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Research on the Influencing Factors of Express Delivery Entering Villages Based on Investigation

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Abstract: This study enriches the theoretical research on logistics distribution, rural revitalization, regional economic coordinated development, and e-commerce logistics integration by analyzing the practice of "express delivery into villages", providing theoretical support for narrowing the urban-rural economic gap and promoting rural economic development. 'Express delivery to villages' can improve the rural logistics system, promote rural consumption upgrading, assist in the circulation of agricultural products, promote rural industrial revitalization, and enhance the quality of rural life, injecting new impetus into rural revitalization. In this data analysis, this report comprehensively sorted and analyzed the basic information of the sample population through descriptive statistical methods, and drew statistical charts to visually present the characteristics of the sample. The results showed that males accounted for 62% of the sample, with middle-aged and elderly people aged 46-60 dominating. The overall education level was relatively high, and there was a high demand for express delivery services in the Guanxu area. Further one-way ANOVA revealed a positive correlation between network distance and transportation impact, with Guanwei Town performing outstandingly in various indicators, indicating a positive attitude towards "express delivery into villages". The samples were divided into three categories through cluster analysis: positive support type, neutral balance type, and negative denial type. Finally, multiple ordered logistic regression analysis showed that the frequency of express delivery usage is positively correlated with express delivery fees.

Keywords: Express delivery to villages, Rural revitalization, Logistics system

1. Introduction

With the vigorous development of e-commerce and the deepening of rural revitalization strategy, the demand for express delivery services in rural areas is increasing day by day. However, compared to urban areas, rural express delivery services still have many shortcomings, with the "last mile" problem being particularly prominent[1]. Accelerating the promotion of "express delivery into villages" is of great significance for promoting the smooth circulation of urban and rural economy and serving the strategy of rural revitalization.

Deqing County, as a county under the jurisdiction of Zhaoqing City, Guangdong Province, is located in the mountainous area of western Guangdong, with a high proportion of rural population and abundant resources of characteristic agricultural products. In recent years, Deqing County has actively promoted the comprehensive demonstration of e-commerce in rural areas and achieved significant results. However, due to factors such as geographical environment, population distribution, and infrastructure, Deqing County's "express delivery to villages" still faces many challenges, which restrict the further development of rural e-commerce.

This study takes Deqing County as an example to deeply analyze the influencing factors of "express delivery into villages", aiming to: understand the current situation and existing problems of "express delivery into villages" in Deqing County, and provide reference for government departments to formulate relevant policies; Explore the key factors affecting the "delivery to villages" and provide decision support for courier companies to optimize their rural network layout and improve service quality; Promote the experience and practices of "express delivery into villages" in Deqing County, and provide reference for other regions[2].

Analysis of the current situation and problems of express delivery entering villages: Investigate the coverage range of express delivery entering villages, analyze the differences in coverage in different regions, and conduct in-depth research on the obstacles in infrastructure construction, operating costs, distribution efficiency, and other aspects. For example, some remote rural areas have inconvenient transportation and poor road conditions, which makes it difficult for express delivery vehicles to pass through and increases transportation costs, thereby affecting the frequency and efficiency of delivery[3].

The interaction between express delivery entering villages and rural economic development: on the one hand, studying how express delivery entering villages can promote the development of rural e-commerce, promote the upward movement of agricultural products, and increase farmers' income; On the other hand, analyzing the feedback effect of rural economic development on the entry of express delivery into villages, such as the driving force of rural consumption capacity on the growth of express delivery business volume. For example, a certain rural area sells specialty fruits through e-commerce platforms, and express delivery services enable it to quickly send the fruits to various parts of the country, increasing the income of fruit farmers[4]. At the same time, with the growth of income, the demand for online shopping among villagers increases, which in turn promotes the increase of express delivery business volume.

The integration of express delivery into villages and rural social culture: exploring the impact of express delivery on the lifestyle, consumption concepts, and social patterns of rural residents. For example, express delivery to villages enables rural residents to purchase urban goods more conveniently, changing their consumption choices and promoting information exchange between rural areas and the outside

world, broadening the horizons of villagers.

