express service [2]. Zhou analyzed the psychology of students for logistics and distribution in the school, and came up with new distribution modes such as self-pickup and unmanned vehicle delivery to break the traditional courier delivery, reasonably improve the courier profit and meet the psychology of the consumers. Li studied the site-path problem of the courier delivery service, combined with unmanned delivery of courier cabinets, etc., and established a new model to formulate the quality problems and countermeasures of campus express service. They established a new model to optimize the three key decisions of site selection, customer allocation, and distribution path planning for the terminal network [3]. The new model is established, and three key decisions are formulated to optimize the end network location, customer allocation, and distribution path planning. In the context of the rapid development of information technology and e-commerce, it is important to analyze the development status of Jingdong Express within Longyao County to accelerate regional economic development [4].

In the context of the rapid development of information technology and e-commerce, the research question of this paper is how to speed up regional economic development by analyzing the development status of Jingdong Express in Longyao County. Aiming at the representative Jingdong logistics, through systematically grasping the development status of Jingdong Express in Longyao County, the problems existing in its delivery service process are studied. Put forward the corresponding improvement measures, find a new mode suitable for urban and rural logistics distribution, accelerate the development of modern economy. Compared with other previous research methods, this paper adds the concept of consumer innovation to reverse promote the optimization and innovation of the logistics industry through the feedback of consumers. In the context of rapid economic development, urban and rural logistics has become an important engine of economic development, with the introduction of national policies and relevant support, urban and rural express delivery has also attracted more and more attention, playing an

indispensable role in economic development. Therefore, it is timely to explore the quality of Jingdong Express delivery service in Longyao County.

This paper mainly intends to take the way of survey-case study-content analysis, and combine it with related literature, to research and analyze the delivery of Jingdong Express within Longyao County, and finally draw conclusions [5]. This method has high representativeness and wide applicability, which can systematically evaluate and research and analyze all aspects of Jingdong Express delivery service in a more comprehensive, in-depth and powerful way. By analyzing the questionnaire data, investigating the most satisfactory express delivery methods for Longyao County residents, investigating and analyzing the problems of employee handling complaints, logistics information feedback problems, express parcel problems and outlet problems, etc., and combining the local street layout, distribution of express stations, distribution resources, and consumer satisfaction, etc., we can establish a distribution model that is most suitable for the development of Longyao County's industry and the promotion of economic transformation and upgrading [6]. It fully meets the express delivery service quality needs of BOE consumers, promotes the improvement of distribution quality, combines the actual situation with model innovation and standardized management, promotes the construction of information technology, accelerates the construction of the express delivery network in rural areas of Longyao County, and guarantees the timeliness of BOE delivery in Longyao County with a view to realizing the purpose of reducing the cost of secondary distribution and improving the timeliness of distribution [7]. The purpose is to realize the purpose of reducing secondary distribution costs and improving distribution timeliness [8]. By rationally dividing the distribution network, broadening the content of the distribution business, and building a packaging recycling system, it can further promote the Longyao County Jingdong Express distribution industry in a healthy and sustainable direction [9].

2. Longyao County Jingdong Express delivery service quality status quo

2.1. Professionalism of service personnel

Longyao County Jingdong Express has formed a set of scientific personnel training programs in the process of development, Longyao County Jingdong Express attaches importance to the ability of courier personnel and professional training to deal with the problem of complaints. Jingdong training for all Jingdong logistics employees, including couriers, warehouse managers, distribution personnel, etc. [10], aims to improve the professional ability and service level of employees so that they can better adapt to the various needs of the market [11]. The training includes not only service skills and technical skills, but also corporate culture and teamwork training, which seeks to enable Longyao County employees to better coordinate and cooperate with each other in their work, complete their work safely and efficiently, and prepare for the future development and challenges of the logistics industry [12].

