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Analysis of Community Group Purchasing in China during the COVID-19 Period

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Abstract. Many new first-tier cities in China, including Wuhan, have started to develop community group purchasing businesses as a result of the COVID-19 outbreak. This paper interprets the supply chain structure of community group purchasing business from the perspective of e-commerce platforms. By dividing the whole process into five parts: shared warehouse - central warehouse - front distribution center (FDC) - stores and group buying brokers - consumer, this paper focuses on the role of the first three parts in the fulfillment process, analyzes the commodity flow process of this new business model, and proposes better efficiency solutions accordingly, so as to explore the fulfillment efficiency of community group buying compared to traditional e-commerce, and further offer some suggestions for the future improvement.

1 Introduction

Many new first-tier cities in China, including Wuhan, have started to develop community group purchasing businesses as a result of the COVID-19 outbreak. Dubbed community group buying, the feature allows a group of residents within the same apartment compound to get discounts by buying together in bulk. It is based on a community store and adopts the "pre-sale + next-day delivery + self-pickup" model, and is positioned to address the daily needs of consumers in the family.

Due to its convenience and pleasing cost performance, more and more residents are choosing this way to buy fresh, groceries and other supplies. This paper mainly focuses on the performance chain and warehouse and distribution model of this emerging business model, so as to explore the fulfillment efficiency of community group buying compared to traditional e-commerce, and further suggests possibilities for the future improvement.

2 Analysis of Community Group Purchasing

2.1 Community group purchase full-link warehouse and fulfillment chain

Community group buying overturns the original retail commodity fulfillment circulation model, with a shorter overall chain and more efficient warehousing and distribution (Figure 1).

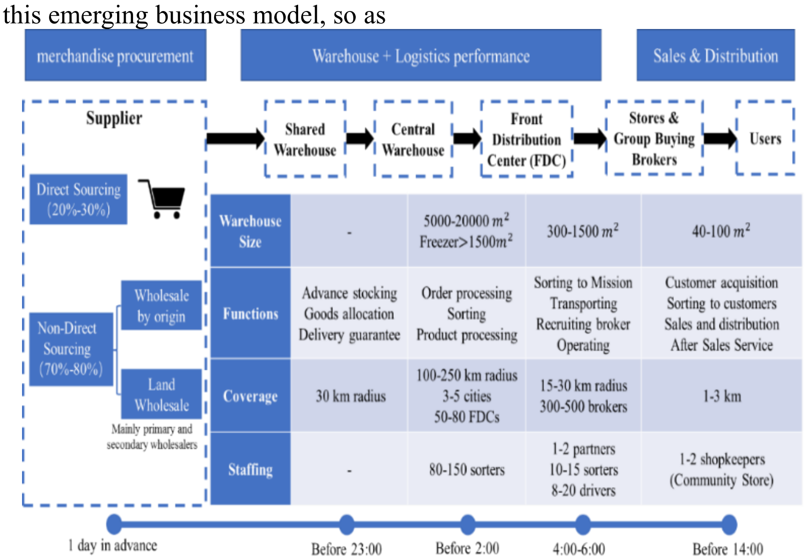

Fig. 1. Community group purchase fulfillment chain

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The warehousing and distribution model of community group purchase completes the functions of primary product processing, packing, and intensive step-by-step sorting. The upstream suppliers fully integrates regionalized commodity resources and adopts “pre-sale + next-day delivery + self-pickup" model to ensure timeliness, the middle link improves sorting efficiency through the mode of intensive redistribution, and the way of intensive distribution in the last kilometer changes each single distribution link into the mode of collective distribution, which significantly reduces the fulfillment cost [1].

The "last mile delivery" is one of the highest cost links in the logistics chain. In the traditional courier mode, the last mile delivery cost accounts for a high percentage, usually up to 30-40% in the warehouse distribution mode. Although the fulfillment model of community group purchase sacrifices part of the consumer experience (time, self-pickup), it reduces the cost and is more relevant to the consumer willingness and ability of the sinking market [2].