Research on the Operation Mode and Management Mechanism of Express Delivery into Villages: Analyze the advantages and disadvantages of existing express delivery operation modes, such as independent operation by express delivery enterprises, joint delivery, and cooperation with rural convenience stores. Study how to establish effective management mechanisms, including personnel training, service quality supervision, information security assurance, etc. to improve the service level of express delivery into villages[5].

Research on Policy Support and Guarantee System: Sort out the relevant policies of national and local governments on express delivery to villages, and evaluate the implementation effect of the policies[6]. Study how to improve the policy support system, increase the intensity of fiscal subsidies, tax incentives and other policies, guide more express delivery companies to participate in village services, and strengthen the supervision and evaluation of policy implementation.

2. Data analysis of express delivery entering villages

The proportion of males and females is 49% and 51% respectively, with a difference of 2%, indicating that there are more females in the gender distribution of the sample, as shown in Figure 1 and Figure 2.

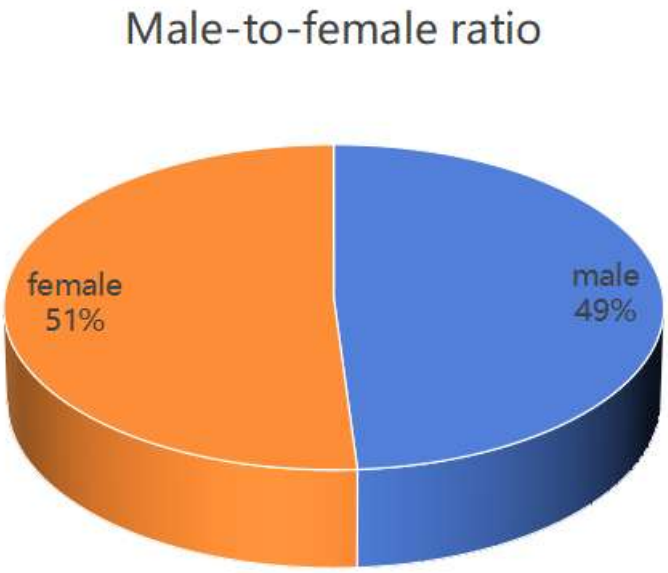


Figure 1 Gender Ratio Chart

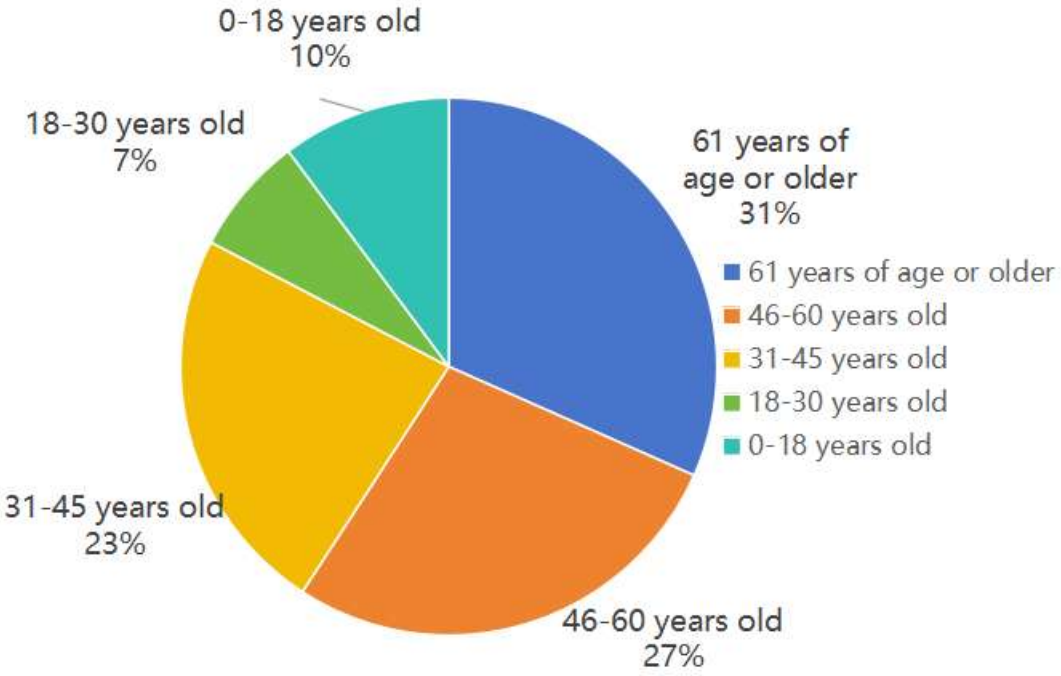


Figure 2 Age ratio chart

The age structure of the sample is biased towards the middle-aged and elderly population, with middle-aged and elderly people (over 46 years old) accounting for 58% (31%+27%), significantly higher than other age groups, indicating that the survey sample is mainly composed of middle-aged and elderly people.

