

Integrated Analysis of Prefabricated Vegetables and Logistics Supply Chain

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Keywords: logistics and supply chain, prefabricated dishes, catering market

Abstract: With the progress and development of technology, automation technology is constantly infiltrating people's lives, and the food industry is undergoing industrial transformation. However, it is the existence of pre made dishes that allows households to taste the delicious food of restaurants without leaving their homes during the epidemic. With the development of logistics and supply chain, the transportation speed of logistics has undergone rapid changes. If prefabricated dishes are combined with the supply chain to achieve efficient transportation of prefabricated dishes and rebuild the image of prefabricated dishes, it will definitely open up another clever path for prefabricated dishes to open up the catering market.

1. Introduction

1.1 Background of topic selection

With the rise of online shopping, logistics is constantly coming into people's field of vision. Faster timeliness, lower cost, safer delivery, etc. are the long-term goals pursued by many logistics companies.

With the continuous rise of international logistics, the deficiencies of logistics and supply chain have been continuously exposed, the standardization of management needs to be improved, and the coverage area is still limited.

In recent years, following the entry of overseas chain catering giants into the Chinese market in the 1980s, domestic demand for fast food semi-finished products has increased, and clean vegetable distribution factories have emerged. From the perspective of industry driving factors, with the combination of various factors such as domestic economic development, consumption upgrades, fast-paced life, the rise of takeaway group meals, and the development of cold chain transportation, the supply and demand of my country's prepared vegetable industry has increased, and the market has expanded rapidly.

1.2 Research Significance

1.2.1 Theoretical and Practical significance

This project starts with the combination of the prefabricated vegetable industry and the logistics supply chain, and tries to analyze how to practically expand the prefabricated vegetable market. The combination provides certain data. At present, in order to develop prefabricated dishes and enter the public eye, we must work hard on publicity and services. Many consumers know nothing about prefabricated dishes. By promoting the deepening reform of prepared vegetables, it will drive the deepening development of the catering industry and the prepared vegetable industry, and promote economic recovery after the epidemic.

1.3 Relevant literature review

Prefabricated dishes are convenient dishes that can be eaten directly after being hygienically and scientifically packaged and heated or steamed by using modern standardized assembly line operations to prepare the raw materials of the dishes and simplify the production steps [1].

The lack of and unsuitable problems of prefabricated dishes in terms of product standards and production specifications still exist. Prefabricated dishes are not unfounded, but the problem is that

there is a lack or mismatch of hygienic standards and processing specifications for specific products.

Many existing studies have shown that there are still many deficiencies in prefabricated vegetables, such as food safety and hygiene issues and transportation timeliness in production and sales. To a certain extent, food safety and transportation timeliness between production and sales can be optimized [2].

1.4 Research Methods

(1) Literature research method

By consulting a large number of papers and periodicals on HowNet, Wanfang and other websites, I have a comprehensive understanding of the development status of prefabricated dishes, and have basic theoretical knowledge and an overall understanding of public interest litigation.

(2) Questionnaire survey method

By investigating consumers' willingness to pay, experience and influencing factors for pre-made dishes, taking college students as the survey object, and designing different questionnaires for college students from the perspective of whether college students have willingness to pay, from consumers and producers Starting from two aspects, the existing problems of prefabricated dishes are found, so as to propose solutions and countermeasures.

(3) Frequency analysis method

In the process of frequency analysis, select the index response rate, penetration rate, and chi-square goodness-of-fit test for analysis. This analysis method is mainly aimed at the non-scale questionnaire analysis method. In this project, the team members analyzed relevant data according to this research framework. Figure 1 shows non-scale questionnaire research framework.