One of the major reasons for the rapid growth of community group buying is its accurate grasp of China's unique business culture. China is a developing country with low per capita disposable income. Community group buying focuses on low-cost necessities, which fits the core concerns of most consumers. At the same time, China has a complex urban hierarchy and the world's leading Internet and e-commerce culture. The addition of the role of the brokers of the distribution chain can fully mobilize local resources in each region, and use the interpersonal relationships embedded in WeChat, the universal app, to enable the platform to achieve relatively rapid start-up and expansion even in low-tier cities.

2.2 Shared warehouse

The emergence of shared warehouses makes community group buying timeliness front-loaded, and the intensive processing method makes the operation more efficient. The shared warehouse integrates commodity processing, sorting, packing, storage and transportation, and has a good profit model. In terms of commodities, generally shared warehouses mainly process fresh commodities and some standard products. In terms of distribution, the shared warehouse will be responsible for the distribution from the shared warehouse to the central warehouse, accepting instructions from suppliers [3].

As a key link to ensure the timeliness of fulfillment and improve the efficiency of processing, packing and sorting, the shared warehouse will receive more and more attention, and four major trends may arise in the future.

(1) Platform intervention. At present, most of the shared warehouses are operated by third parties with good profitability. If the profitability of shared warehouses is sustainable, platforms may gradually use self-owned shared warehouses or cooperative shared warehouses to replace third parties in the future [2].

(2) Service upgrade and volume increase. In addition to basic warehousing services, processing and sorting services will become more and more diversified to meet the needs of suppliers.

(3) Automation. In the case of large and stable business volume, more machines may be introduced to automate the picking and processing of specific SKUs [4].

(4) Merger of shared warehouse and central warehouse. Shared warehouse and central warehouse are expected to be merged into the same warehouse or park to form a warehouse within a warehouse, retaining the function of shared warehouse, while shortening the chain and improving operation efficiency, and the timeliness will be further advanced.

2.3 Central warehouse

The central warehouse is mainly responsible for the role of sorting, flowing and shipping of goods that have been grouped together, firstly, all goods are concentrated to the central warehouse, then sorting and casting lines according to the SKU of the FDCs, and finally distribution to the FDCs [4]. The cost of central warehouse accounts for 40% of the total fulfillment chain, and central warehouse is the breakthrough to reduce the fulfillment cost in the future.

Cost of central warehouse = rent + sorting cost + transportation cost [5].

(1) Rent: rent depends on the storage area and shipment volume, but the overall unit rent accounts for a relatively low level, and the improvement effect may not be obvious.

(2) Sorting cost: Sorting cost depends on the efficiency of manpower, but in the future, the volume of community group purchase business will increase, and the increase of SKU will bring down the efficiency of sorting and upward cost.

(3) Freight cost: Freight cost depends on the full load rate of trucks. This is the core point of central warehouse fulfillment cost, and the improvement flexibility is large. In the long term, we can improve efficiency by changing the model or improving the lineup, thus reducing transportation costs [5].

At present, the central warehouse in most cities has not reached saturation. The saturation capacity and actual capacity of the central warehouse in different cities vary greatly, and the central warehouse in some provincial capital cities will have the phenomenon of burst warehouse. Along with the increase of the overall business volume of community group purchase, the capacity of the central warehouse will gradually reach the upper limit, and it is expected to face the trend of expansion and expansion or multiple central warehouses in one city in the future.

2.4 Front Distribution Center (FDCs)

FDCs set single distribution is the biggest difference and breakthrough compared with traditional e-commerce distribution or takeaway distribution, single distribution into set single distribution is an important reason why the cost of performance can be reduced, FDCs to join the form of full use of socialized capacity to share the cost and risk.

FDCs include two links：

(1) Sorting link: Sorters sort according to the corresponding orders, according to the group buying

brokers. Multiple SKUs are sorted at once.

(2) Distribution link: The driver makes centralized distribution of each leader's order according to the advance planning line.

This link is beneficial to the community group buying platform to reduce costs and increase efficiency, and at the same time can make the coverage area wider. For the platform, FDCs are the only self-managed segment and therefore the main breakthrough for the platform to improve its own efficiency.