Possible reasons: The outflow of young population from rural areas, survey methods that are more likely to reach middle-aged and elderly people (such as offline household visits), or natural aging of the local population.

Impact: The demand for express delivery services may reflect more the consumption habits of middle-aged and elderly people (such as low-frequency and agricultural product delivery needs), while the demand of young users (such as high-frequency online shopping) may be underestimated.

The proportion of young people (aged 18-30) is abnormally low, accounting for only 7%, far lower than other age groups.

Possible issues: Insufficient sample representativeness (young population not effectively covered) or reflection of severe loss of local young population.

Impact: If express delivery services need to attract young people (such as e-commerce consumers), current data may not fully analyze their needs, and targeted surveys need to be supplemented.

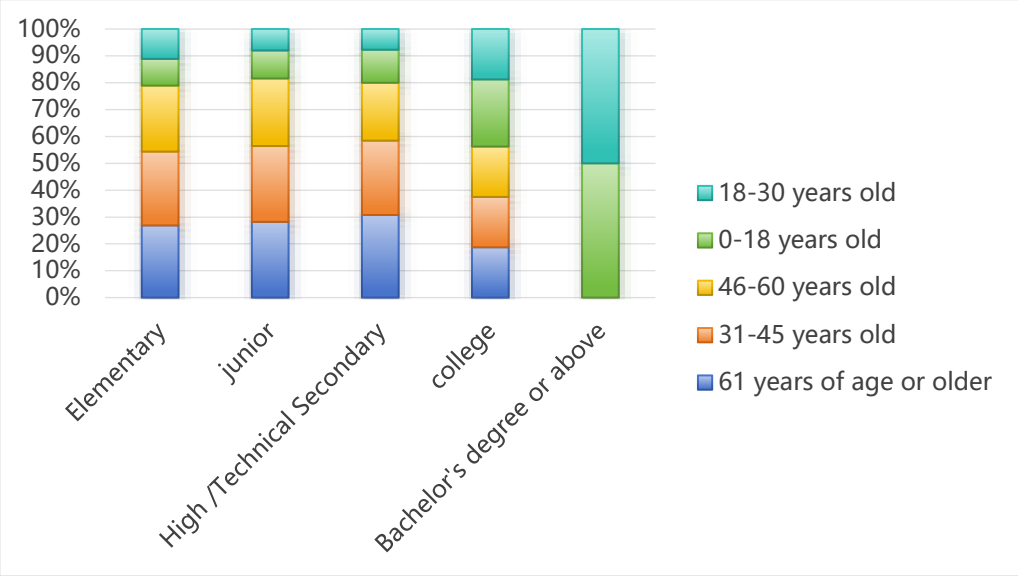


Figure 3 Comparison of Age and Educational Level

From Figure 3, it can be seen that all age groups are mainly focused on primary school and below, as well as junior high school education. Among the age groups of 61 and above, 46-60 years old, and 31-45 years old, the proportion of primary school and below junior high school education exceeds 80%, and the proportion of high school and above education is extremely low. Only the 18-30 and 0-18 age groups have a small number of college and bachelor's degrees or above.

Current data shows that the cultural level of rural residents in Deqing County is generally low, especially the education level of middle-aged and elderly groups is low, which is highly related to their low frequency of express delivery and single demand (such as agricultural product delivery). In the future, it is necessary to gradually improve the acceptance and ability of different age groups to use express delivery services through education popularization, skill training, and innovative service models, and promote the sustainable development of express delivery into villages.