2.2. Logistics information service technology

With the arrival of the Internet era, Longyao County Jingdong Express is gradually replacing the manualization of traditional processes with informationization and automation at some levels to improve efficiency while realizing the dynamic monitoring of each process. Longyao County Jingdong [13]. Express uses logistics information systems to monitor the real-time status of the courier in transit and feedback so that consumers can grasp the dynamic status of the courier, a timely understanding of the courier's logistics information [14]. With the help of modern computer infrastructure, and the realization of information technology logistics, the courier the way each link consumers can always understand, so that consumers are more assured at the same time also effectively improve the efficiency of the Longyao County Jingdong Express courier, so that they can efficiently and quickly complete the task, to protect the consumer can receive the courier in a timely manner, you can effectively improve the operational efficiency of the Longyao County Jingdong Express [15]. Longyao County Jingdong Express introduces advanced technology to carry out logistics information services, not only to ensure the accuracy of logistics control, effectively reduce the possible errors in the process of information transfer, effectively do a good job in each of these links, and constantly optimize the quality of service, but also to make the process of logistics information more transparent and open, to increase the consumer's sense of participation, and to promote the use of consumer peace of mind [16]

2.3. Quality of transportation services

Over the years, Jingdong Express has continued to improve the quality of service and improve the quality of service, helping the entire express delivery industry to high-quality development [17]. In order to protect the quality of transportation services Jingdong Express took the lead in proposing "overtime must be compensated", "damage must be compensated" and other commitments to continue to protect the consumer service experience. Longyao County Jingdong Express is the implementation of delivery to the home, face-to-face inspection of the goods after signing the basic guidelines, as far as possible to protect the quality of express transportation and delivery services [18]. At the same time, Longyao County Jingdong Express is also constantly updating the logistics network, including warehouses, distribution stations, and fleets, real-time monitoring of the status of parcels in transit, to avoid damage to parcels during transportation, so as to ensure the quality of transportation services [19].

3. Longyao County Jingdong Express delivery service quality evaluation index system construction

The purpose of this paper is to analyze the questionnaire data to identify the most satisfactory express delivery methods for residents of Longyao County. It aims to investigate and analyze various issues, including staff handling of complaints, logistics information feedback, problems related to express parcels, and network-related challenges [20]. A substantial number of questionnaires will be administered in the preliminary stage, along with field surveys to collect relevant information for

evidence gathering. This process will involve handling a significant amount of data, which will be categorized, disassembled, and processed both qualitatively and quantitatively. The goal is to refine this data to produce effective results that clearly describe or measure the subjects of investigation, enabling a systematic analysis and assessment of the data situation. To build evaluation indexes, it is essential to understand the purpose and define the objectives, identify the key elements of the process, and utilize charts or formulas to disassemble the data and construct models. The construction of the evaluation index system is essential for quickly analyzing the basic situation and key aspects of Longyao Express. This system helps clarify the relationship between urban and rural express delivery and consumer satisfaction. By analyzing these indicators, we can gain a deeper understanding of consumer needs and existing problems, enabling us to optimize the distribution of urban and rural express services and improve the efficiency of the last mile delivery [21].

3.1. Index construction

This study evaluates consumer satisfaction with express delivery services, focusing on several dimensions, including satisfaction with government policies, logistics distribution, and courier experiences within the express industry. It also explores the satisfaction levels of rural residents regarding express delivery to villages. Key issues identified in the research include parcel-related problems, delivery service shortcomings, and challenges in after-sales support. Additionally, the study assesses the current development status by examining whether the distribution of courier stations aligns with demand, whether urban and rural development trends are synchronized, and if the rural courier industry meets modern standards. To gauge the degree of modernization, the study maps the distribution of courier points, analyzing whether these locations adequately serve rural areas and match the needs of local economic development.

3.2. Questionnaire design and distribution

Before designing the questionnaire, preliminary exploratory work is essential to gain an understanding of relevant content and consumer perspectives. This initial phase helps identify various question types and potential answers, addressing the challenge of starting questionnaire preparation while avoiding ambiguous questions and options that do not align with objective reality, thereby ensuring the validity of the questionnaire. This exploration can involve desktop research, background data analysis, and user interviews. The basic structure of the questionnaire should include a concise description at the beginning (around 100 words) to explain the survey's content, purpose, and scope, as well as the identity of the organizer. It is also important to filter topics based on the target users, such as consumers, couriers, and stagecoach owners. The questionnaire content should cover demographic data—such as gender, age, occupation, income, literacy, and hardware environment—along with more subjective aspects. Objective data helps identify who the research subjects are and their characteristics, while behavioral data focuses on how subjects engage with various software products, including usage frequency and purposes. Additionally, the questionnaire should explore participants' thoughts and attitudes, examining their

perceptions, satisfaction, preferences, and expectations regarding specific concepts or phenomena, such as divorce. This perceptual and subjective data provides valuable insights into the subjective feelings and attitudes of the research subjects.

