

Discussion on the "Last Kilometer" Problem of Campus Express

—Taking Taishan College as an Example

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Abstract

This article conducts a special case analysis on the "last mile" of Taishan College's logistics, summarizes its development status and distribution mode, and then finds shortcomings and overlooked points for the current delivery status of Taishan College, and analyzes and proposes countermeasures to improve teachers and students. The purpose of improving the satisfaction, occupying the market, improving efficiency and improving efficiency. Form an operation measure that can be used for reference by other universities or community express outlets.

Keywords

University Express, Taishan College, "Last Kilometer" Problem.

1. Introduction

A With the development of Internet technology and the popularization of smart phones, shopping anytime, anywhere has become a reality, and it has also led to the rapid development of online shopping. It can be said that it has profoundly changed people's lifestyles and promoted the economy to a certain extent. The development of China has accelerated the process of economic globalization. After more than ten years of development, after a crazy development stage, the scale of online shopping transactions is still steadily increasing, but the growth rate has declined year by year. Public information shows that by the end of 2019, the number of direct employees has reached 3.5 million, reaching the largest scale in history, online shopping users exceeded 600 million, e-commerce platforms with various business models have emerged one after another, and the horizontal listing of Pinduoduo has brought a brand-new business model to the e-commerce field. At 23:18:09 on November 11, 2018, Tmall Double 11 once again set a new record-the number of logistics orders exceeded 1 billion, and there are many voices that unanimously predict that the peak volume of packages on Double 11 will become the next 8 The average amount per day after 10 years. Compared with the data just started 15 years ago, there have been profound changes and long-term progress in terms of the number of users, the scale of suppliers, and the quality of services. At the same time, logistics costs have always been high, and there is a multiple gap with European and American countries. China's logistics is currently in a stage of rapid development. If logistics costs are not reduced, no matter how large or strong the logistics scale in China is, such a logistics scale must It will be deformed and unhealthy. Therefore, actively looking for the bottleneck of reducing logistics costs and ways to reduce logistics costs have become a must for logistics research. Moreover, public information shows that the "last mile" is an important link that leads to the high cost of the entire logistics industry and is a link that has significant room for transformation. Therefore, a large number of experts and scholars have invested in the research of this link and proposed many Some of these solutions have already been implemented and have begun to be promoted, dedicated to minimizing logistics costs. The importance of the "last mile" logistics research is not only because the market itself is huge, but also because this market can stimulate more potential consumer desires, accelerate consumption and expand consumption, which is beneficial to the overall economic development. Yu Guangtian believes that the problem of the "last mile" of logistics has been haunting and restricting the healthy and orderly development of the express delivery industry. Research and solving the problem of the "last mile" of campus express logistics should focus on improving the timeliness,

safety and customers of express logistics. From the perspective of consumer experience [1]. On the issue of the "last mile" of campus express delivery, He Lihua proposed that the pickup was close to the road junction, and safety hazards such as crowding and collisions often occurred during pickup due to the store area. It is also proposed that in order to ensure school order, colleges and universities should not affect the income of delivery personnel due to the decrease in the number of express mails, thus forming a vicious circle [2]. Bai Binli and Liu Shengchun believe that the express delivery market of colleges and universities has great potential for development. The trend of online shopping for teachers and students is increasing. To meet the diverse needs of teachers and students, it is necessary to develop the express delivery market for schools and continuously improve service quality. Then through the integration of campus express delivery points, the establishment of a standardized operation and a reasonable fee express center can effectively promote the healthy and sustainable development of campus express delivery [3]. Foreign e-commerce and "last mile" logistics are relatively developed in Europe and the United States and other regions. The "last mile" landing delivery personnel delivery situation of e-commerce logistics in Europe and the United States and other regions are basically the same as China's e-commerce and "last mile" logistics landing delivery. The same, but the situation where the customer chooses to pick up the goods is obviously different from that in China. Ducret recommends that B2C and B2B e-commerce companies innovate in the three aspects of organization, service and transportation, and develop a new "last mile" distribution model [4]. Wang proposed the merger of e-commerce companies and express companies and joint convenience stores for "last mile" delivery [5]. This is mainly determined by the specific national conditions and regional conditions of relevant foreign countries or regions.