In terms of business model, FDC is similar to the express transit center and is the last link of the community group purchasing logistics system. FDCs currently have the trend of merging and expanding.

At present, China's domestic FDCs franchise merchants lack professional training, join a single mode, the overall efficiency of the FDCs is low, is a breakthrough in the future to improve the efficiency of the group [6].

3 Existing problems and solutions of community group buying business

At present, China's community group buying business has developed to a certain stage, but due to the asset-heavy operation mode, the overall industry is in a downward spiral [7]. According to the analysis of the current situation of each link, the programs to improve the community group buying industry are as follows (Figure 2).

(1) upstream shared warehouse + central warehouse using the platform self-operated model [8]. At present, the utilization rate of the central warehouse of the link has not reached saturation, in this case, the platform can set aside a part of the shared warehouse to the supplier inventory, not only to charge part of the cost of subsidizing the cost of the central warehouse, but also to reduce the repeated loading and unloading, transport costs and losses of goods [9].

(2) Downstream FDCs + head operation using the franchise model [8]. Downstream using the franchise model can accelerate the community group purchase business down to the county, township and other areas, reducing input and operating costs. At the same time, the FDCs and strategic team integration model will pull both sides into a unified front, stimulate initiative, increase the internal coordination, and promote the group efficiency.

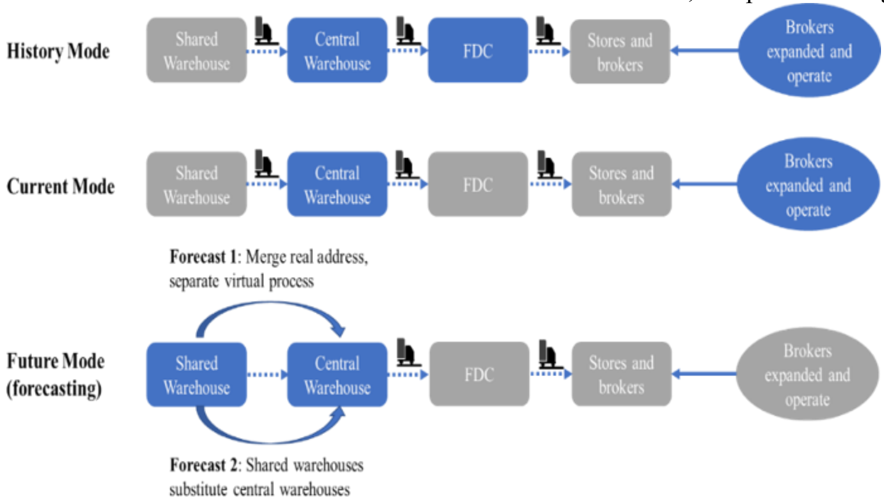

Fig. 2. Future model forecast for each session

4 Conclusion

Whether the community group buying model can operate successfully is a comprehensive test of the platform's commodity capabilities, warehousing and distribution capabilities, ground promotion and franchisee management capabilities, and multi-business coordination capabilities. Overall, this business model has a long business chain and complex logic, which requires each e-commerce platform to build barriers and maintain advantages in different dimensions of capabilities.

At present, the business model of community group purchase is not yet mature, along with the entrance of the giant, the future will become a protracted battle.

The breakthrough of community group purchase in the fulfillment is the core point of industry development, and the fulfillment (warehouse distribution) is also the key assessment ability of each family at this stage.

According to the analysis of different aspects of community group purchase in this paper, the focus of this business model is the efficiency of the front warehouse, which is one of the characteristics that distinguish traditional e-commerce and community group purchase. The current front-end warehouse in China's community group buying operation has the property of heavy asset operation, which will increase the cost of the overall business, and in the future, the consolidation of different links can be considered to reduce the cost and increase the efficiency [10].

This paper only qualitatively analyzes the operation mode of each link in community group buying, which is limited by the fact that the community group buying business has just started and the relevant data are not comprehensive. Due to the lack of data sources from official channels, the paper does not make detailed quantitative analysis such as cost splitting, which can be further improved after the community group buying business enters a stable period in the future.

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