Launching of the questionnaire: Before the questionnaire is formally launched, it is necessary to conduct a trial survey on a small scale, i.e., to test the questionnaire. The purpose of questionnaire testing is to discover unreasonable question designs, difficult to understand conceptual terms, and to optimize the questionnaire in time, rather than to collect data for analysis. Generally speaking, there are two ways of questionnaire testing: One is the objective test method and the other is the expert assessment method. The objective test method mainly involves selecting a small sample by non-random sampling and then conducting a survey with the questionnaire that you want to assess, and then analyzing the results based on the examination of the findings and discovering problems from them. The expert assessment method means inviting experts in the field of research or typical respondents to make a subjective assessment of the questionnaire and point out the unreasonable aspects of the questionnaire [22]. If scientific random sampling cannot be done, try to put the questionnaire through multiple channels. According to the user characteristics accumulated in the backend (generally demographic characteristics), adopt a stratified sampling method to stratify the backend users, set the sample quota, and then conduct simple random sampling for each type of user, and finally push online questionnaires to the selected users directionally through the product embedded questionnaires, text messages, emails, and other ways.

The sample size for this questionnaire was set at 115 people, and although this number may be considered relatively small statistically, its sample composition is uniquely valuable and highly representative. The samples were mainly from village and township managers, who, as grassroots leaders, maintained close and frequent communication with villagers. Therefore, they not only have a deep understanding of the local people, but also can accurately understand and reflect the real opinions and needs of the majority of villagers. Such sample composition enables our research to grasp the actual situation of rural areas more accurately, and has high representativeness and reference value. Based on the research content of this thesis, the area of the questionnaire survey is Longyao County. The design of the questionnaire survey was divided into five categories of people: Jingdong management staff, express delivery staff, express station staff, urban residents, and rural residents. The questionnaire survey questions are: Do you think that the Jingdong customer service deals with complaints in a timely manner, do you think that the Jingdong express logistics information feedback is timely, whether your Jingdong express parcel is broken, your home near the express station and so on questions to investigate and analyze.

4. Longyao County Jingdong Express delivery service quality evaluation survey and current situation evaluation

4.1. Reliability and validity analysis

The validity and reliability of a questionnaire are key indicators for assessing the validity and credibility of the questionnaire used by the investigator. Trial testing is a key step in the questionnaire design process, whereby the reliability and validity of the questionnaire are tested by trying it out as a means of assessing and ensuring its reliability and validity. By identifying and modifying the questions in the questionnaire, it can be ensured that the final survey instrument will produce more trustworthy and meaningful data.

4.1.1. Reliability analysis

Reliability, often referred to as consistency, measures the stability and dependability of a questionnaire's results. A questionnaire with high reliability yields consistent results when administered repeatedly to the same group of respondents, making it a crucial factor in ensuring scientific validity. In essence, high reliability indicates that the questionnaire is dependable, while low reliability suggests otherwise. The reliability coefficient quantifies this reliability, ranging from 0 to 1; a value closer to 1 signifies greater stability. However, various factors can impact reliability during the survey process. These include the sample size—where insufficient representativeness can lead to sampling errors—and the use of inappropriate or incomplete measurement tools. Such issues can significantly affect the overall reliability of the questionnaire.

4.1.2. Validity analysis

Validity refers to the degree to which a measurement tool accurately measures what it is intended to measure. A measurement tool with high validity effectively fulfills its intended purpose, while low validity indicates a failure to do so. The primary factors affecting the validity of a questionnaire include the relevance of the survey content to its objectives. If the content is not closely aligned with the survey's purpose or includes irrelevant material, and if the test questions do not adhere to the intended measurement goals, the validity will be compromised. Reliability and validity are both essential components of test quality, yet they are distinct and interrelated. High reliability is necessary but not sufficient for ensuring validity; that is, a questionnaire can be highly reliable without being valid. However, if a questionnaire possesses high validity, it will also inherently have high reliability. Thus, both reliability and validity are critical to maintaining the quality of a questionnaire. A well-designed questionnaire must demonstrate high levels of both to ensure that survey results are trustworthy and meaningful.