The "last mile" refers to the last one percent of a job. Now a new connotation is added to the "last mile", which means not only the last one percent but also a vital link. The term "kilometer" is widely used in government administration, communication services and other industries in addition to the logistics and distribution links. In this article, unless otherwise specified, the "last mile" refers to the end distribution link in the logistics field by default. Generally speaking, the current "last mile" problem is prominently manifested in the problems of backward management, extremely high cost, low efficiency, poor service, low security, serious waste of resources, and shortage of talents. Therefore, the "last mile" is constantly facing the problems. Improvement has become the first problem to be solved at the moment.

2. Main Problems of Taishan College Campus Express Delivery "Last Mile"

2.1 Information Update is Slow, Delivery Time is too Long

Today's increasing individual needs of college students put forward new requirements for participating distribution logistics companies: punctual delivery, timely information, and satisfactory service. Although the current distribution companies also use computer network systems to update and process information, the technology cannot be updated in time if the technology only stays in the company or even inside, let alone provide users with external information processing and sharing such as tracking and querying the whole process anytime, anywhere. One important reason why the "last mile" has received widespread attention from the society is that the last mile delivery time occupies more than 20% of the entire logistics transportation time. Among them, JD Logistics accounts for about 40% of the total. At this stage, After receiving the package from the service station during the last mile, it started to get busy. The process of updating information, putting the package on the shelf, sending SMS and so on, students usually receive the SMS notification in about 4 hours to pick up the express. If you take the door-to-door delivery method, you need to call one by one to notify you and wait downstairs. Normally, each recipient will not come down in time, and you need to wait about 2 to 3 minutes, plus on the road. The detour time is very long, which is the main reason for the rise of express post.

2.2 Courier Security is Difficult to Guarantee

Under the huge rent pressure, the space of the service station is difficult to arrange reasonably, which causes the express delivery to be arranged randomly, and the express delivery squeezes each other. Some oversized items are directly placed outside the door, and there is even a phenomenon of handling express delivery at a huge profit. The processing method has caused many vulnerable parts to be damaged or even lost directly, and it also makes it difficult to find the parts and reduces the efficiency. In addition, the extremely unsafe verbal verification method is used to determine the pick-up person, sign for the delivery without the customer's consent, and send a text message pick-up code at 6 o'clock in the afternoon to pick up the goods before 5:30, which is very easy to cause. The occurrence of wrong picking is an extremely irresponsible behavior for customers.

2.3 "Last Mile" Operating Costs are High

The society is progressing and prices are rising. The cost of "last mile" delivery has been high. Now labor costs have also increased, and store rents are also rising every year. In order to compete in the core link of "last mile" Advantages, it also needs to invest a lot of R&D personnel and R&D expenses to provide higher quality services. These huge expenses determine that if you can't find profitable projects and directions, you will definitely not be able to develop in the long term, but in order to obtain more logistics companies to join, it is usually continuously compressing profit margins and committing to improve higher services will lead to insufficient income, and ultimately will most likely lead to hindering market development.

2.4 The Industry Generally Lacks Talents and Innovation

The rise of the logistics management profession is the past ten years. The logistics industry is now developing very rapidly, but inversely proportional to the development of the industry is the scarcity of logistics management professionals. At present, logistics professionals have been listed as one of the 12 types of talents in short supply in China. One, the gap is more than 600,000. Logistics is a cross-departmental and cross-industry compound industry, as well as a labor-intensive and technology-intensive industry. With the rapid expansion of the logistics industry, the renewal of logistics service concepts, technological progress, and the diversity of customer needs will inevitably lead to a continuous increase in the overall and diverse needs of logistics talents. Especially in the "last mile" link of logistics, professional talents must carry out scientific management, continuous innovation, and continuous follow-up of the latest operating models to improve services, so that the logistics industry can move forward as a whole. The main reason for the fierce competition is that everyone is blindly imitating, resulting in too serious homogeneity in the "last mile" distribution plan. At present, the service provided by the unmanned express cabinet is still only about storing packages and sending text messages. Function, still did not find a profitable way for unmanned express cabinets. Some companies proposed to provide advertising spaces on the screen and appearance of unmanned express cabinets and SMS notifications. Others proposed to sell daily necessities, Internet celebrity products, and other services at service stations. Drainage business. Although these are feasible, they are very easy to imitate or even better than you, and they cannot be competitive.