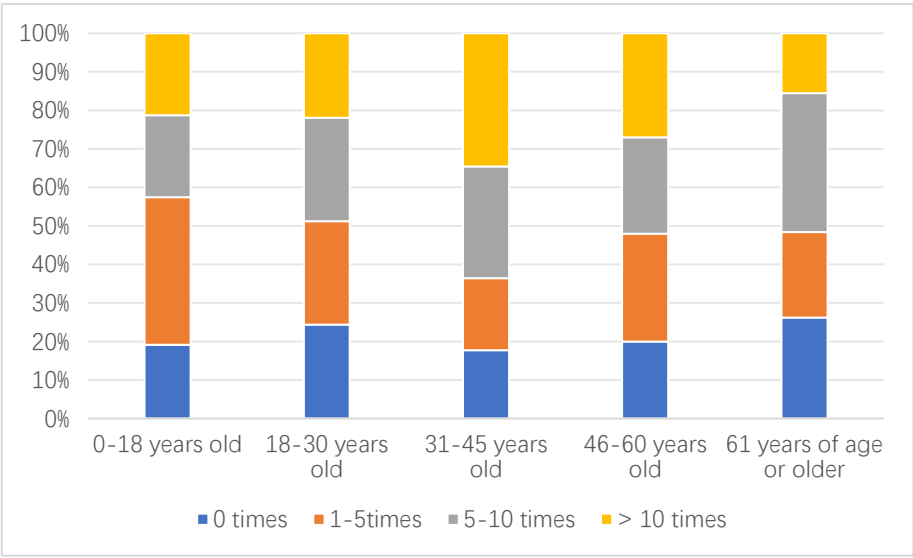


Figure 4 Age and Express Usage Frequency Chart

As shown in Figure 4, the older the age, the less frequent the use of express delivery. The possible reasons may be: (1) operational barriers: Older people have weak acceptance of new things, and have difficulty learning how to use shopping

apps and operate the shipping process, which hinders their use of express delivery. (2) Consumer habits: They are more accustomed to offline shopping, thinking that going to the mall or market in person can see and touch the goods, with guaranteed quality, and the shopping process can also be social and leisurely, achieving multiple benefits in one go. (3) Demand difference: Young people have a higher demand for online shopping, such as fashion clothing, electronic products, etc; Older people have less demand for this type of item and tend to purchase daily necessities from nearby physical stores. (4) Security concerns: Older people pay more attention to personal information security and are worried that using express delivery may leak information and cause property damage.

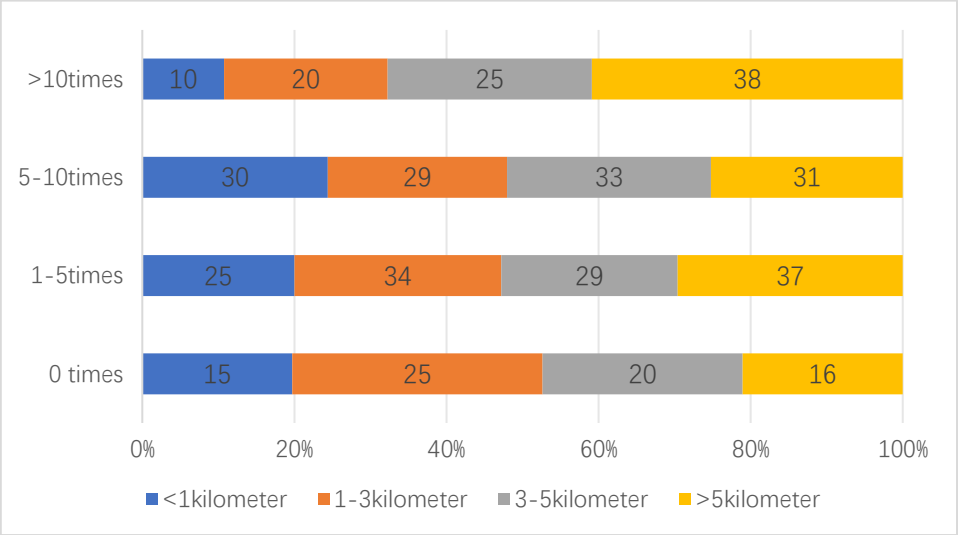


Figure 5 Distance and Frequency of Use

As shown in Figure 5, the farther the distance, the less frequent the use of express delivery. With the increasing geographical distance, the frequency of consumers choosing express delivery services has shown a significant downward trend. The reason may be: (1) inconvenient pick-up: the pick-up journey is long, time-consuming, and physically costly. For example, people living in remote rural areas may have to walk for a long time to pick up the package in the town, which can make people feel troublesome and reduce the need to send and receive packages. (2) Difficulty in information communication: Due to the distance, it is inconvenient to communicate face-to-face with the staff at the courier station, and it is difficult to solve problems in a timely manner, which affects the user experience. (3) Limited express delivery services: Some express delivery companies may not provide doorstep pickup services due to long distances, or their service standards may be lowered, resulting in a decrease in usage frequency.