4.2. Factor analysis

Based Factor analysis belongs to a test of structural validity, which aims to categorize all the questions in the questionnaire according to their degree of relevance, and to group the questions reflecting a particular trait into a category, which the researcher can name according to the main characteristics of that category. The main factor should have the following four characteristics:

(1) The number of principal factors must be less than the number of original variables.

(2) The characteristics of the principal factor are representative of the vast majority of the characteristics of the original variable.

(3) There is no clear linear relationship between the principal factors.
(4) The principal factors are named interpretability.

4.3. Variable definition and measurement

This questionnaire surveyed a total of five categories of people, due to the overall number of Jingdong management personnel, courier delivery personnel, and courier station staff is small, the data is not representative, here only the situation of urban and rural residents will be analyzed.

4.3.1. Townspeople

Reliability analysis is a measure of the level of consistency of the results collected by the scale, the reliability analysis in this paper mainly uses Cronbach's Alpha coefficient, generally Cronbach's Alpha value is greater than 0.7, which indicates that the reliability of the scale meets the requirements of the internal consistency of the scale is high, and it can be further analyzed, and if it is less than 0.7, then it is necessary to adjust the questionnaire or increase the Sample size. Determine whether the empirical data for each latent variable meets the requirements of internal consistency by using the reliability coefficient [23].

From **Table 1** Cronbach's reliability analysis, it can be seen that the data has six question items and the reliability coefficient Cronbach Alpha is 0.878, which meets the criteria of greater than 0.7, which shows that the results are good and the performance of the test is stable, which in turn, indicates that the quality of the reliability of the data of the study is good.

Table 1. Cronbach's reliability analysis.

Item count	Sample size	Cronbach's alpha coefficient
6	115	0.878

Exploring factor analysis is to measure the structural validity of the scale, it is to determine whether the measurement variables of each latent variable have stable consistency and structure, it is the most commonly used index when evaluating the validity of the scale, this paper examines the dimensional composition. When using factor analysis for validity analysis, one generally needs to meet two conditions, one is the need for a KMO value to be greater than 0.7; the second is the significance of Bartlett's test of sphericity is less than 0.05, if these two conditions are met indicates that there is a strong correlation between the observed variables, suitable for factor analysis [24]. If these two conditions are met, there is a strong correlation between the observed variables and it is suitable for factor analysis.

Using factor analysis for information enrichment research, first analyze whether the research data is suitable for factor analysis, as can be seen from **Table 2** KMO test and Bartlett's test: The KMO value is $0.903 > 0.7$, the validity is very high, which means that the data can be used for factor analysis research as well as the data passes the test of Bartlett's sphericity ($p < 0.05$), which It means that the data of the study is suitable for factor analysis.

Table 2. KMO test and Bartlett's test.

KMO value		0.903
Bartlett's test of sphericity	Approximate chi-square (math.)	529.151
	df	15
	P	0.000

Table 3 Variance Explanation Rate table for the factor extraction and factor extraction of the amount of information can be analyzed: Factor analysis extracted a total of 1 factor, the eigenroot value is greater than 1, this 1 factor after rotation of the variance of the explanation of 68.712%, respectively, the cumulative variance of the explanation of the rate of 68.712% [25].

Table 3. Table of explanation of variance.

Factor number	Characteristic root			Post-rotation variance explained		
	Characteristic root	Variance explained (%)	Cumulative (%)	Characteristic root	Variance explained (%)	Cumulative (%)
1	4.123	68.712	68.712	4.123	68.712	68.712
2	0.994	16.567	85.278	-	-	-
3	0.307	5.123	90.402	-	-	-
4	0.219	3.652	94.054	-	-	-
5	0.207	3.442	97.496	-	-	-
6	0.150	2.504	100.000	-	-	-

4.3.2. Rural residents

As shown in **Table 4** Cronbach's reliability analysis, the data has six question items, and the reliability coefficient Cronbach Alpha is 0.879, which meets the criterion of greater than 0.7, which shows that the results are good and the performance of the test is stable, which in turn, indicates that the quality of the reliability of the data of the study is good.

Table 4. Cronbach's reliability analysis.