3. Taishan College Campus Express "Last Mile" Solutions

3.1 Centralized Operation

A school is responsible for setting up a unique express service station to receive express mail from various logistics companies, and to perform the functions of the outlets uniformly. The school bidding is operated by a professional company. Each logistics company fully authorizes the school outlets, and believes that unified operation is better than previous separate operations. Through integration and unified operation, economies of scale can be realized, labor costs can be reduced, and each employee can clarify their own tasks and improve efficiency; Reduced management costs, unified management and operation, and avoided vicious competition; reduced floor space, correspondingly reduced rents to achieve higher profits. Unified management can improve the management level, formulate strict work regulations, effectively avoid the occurrence of lost parts and parts damage, and

provide better services for teachers and students. The express prices of various logistics companies are clearly marked, and students can choose by themselves. Schools can strengthen supervision and improve the level of service to students and teachers, and they can also place work-study positions on this platform to provide students with practice and reduce the burden on families. Use this unified large platform to carry out various activities or advertising campaigns with large traffic, including social public service advertisements, commercial advertisements, own activities, campus activities, etc., which not only contributes to the society and the school, but also increases revenue and improves one's own Influence. It may harm the interests of some people in the process of moving from separate governance to unified management, but objectively speaking, it is quite beneficial to teachers and students, to the school, and to the entire society. It is also beneficial to the entire logistics industry. Should be unwavering support.

3.1.1 Location Problem

The site selection discussed in this discussion mainly uses quantitative analysis to select the center of gravity method to select the location of the unified business site. The distance from the express delivery point during the "last mile" service process greatly affects service efficiency and student satisfaction. The secondary center of gravity method is mainly based on the location of the service demand according to the distance. The main service demand is concentrated among the 12 student apartments. Since the main delivery volume of each student apartment is really impossible to count, this discussion defaults to every The comprehensive receiving and sending express delivery volume of a dormitory building is the same, and the factors that have minimal impact on the different express delivery volumes of male and female students, colleges and departments, and grade apartments are not considered.

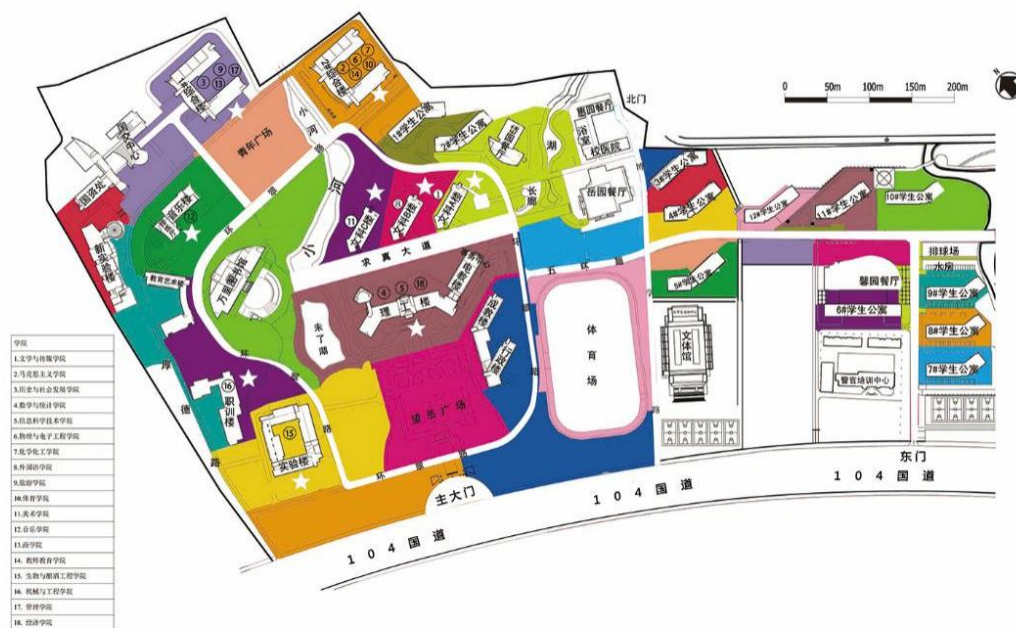


Fig 1: Taishan College campus plan

Delivery distance is the straight-line distance between the proposed service center and each dormitory building. The express delivery demand is the total number of express delivery personnel who pick up the express mail at the existing express delivery agents in a single day. T is the total delivery amount. Available objective function formula objective function:

$$T = \sum_{i=1}^{12} D_i * Q_i \quad (i=1, 2, 3, \dots, 12) . \tag{1}$$

As shown in the figure below, according to the location of the 12 student apartments in the main campus of Taishan University, the coordinate system is established with the lower right corner of the figure as the origin of the coordinates, and the coordinates of the 12 student apartments are (856,786) and (809,742).), (492,713), (489,642), (486,543), (248,504), (102,422), (102,476), (102,528), (160,664), (288,642), (386,636). Fill in the coordinates as shown in Table 1.