Figure 6 Line Chart of Express Usage Analysis

As shown in Figure 6, e-commerce has the best sales performance: leading with a value of 326, far exceeding other categories, which may benefit from the popularity of online channels or promotional activities.

The difference between online shopping products and delivery services from friends and family is relatively small: 313 and 300 respectively, indicating that consumers' choices for these two types of services tend to be balanced.

The category of 'Other' ranks last: only 270, which may have insufficient demand or ambiguous classification issues, and further clarification is needed on its scope of coverage.

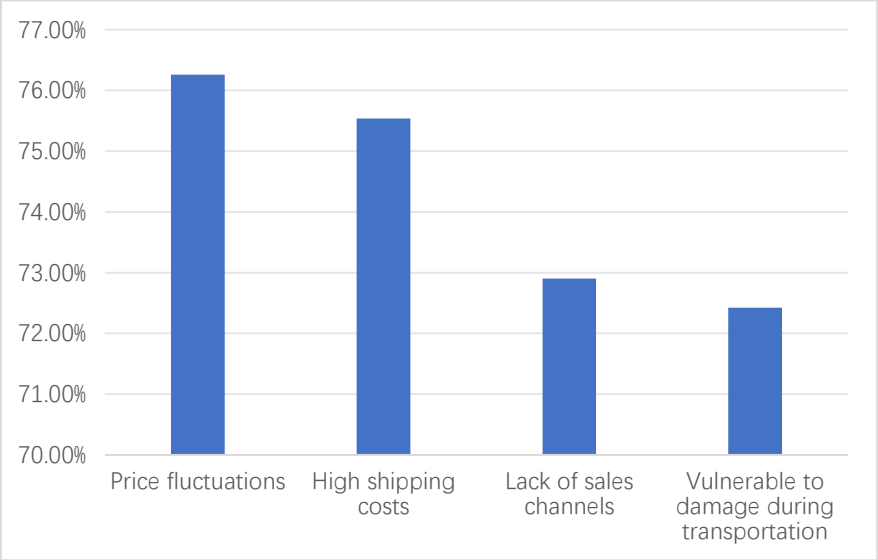


Figure 7 Concerns about Agricultural Product Sales

From Figure 7, it can be seen that price fluctuations are the most prominent: significantly higher than other issues, which may be due to unstable market supply and demand or unreasonable pricing strategies.

Transportation costs and sales channel issues are secondary pain points that require targeted optimization.

The issue of transportation vulnerability is relatively mild: although it still needs attention, the value is slightly lower than other problems, which may be partially alleviated by existing packaging or logistics processes.