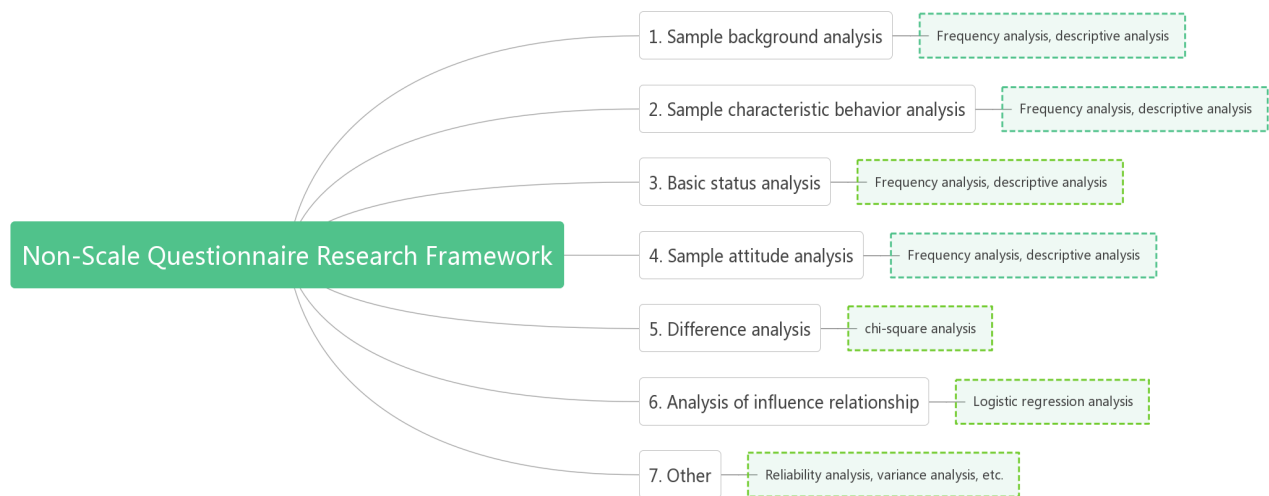


Figure 1 Non-scale questionnaire research framework

2. Development Status of Prepared Vegetables and Supply Chain

2.1 The image of the prefabricated vegetable market is bleak

Many consumers are also worried about the low nutritional value of prefabricated dishes and the difficulty in meeting the daily needs of the public. These problems need to be solved by the manufacturers of prefabricated vegetables. However, manufacturers of prepared vegetables did not seize the opportunity for development. The prefabricated vegetable industry lacks certain supervision. Facing an emerging industry, in terms of operation and management, the relevant industry standards of the prefabricated vegetable industry are not perfect [3].

2.2 The bottleneck of logistics development

With the continuous development of the domestic market, a number of excellent logistics companies and supply chain companies have emerged. Sinotrans, SF Express, China Railway Express,

etc. are all familiar logistics companies. The current docking phenomenon and the uneven level of industry standards indirectly lead to the transportation efficiency of the supply chain, and even the transportation of many dangerous goods has caused casualties, which is also caused by the low standardization of logistics management to a certain extent [4].

3. Market Analysis of Prepared Vegetables

3.1 Data analysis

This group adopts non-scale questionnaire analysis method for the results of this questionnaire survey. There are the following steps of sample background analysis, sample characteristics, behavior analysis, sample attitude analysis and difference analysis.

3.1.1 Sample background analysis

Table 1: Gender, income, grade Frequency analysis

Frequency analysis results				
Name	Options	Frequency	Percentage(%)	Cumulative percentage (%)
1.Gender	Male	73	35.10	35.10
	Female	135	64.90	100.00
2.Grade	Freshman	39	18.75	18.75
	Sophomore	64	30.77	49.52
	Junior	80	38.46	87.98
	Senior	25	12.02	100.00
3.Income	Below 2000RMB	156	75.00	75.00
	2000-3000RMB	52	25.00	100.00
	3000-4000RMB	43	0.00	0.00
	More than 4000 RMB	62	0.00	0.00
Total		208	100.0	100.0

Frequency analysis results is shown in Table 1. The object of this survey is mainly aimed at college students. There are a total of 208 valid questionnaires, of which 64.0% are female and 35.10% are male. At the same time, the monthly income of most students is below 2000 yuan, accounting 75%, a small part of the monthly income is 2000-3000, accounting for 25%.

3.1.2 Sample characteristics and behavior analysis

It can be seen that most students' food consumption is concentrated in the two ranges of 900-1099 yuan and 1100-1299 yuan, accounting for nearly 50% of their monthly income; The students have all had purchase experience, accounting for 77.88%, and a small number of students have no purchase experience, accounting for 22.12%.