Table 1: Three Scheme comparing

Distribution area	distribution area coordinates		distribution coefficient
i	X_i	Y_i	S_i
Apartment 1	856	786	1
Apartment 2	809	742	1
Apartment 3	492	713	1
Apartment 4	489	642	1
Apartment 5	486	543	1
Apartment 6	248	504	1
Apartment 7	102	422	1
Apartment 8	102	476	1
Apartment 9	102	528	1
Apartment 10	160	664	1
Apartment 11	288	642	1
Apartment 12	386	636	1

$$C_y = \sum_{\Sigma=1}^{12} (X_i * S_i) / \sum_{\Sigma=1}^{12} S_i. \quad (2)$$

$$C_y = \sum_{\Sigma=1}^{12} (D_i * Q_i) / \sum_{\Sigma=1}^{12} S_i. \quad (3)$$

Then calculate the coordinates (376.6667, 608.1667) according to formula 2 and formula 3, and locate the position of the five-pointed star in the plan view. It is worth mentioning that due to the use of the center of gravity method, distance is regarded as the only criterion and other non-quantitative factors are ignored. For example, different genders have different responses to the same distance, and the straight-line distance itself cannot truly reflect the path distance. The selected points are likely to be unavailable addresses. These factors affect the rationality of the site selection, but from this case, the overall impact of these problems is negligible, and the selected address is reasonable.

3.1.2 Equipped with facilities

Infrastructure such as shelves, counters, electronic scales, communication equipment, scanning equipment, printers, computers, video surveillance, and transportation equipment are indispensable. These hardware constitute the interaction and cooperation formed by resources, information, functions, technologies, functions and processes. Stable structure of relationship with demand and supply. After the basic equipment and information technology are guaranteed, the front desk can be decorated in accordance with the complete service station decoration plan of the express cooperative's corporate culture. The back-end storage area is mainly shelves. Scale construction is carried out according to the area and size of the shelves.

3.2 Increase talent training

To deal with the problem of talent shortage, we must attract extensive attention from all walks of life. Colleges and universities set up relevant majors to increase teaching investment, attach importance to student practice and innovation, and cultivate qualified professionals. Only when the fundamental

problem of talent shortage is solved, other problems will follow the major The intervention of talents will be resolved accordingly. Colleges and universities should encourage college students who intend to start a business to participate in the "last mile" logistics and distribution, and provide policy and financial support. The state has increased investment in related majors to guide social resources to the logistics industry. At the same time, in-service personnel should be trained and strict working standards and supervision procedures should be formulated. Logistics companies should also improve the salary system based solely on the piece rate, form a top-down work attitude and atmosphere that emphasizes customer experience, and completely solve it. The problem of poor customer experience.

3.3 Comprehensively Promote the Application of Information Technology

The construction of the enterprise's information system, especially the "last mile" information technology, allows the recipient to see the dynamics of their packages in time and accurately arrive at the time. The biggest difference between modern logistics and traditional logistics is the degree of utilization of network and information. The requirement of modern logistics is to establish a modern logistics information system supported by a variety of high-tech to support the operation of the entire intra-city distribution enterprise. The logistics information system is a necessary tool to play the role of the network and realize intensive management. With it, it can ensure that intra-city distribution companies can fully understand the logistics service needs in the service, achieve reasonable and effective control of the logistics process, and reduce the waiting time of customers. Improve service quality.

3.4 Increase the Construction of Distribution Infrastructure

In view of the problem that the safety of the items in the express package cannot be guaranteed, we should start with increasing the investment in infrastructure, expand the area of the service station, and supplement the equipment for storing express delivery such as the shelf of the service station, to ensure that each express can be placed in compliance with the requirements Until it is completely handed over to the customer, the vehicles are formed and combined, and the vehicles are appropriately selected according to the state of the goods and the transportation distance, so as to realize the optimization of vehicle scheduling and the reasonable allocation of resources. This not only enables the reasonable allocation of vehicle resources, but also ensures the safety of express delivery and improves delivery efficiency.

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