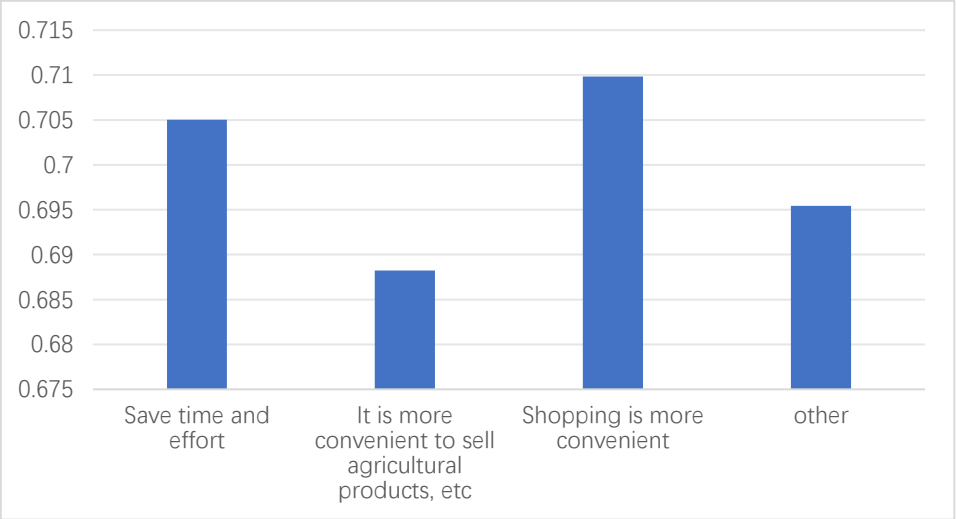


Figure 8 Positive Impact of Express Delivery Services

From Figure 8, it can be seen that the highest level of attention: "Selling agricultural products is more convenient" in the bar chart on the right is significantly ahead, indicating that users have the most urgent demand for the convenience of agricultural product sales.

Comparative differences: In the left bar chart, "shopping is more convenient" and "saving time and energy" are higher, but in the right bar chart (including "selling agricultural products"), "selling agricultural products is more convenient" becomes the core advantage, and other options are lower than the values on the left.

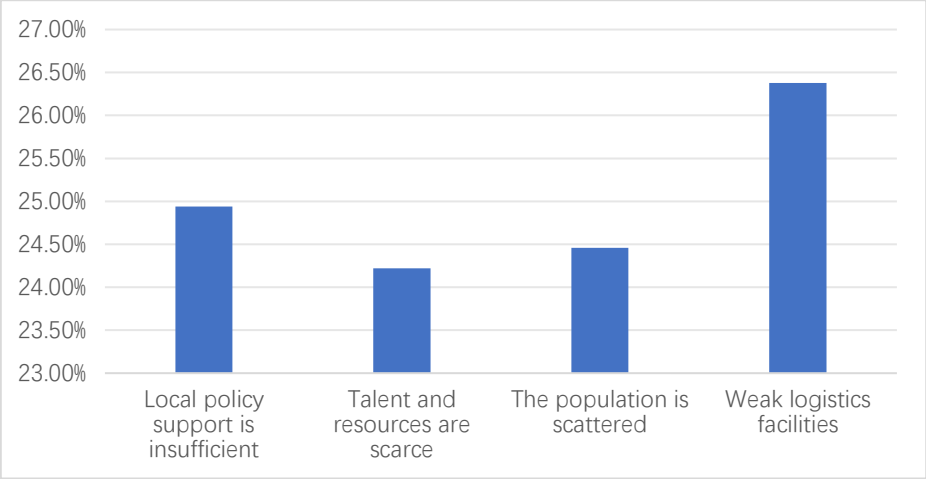


Figure 9 Analysis of the main reasons restricting express delivery into villages

From Figure 9, it can be seen that the biggest constraint factor is weak logistics facilities (with a count of 110, accounting for nearly 26%), which is the primary obstacle to express delivery entering the village.

Secondary contradiction: The scarcity of talent and resources (with a count of 101, accounting for nearly 25%) and insufficient support from local governments (with a count of 104, accounting for nearly 24%) are listed as secondary factors, reflecting the dual shortcomings of infrastructure and policy support.

The impact of population dispersion is limited: Although population dispersion (with a count of 102, accounting for nearly 24%) is listed as the fourth largest factor, its actual impact may be overestimated due to the characteristics of rural areas.