3.2 Sample attitude analysis

3.2.1 Analysis of Multiple Choice Questions

What do you think are the advantages of prefabricated dishes:

Table 2: Response rate and Penetration: price, nutrition

Response Rate and Penetration Summary Table			
Options	Response		Penetration rate(n=208)
	n	Response rate	
Discount price	102	15.57%	49.04%
Easy to use	102	15.57%	49.04%
Full of nutrition	84	12.82%	40.38%
Variety of flavors	64	9.77%	30.77%
Save time	96	14.66%	46.15%
Easy to store	99	15.11%	47.60%
Easy to carry	108	16.49%	51.92%
Total	655	100%	314.90%

Goodness of fit test: $\chi^2=14.446$ p=0.025

What do you think are the advantages of prefabricated dishes:

For the questionnaire survey on the advantages of prepared dishes, we adopted a multiple-choice question format and conducted multiple-choice analysis. Response rate and Penetration is shown in Table 2. Therefore, it can be seen that the advantages of "convenient to carry", "price discount" and "simple operation" are the more intuitive advantages of prefabricated dishes for consumers, especially "convenient to carry" is the competitiveness of prefabricated dishes compared with other dishes.

The main sources you know of to buy prepared dishes are:

Table 3: Physical store, restaurant purchase, online shopping

Response Rate and Penetration Summary Table			
Options	Response		Penetration rate(n=208)
	n	Response rate	
Physical store (supermarket, market, etc.) purchase	165	39.86%	79.33%
restaurant purchases	110	26.57%	52.88%
Online shopping (Taobao, Pinduoduo, etc.)	138	33.33%	66.35%
Other	1	0.24%	0.48%
Total	414	100%	199.04%

Goodness of fit test: $\chi^2=149.961$ p=0.000

Response Rate and Penetration Summary Tables are shown in Table 3 and Table 4. The main sources you know of to buy prepared dishes are:

It can be seen that physical stores are the main way and first choice for most people to buy prepared dishes. For the future development of prepared dishes, we can first focus on expanding the scale of prepared dishes in physical stores.

What do you value in selling prepared meals online:

Table 4: Response Rate and Penetration Summary Table

Options	Response		Penetration rate(n=208)
	n	Response rate	
Price and flavor	78	12.52%	37.50%
Brand Impressions	93	14.93%	44.71%
Health	85	13.64%	40.87%
Convenience of production	80	12.84%	38.46%
Service	78	12.52%	37.50%
Local cooperation for faster delivery	87	13.96%	41.83%
food safety	53	8.51%	25.48%
storage condition	68	10.91%	32.69%
Others	1	0.16%	0.48%
Total	623	100%	299.52%

Goodness of fit test: $\chi^2=91.294$ p=0.000

Table 4 is Response Rate and Penetration Summary Table. In terms of response rate and popularity rate, "brand image" is the most important aspect that consumers pay attention to when it comes to the requirements of online pre made vegetable sales, reaching 14.93% and 44.71% respectively. In summary, prefabricated vegetable enterprises need to focus on establishing their brand image in online sales.

3.3 Sample attitude analysis

3.3.1 Analysis of Multiple Choice Questions

Table 5 is Response Rate and Penetration Summary Table. Demand for purchasing pre made dishes:

Table 5: Response Rate and Penetration Summary Table

Response Rate and Penetration Summary Table			
Options	Response		Penetration rate(n=208)
	n	Response rate	
Easy and fast production	135	31.62%	64.90%
Units are sufficient and cost-effective	82	19.20%	39.42%
As an emergency reserve food, daily flavor changes	106	24.82%	50.96%
Maximize the preservation of ingredient flavor and taste	104	24.36%	50.00%
Others	0	0.00%	0.00%
Total	427	100%	205.29%

Goodness of fit test: $\chi^2=123.363$ $p=0.000$

In response to consumers' demand for pre made dishes, from the perspective of response rate and popularity rate, "convenient and fast production" is the most important aspect that pre made dishes consumers pay attention to, accounting for 31.62% and 64.90%, respectively. In summary, it can be concluded that for pre made vegetable manufacturers, they need to actively produce pre made vegetable products that are easy to make and can bring consumers fast and convenient.