Item count	Sample size	Cronbach's alpha coefficient
6	42	0.879

Table 5. KMO test and Bartlett's test.

	KMO value	0.861
Bartlett's test of sphericity	Approximate chi-square (math.)	200.985
	df	15
	P	0.000

Using factor analysis for information enrichment research, the research data were first analyzed to see if they were suitable for factor analysis, as can be seen from the KMO test and Bartlett's test in **Table 5**: The KMO value is 0.861 > 0.7, which has a high degree of validity, implying that the data can be used for factor

analysis research. As well as the data passed Bartlett's test of sphericity ($p < 0.05$), which means that the research data is suitable for factor analysis.

Table 6 variance explanation rate table giger for the factor extraction, as well as factor extraction of the amount of information to analyze the situation, from the above table, can be seen: Factor analysis extracted a total of 1 factor, the eigenroot value is greater than 1, this 1 factor rotated variance explanation rate is [67.778]%, the cumulative variance explanation rate of 67.778%.

Table 6. Table of explanation of variance.

Factor number	Characteristic root			Post-rotation variance explained		
	Characteristic root	Variance explained (%)	Cumulative (%)	Characteristic root	Variance explained (%)	Cumulative (%)
1	4.067	67.778	67.778	4.067	67.778	67.778
2	0.989	16.481	84.259	-	-	-
3	0.467	7.786	92.045	-	-	-
4	0.218	3.636	95.681	-	-	-
5	0.194	3.238	98.919	-	-	-
6	0.065	1.081	100.000	-	-	-

4.4. Status of Jingdong Express delivery service quality in Longyao County evaluation

From the data analysis in 4.3 combined with **Tables 7** and **8** below, a subsequent correlation analysis can be made.

Table 7. Table of factor loading coefficients after rotation.

Name	Factor loading factor
	Factor 1
1. Do you think Jingdong customer service handle complaints in a timely manner?	−0.883
2. Do you think Jingdong Express logistics information feedback is timely?	−0.897
3. Does your Jingdong Express package appear to be damaged?	−0.912
4. Do you have many delivery stations near your home?	−0.935
5. Which is the most problem you encountered in the process of receiving delivery?	−0.124
6. Does online shopping through platforms such as Jingdong increase happiness in life?	−0.804

Table 8. Common factor variance.

	Starting (point)	Withdraw (From a bank or warehouse)
1. Do you think Jingdong customer service handle complaints in a timely manner?	1.000	0.788
2. Do you think Jingdong Express logistics information feedback is timely?	1.000	0.805
3. Does your Jingdong Express package appear to be damaged?	1.000	0.832
4. Do you have many delivery stations near your home?	1.000	0.875
5. Which is the most problem you encountered in the process of receiving delivery?	1.000	0.015
6. Does online shopping through platforms such as Jingdong increase happiness in life?	1.000	0.716

As can be seen from the table of factor loading coefficients after rotation in **Table 7**, and the variance of the common factor in **Table 8**, all the variables are extracted to a good degree, indicating that the extracted common factor has a strong correlation with the original variables, and it can be better to have a good explanatory power for the original variables.

Through the reliability analysis, validity analysis, and factor analysis of the data collected from the questionnaire, it was found that the data this time is real and effective, and can be used to conduct data and results analysis. By analyzing the six representative questions in the questionnaire: Do you think that Jingdong customer service is timely in dealing with complaint problems, do you think that the feedback of Jingdong express logistics information is timely, is your Jingdong express parcel broken, are there many express stations near your home, which is the most problem you encountered in the process of receiving express delivery, and will online shopping through platforms such as Jingdong increase the sense of well-being of your life these six questions.

The analysis identifies four main issues affecting both rural and urban logistics: (1) Logistics complaints: Increased demand and diverse purchases lead to more complaints, exacerbated by mismatched logistics distribution and courier service quality; (2) timely feedback: Growing purchasing power and variety contribute to delays in logistics information updates, while insufficient informatization in rural areas creates pressure on local feedback systems; (3) parcel damage: Extended delivery times and transfer processes increase the risk of packaging damage, compounded by natural disasters and courier-related issues; (4) insufficient rural outlets: With limited Jingdong Express outlets—often just one per village—rural residents tend to shop locally for convenience. This mismatch between purchasing power and delivery options further exacerbates the previous issues.