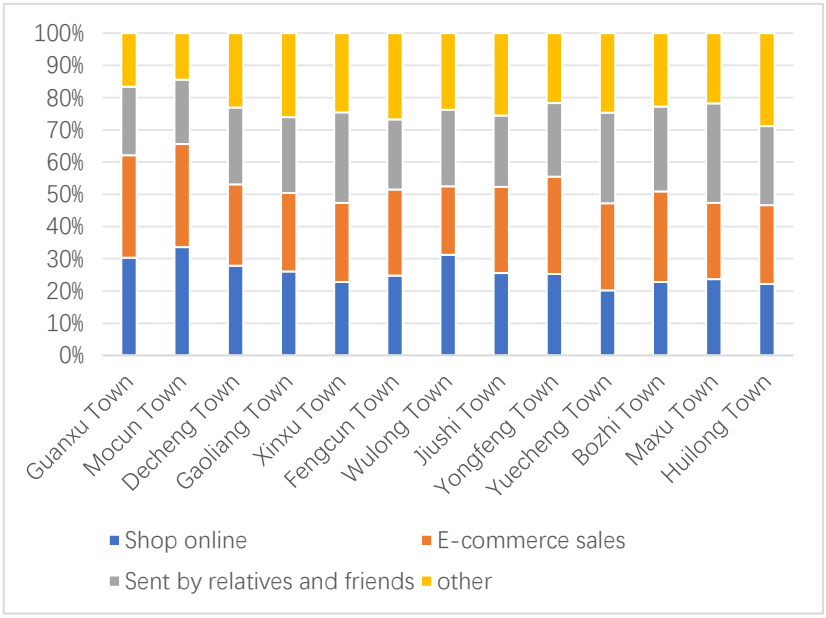


Figure 10 Main Usage of Express Delivery in Various Towns and Streets

As shown in Figure 10, the data comparison of e-commerce sales, online shopping of goods, family and friend delivery, and other categories in different townships. E-commerce sales account for the largest proportion among them, indicating the important position of e-commerce sales in these regions.

Table 1 Comparison of Educational Level and Annual Income of Each Town

Degree of education	Annual household income				
The town where it is located	50000 to 100000	20000 to 50000	>100000 yuan	<20000	total
Bozhi Town	22.22%	27.78%	38.89%	11.11%	100.00%
Decheng Town	29.27%	26.83%	26.83%	17.07%	100.00%
Fengcun Town	25.81%	16.13%	22.58%	35.48%	100.00%
Gaoliang Town	31.58%	28.95%	18.42%	21.05%	100.00%
Guanxu Town	20.41%	27.55%	27.55%	24.49%	100.00%
Huilong Town	20.00%	33.33%	26.67%	20.00%	100.00%
Jiushi Town	14.81%	37.04%	18.52%	29.63%	100.00%
Maxu Town	11.11%	44.44%	22.22%	22.22%	100.00%
Mocun Town	25.00%	8.33%	25.00%	41.67%	100.00%
Wulong Town	26.09%	26.09%	26.09%	21.74%	100.00%
Xinxu Town	25.00%	27.78%	22.22%	25.00%	100.00%
Yongfeng Town	29.63%	22.22%	25.93%	22.22%	100.00%
Yuecheng Town	27.27%	27.27%	24.24%	21.21%	100.00%
total	23.98%	27.34%	24.94%	23.74%	100.00%

According to Table 1, there is a significant positive correlation between educational level and household income. For example, in Yuecheng Town, the proportion of college graduates is 10%, and the proportion of households with an annual income of over 100000 yuan is 30%. However, in economically underdeveloped areas such as Xinwei Town, the educational level is generally low (primary school and below account for 40%), and the proportion of low-income groups (<20000 yuan) is as high as 35%. There are significant regional differences. Yuecheng Town and Yongfeng Town rely on their industrial advantages to achieve coordinated development of education and economy, while middle-income towns such as Decheng Town and Guanxu Town need to optimize the allocation of educational resources (such as strengthening skills training) to promote income growth. Low income towns such as Xinxu Town urgently need policy support (such as e-commerce support and agricultural technology upgrading) to break through development bottlenecks.