3.3.2 Frequency analysis

Table 6 shows the acceptable price for purchasing pre made dishes (one pre made dish):

Table 6: The price you can accept to buy prepared dishes (a prepared dish)

Frequency analysis results				
Name	Options	Number	Percentage (%)	Cumulative percentage (%)
The price you can accept to buy prepared dishes (a prepared dish)	Below 20RMB	75	36.06	36.06
	20-50RMB	89	42.79	78.85
	50-100RMB	34	16.35	95.19
	More than 100RMB	10	4.81	100.00
Total		208	100.0	100.0

It can be seen from this that manufacturers of prepared vegetables should respond to the price requirements of consumers, and high quality and low price will become one of the strong competitiveness of prepared vegetables in the future.

3.3.3 Difference analysis (crosstabulation is used to analyze the selection differences of different samples)

Investigate whether gender differences will have different needs and concerns for prepared dishes and the results are shown in Table 7 and Table 8:

Table 7: cross summary table

Cross summary table			
Option	Gender		Total(n=208)
	Male(n=73)	Female(n=135)	
Price and flavor	22(30.14)	56(41.48)	78(37.50)
Brand Impressions	36(49.32)	57(42.22)	93(44.71)
Health	23(31.51)	62(45.93)	85(40.87)
Convenience of production	29(39.73)	51(37.78)	80(38.46)
Service	22(30.14)	56(41.48)	78(37.50)
Local cooperation for faster delivery	33(45.21)	54(40.00)	87(41.83)
Food safety	19(26.03)	34(25.19)	53(25.48)
Storage condition	24(32.88)	44(32.59)	68(32.69)
Others	1(1.37)	0(0.00)	1(0.48)

Chi square test: $\chi^2=7.926$ $p=0.441$

Table 8: cross summary table

Cross summary table			
Option	Gender		Total(n=208)
	Male(n=73)	Female(n=135)	
Prefabricated dishes are low in cost performance and not affordable enough	30(41.10)	55(40.74)	85(40.87)
Concerns about preservatives, shelf life	44(60.27)	72(53.33)	116(55.77)
I feel that the taste is not as good as fresh dishes, and the ingredients are not fresh	36(49.32)	66(48.89)	102(49.04)
Worry about food safety	25(34.25)	50(37.04)	75(36.06)
Incomplete labeling of product information	14(19.18)	32(23.70)	46(22.12)
The purchase channel is not convenient and fast enough	20(27.40)	39(28.89)	59(28.37)
Trouble making the program	25(34.25)	44(32.59)	69(33.17)
Worry about food problems caused by transportation channels and processes	27(36.99)	63(46.67)	90(43.27)
Others	1(1.37)	0(0.00)	1(0.48)

Chi square test: $\chi^2=3.843$ $p=0.871$

4. Advantages of Cooperation between Prefabricated Vegetables and Logistics Supply Chain

4.1 Develop logistics and prefabricated vegetable market

The combination of logistics, supply chain and prefabricated vegetables not only brings hope for the cross-regional transportation of prefabricated vegetables, but also helps to expand foreign markets. Prefabricated dishes with different tastes have entered the country, providing customers with a wealth of choices. In fact, in daily life, it is not difficult to find that many food retailers have poor storage environments and wantonly asking prices. The price difference provides a low price, and can also understand the food production environment, inspection standards, etc., and provides effective proof for the quality of the food [5].

4.2 Logistics Market Analysis

Due to the strict requirements of food transportation conditions and high requirements for transportation timeliness, it is very necessary to establish an efficient and comprehensive network information structure [6-7]. With the continuous expansion of the business scope of the logistics and supply chain industry, the food transportation industry has gradually become the service object of the logistics and supply chain. Great challenge. With Meituan, Ele.me and other companies occupying the catering market, prefabricated dishes have brought the possibility of entering the logistics and supply chain, broadening the market and bringing opportunities [8].

5. The cooperation optimization path of prefabricated vegetables and logistics supply chain

There are bound to be many frictions in the cooperation between prefabricated dishes and the logistics supply chain. Only when the two cooperate with each other, continuously improve the contradictions, and continue to provide assistance, can they facilitate long-term cooperation. In fact, the price of many foods is high and the transportation efficiency is low because there are many intermediate circulation links [9]. By reducing the circulation links, can greatly reduce the price of goods, and realize direct connection between factories and consumers through Taobao, Jingdong and other e-commerce trading platforms, which not only shortens the circulation link but also reduces costs and improves transportation efficiency [10].

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