5. Analysis of the quality problems of Jingdong Express delivery service in Longyao County

5.1. Employees do not deal with complaint issues in a timely manner

The complaints process consists of six steps: Receiving complaints, recording complaints, responding to customers, investigating and verifying, problem-solving, and follow-up processing. In a consumer survey conducted by Jingdong, 46% of feedback indicated that complaints arose from damaged packaging, despite the items inside being intact; 24% of complaints were attributed to courier negligence that led to item damage during delivery; 17% of consumers reported issues with poor courier attitudes and long delivery times; and 13% expressed frustration over dishonest delivery practices by merchants. These challenges are exacerbated by a shortage of Jingdong Express customer service staff, which, when complaints surge, results in long processing times and complex procedures, ultimately leading to unresolved consumer dissatisfaction.

5.2. Untimely feedback of logistics information

In Longyao County, Jingdong Express faces timely logistics information feedback issues, summarized in four key areas: (1) Extended delivery times: Expected delivery of 2–3 days often stretches to 4–5 days due to inefficiencies in warehouse storage and logistics management; (2) untimely updates: A survey revealed that 61% of consumers experience delays in logistics information updates, undermining trust and delivery rates; (3) service quality concerns: About 15% of consumers reported low-quality logistics personnel and poor order management, negatively impacting their shopping experience; (4) high logistics costs: Rising labor, transportation, and warehousing expenses, coupled with insufficient financial management, constrain logistics enterprise development. These issues highlight the need for improved logistics optimization and management [26].

5.3. Breakage of express parcels

In the survey, one-third of consumers reported experiencing parcel breakage. The prevalence of breakage in Jingdong Express parcels in Longyao County can be attributed to three main factors: (1) Improper packaging: The survey revealed that approximately 10 out of every 100 parcels suffer damage due to inadequate packaging. Common issues include the use of fragile materials, insufficient cushioning, and poor arrangement of fillers, making items susceptible to damage. Additionally, loose packaging, inadequate sealing, or low-quality materials further diminish the protective properties of the parcels; (2) transportation process Impact: Throughout the delivery process, parcels pass through multiple transit points, where they are vulnerable to unavoidable factors such as impacts and friction; (3) stacking pressure and environmental factors: In transit or distribution centers, parcels often wait and stack together, which can lead to structural deformation if not stacked properly. Over-pressurization or uneven weight distribution can cause breakage, while extreme temperatures, humidity, or adverse weather conditions may negatively affect the material properties of the items.

5.4. Too few rural outlets in towns and villages

Questionnaire survey statistics indicate that each village in Longyao County has approximately one Jingdong Express outlet, most of which are located in cooperatives, forcing villagers to walk significant distances to pick up their packages. As a result, 34% of rural consumers have greatly reduced their frequency of online shopping due to the limited number of outlets. The scarcity of Jingdong Express outlets in the county's rural areas can be attributed to several factors: Difficulties in site selection for outlet construction, as the rural population is smaller and more dispersed than in urban areas, leading to uneven distribution; poor traffic conditions, characterized by low pavement standards and inadequate transportation facilities, which increase operational costs; low professionalism and socialization in rural logistics, where small-scale and decentralized production hampers the development of standardized logistics; and a lack of attention to rural logistics, resulting in a shortage of logistics professionals. This combination of challenges has significantly exacerbated the issue of rural express terminal distribution [27].

6. Longyao County Jingdong Express delivery service quality improvement strategies

6.1. Improvement of staff professionalism

The professionalism of Longyao County Jingdong Express employees can be improved through the following two aspects of training: (1) Training of professional skills. Through training, Longyao County Jingdong Express employees can acquire new knowledge and skills to improve their professional competence. This helps employees to better fulfill their job responsibilities, improve their personal work performance, and give Longyao County Jingdong Express consumers a better consumer experience. It mainly includes knowledge updating, skill improvement, problem-solving ability, innovation ability, self-management ability, teamwork ability, and other aspects of training; (2) training and improvement of employee quality [28]. Employee personal quality improvement is one of the key objectives of training and development [29]. Through training, Longyao County Jingdong Express employees can establish a better sense of service, and develop better innovative thinking and problem-solving abilities, so that they can adapt to the changing work environment, adjust their mentality in time, and enhance their professional ethics and level [30].