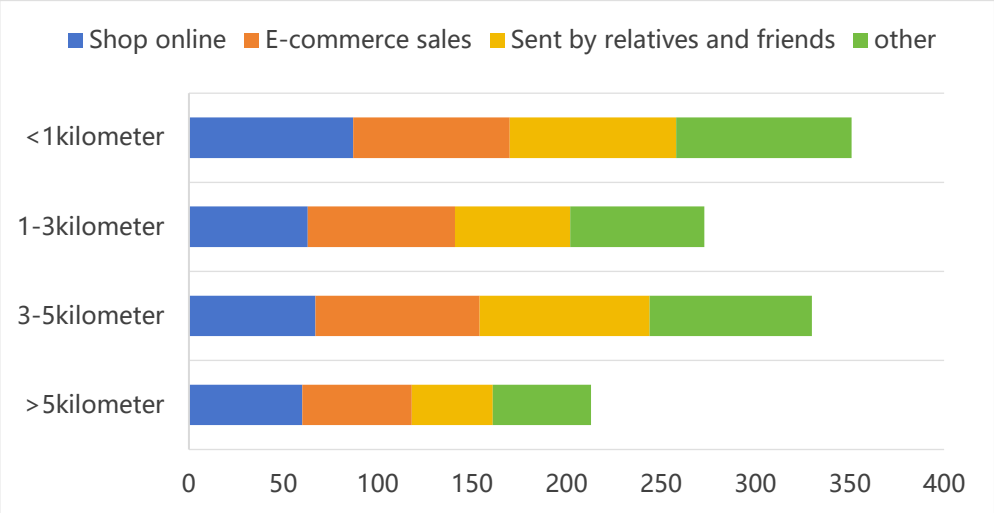


Figure 11 Comparison of Distance and Express Usage

From Figure 11, it can be seen that the activity level of e-commerce is negatively correlated with distance, but some categories (such as family and friend delivery, e-commerce sales) perform outstandingly at medium distance. Short distance (<1 kilometer) is the core scenario of various e-commerce, while long-distance (>5 kilometers) requires optimized services to enhance user engagement.

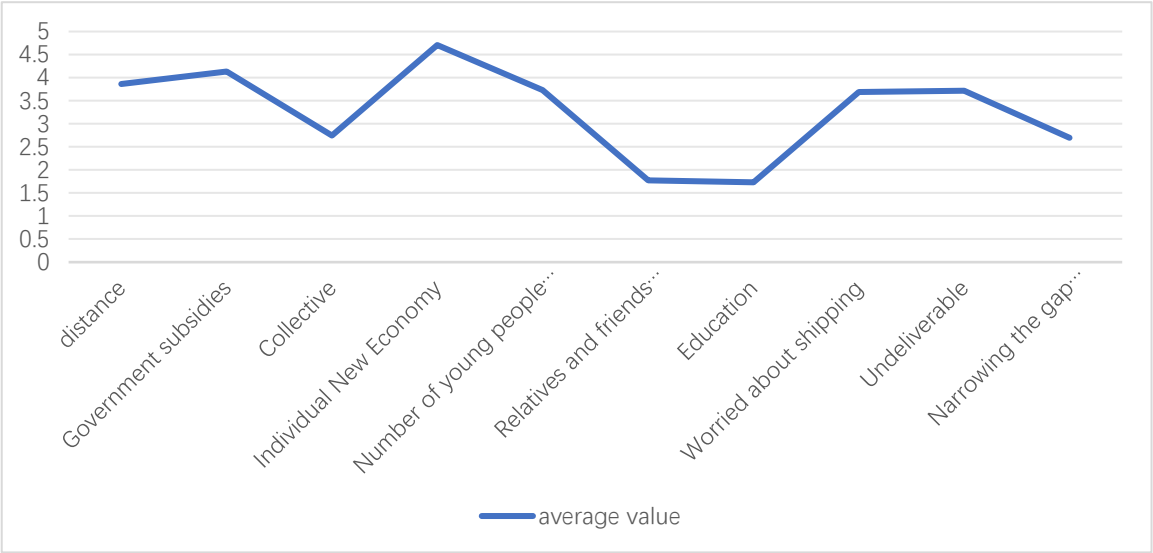


Figure 12 Factors affecting the entry of express delivery into villages

As shown in Figure 12, (1) emerging formats such as rural e-commerce and live streaming e-commerce have significantly driven the demand for express delivery, making high-frequency logistics a necessity. (2) The new rural population drives the use of express delivery through entrepreneurship and consumption, but the potential has not yet been fully unleashed. (3) The distance between villages and express delivery outlets is far, and the delivery cost is high in remote areas. (4) Relatives and friends working outside the city have led to insufficient local consumption demand, and low cultural levels hinder the use of digital tools.

3. Conclusions

There is great potential for express delivery to villages in Deqing County, but cost and coverage issues need to be addressed. Measures such as optimizing infrastructure, innovating operational models, and strengthening policy support can effectively promote express delivery to villages.

Deqing County's express delivery to villages has great development potential, but currently still faces problems such as high costs and insufficient coverage. Measures such as optimizing infrastructure, innovating operational models, and strengthening policy support are needed to effectively promote the sustainable development of express delivery to villages.

The "express delivery town" model has strong replicability, and it is recommended to promote it throughout the county. Through centralized distribution, government enterprise cooperation, e-commerce linkage, and other methods, the pain points and difficulties of express delivery entering villages can be solved, and the sustainable development of express delivery entering villages can be promoted.

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