6.2. Focus on timeliness of delivery

Improving the timeliness of Longyao County Jingdong Express can be improved from the following four aspects: (1) Adopt intelligent technology [31]. With the development of science and technology, Longyao County Jingdong Express should begin to use advanced technologies such as the Internet of Things, big data, artificial intelligence, and other advanced technologies to realize automation and intelligent management [32]. These technologies can improve the delivery efficiency of Jingdong Express in Longyao County, reduce the error rate, provide quality delivery services, and also be able to predict the delivery time more accurately [33]; (2) optimize the distribution network in Longyao County. Optimizing the distribution network is one of the important means to improve timeliness. Establishing multiple sub-stations within Longyao County reduces the distance of cargo transportation and avoids bottlenecks, thus reducing delivery time and cost [34]; (3) improve the quality of employees of Jingdong Express in Longyao County. The Jingdong Express industry is a service-oriented industry, and the professional quality of employees directly affects the quality and efficiency of Jingdong Express services. Therefore, improving the quality of employees and strengthening training is a must for companies to improve timeliness [35]; (4) strengthen Longyao County Jingdong Express warehouse management. Warehouse management is an indispensable part of the express collection and transportation process. Strengthening warehouse management, realizing full-process management, ensuring the smooth entry and exit of goods, and effectively controlling the storage cycle and flow speed, can greatly improve timeliness [36].

6.3. Reduction in packaging damage

Reduce the chances of damage to Longyao County Jingdong Express packaging methods are the following two: (1) Through the analysis of the characteristics of the goods, choose the appropriate packaging materials [37]. Such as the use of better quality, wear-resistant, and impact-resistant packaging materials and the design of a reasonable packaging structure; according to the fragility of the items choose different internal fillers, as far as possible to avoid damage to the packaging, and fragile goods to choose conspicuous labels to mark, to remind the staff to pay attention to the process of transportation; (2) reasonable planning of the transportation path in Longyao County can effectively reduce the damage rate of Jingdong Express packaging and protect the quality and safety of goods transportation. According to the different weather road conditions in Longyao County choose a more suitable transportation path, to avoid the adverse effects of bad weather on the packaging. These optimization planning solutions look forward to achieving the integration of Longyao County Jingdong Express terminal resources, reducing the cost of Jingdong Express distribution [38].

6.4. Rationalization of distribution

Longyao County Jingdong Express can be divided into the following three ways to make distribution more reasonable: (1) According to the distribution of the main division, can be divided into self-supporting distribution mode and third-party distribution mode. Self-supporting distribution mode refers to the Jingdong Express establishing its own distribution network, responsible for completing the distribution tasks of the Jingdong Express; third-party distribution mode refers to the Jingdong enterprises through cooperation with third-party logistics companies, the distribution task will be handed over to the third party to complete; (2) according to the distribution scope, it can be divided into city distribution mode and regional distribution mode [39]. City distribution mode refers to the enterprise's distribution within the county city of Longyao County to meet the needs of residents and enterprises in Longyao County; regional distribution mode refers to the enterprise's distribution within a certain area, usually covering multiple villages and townships in Longyao County; (3) divided by distribution mode: It can be divided into timed distribution mode, quantitative distribution mode, timed-quantitative distribution mode, and immediate distribution mode [40].

7. Conclusion

Building on previous research, this paper delves into the quality of Jingdong Express delivery services in Longyao County. By evaluating delivery service quality through a series of questionnaire surveys, the study identifies key issues affecting service quality, including untimely complaint handling, delayed logistics information feedback, damaged parcels, and a limited number of rural outlets alongside insufficient information technology infrastructure. To enhance Jingdong Express service quality, the company should focus on improving staff professionalism, ensuring timely deliveries, minimizing packaging damage, and optimizing distribution strategies. Moreover, business managers must recognize that

improvements are not one-time solutions; they should understand their responsibilities to ordinary consumers, value public feedback, and address consumer concerns effectively.

Looking ahead, it is essential for Jingdong to invest in advanced logistics technologies and infrastructure, foster partnerships with local businesses, and engage in continuous training programs for staff. This proactive approach will not only improve service quality but also contribute to sustainable growth in rural logistics, ultimately enhancing consumer satisfaction and loyalty in the long term.

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