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THE CONSUMER BEHAVIOUR UNDER THE SEMI-PRE-ORDER MODEL AMONG YOUNG PEOPLE IN GUANGXI

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Abstract: In the post-pandemic era, the semi-pre-order model of "ordering online and collecting in person" has spread rapidly in the fresh produce consumption sector. Taking the Guangxi Zhuang Autonomous Region as the survey area, this study adopted respondent-driven sampling to conduct a questionnaire survey and collected 639 valid responses. In terms of analytical method, descriptive statistics were used to present the sample structure and consumption behaviour characteristics, and chi-square tests were used to compare differences in usage rates across groups so as to identify the key demographic variables affecting usage rates. On this basis, a logistic regression model was established to analyse the purchase intention of non-users and its influencing factors; K-means clustering was further employed to uncover the characteristic types of potential consumers. The results show that price discounts and time savings are the main motivations for users to choose this model, whereas satisfaction with after-sales service is relatively low and the high-frequency repurchase rate is low. Age, occupation, monthly income and marital and parental status have significant effects on usage rates; groups who are self-employed, live in relatively developed cities, obtain information through social media, prefer to buy fruit and vegetables, and pay attention to after-sales service have stronger purchase intentions. Potential consumers can be divided into four categories, whose reasons for not purchasing relate respectively to product safety, cumbersome operation, high prices and a wait-and-see attitude. Based on these findings, it is recommended that the government increase policy support and cold-chain logistics construction, and that merchants optimise product quality, simplify operating procedures and improve the after-sales service system, so as to promote the sustainable development of the semi-pre-order model in Guangxi.
Keywords: Semi-pre-order model; Guangxi; Potential consumers; Cluster analysis; Satisfaction

1 INTRODUCTION

With the rise of the platform economy and the rapid spread of the Internet, the vertical deepening of e-commerce platforms has continued to increase, and China's fresh produce e-commerce market has developed rapidly [1]. In particular, after the outbreak of the COVID-19 pandemic at the end of 2019, lockdown management in numerous residential communities across the country caused order volumes on major fresh produce e-commerce platforms to surge and turnover to double; for example, the number of online orders on Freshippo during the pandemic increased by 220% year on year, and the gross merchandise value of Dmall increased by 236% year on year. According to the 2020 Community Group Buying White Paper, between 2018 and 2020 China's community group buying market grew from 28 billion yuan to around 89 billion yuan [2]. The semi-pre-order model of "ordering online and collecting in person" is gradually becoming an emerging consumption model, and in recent years it has attracted widespread attention and recognition in the market. Combining the purchasing method with the Internet not only provides a new way of purchasing but also injects new vitality into the development of the Internet [3].

The General Office of the People's Government of the Guangxi Zhuang Autonomous Region issued the Notice on Several Policy Measures to Promote the High-Quality Development of E-Commerce, guiding and promoting the rapid and healthy development of the e-commerce industry in the region. In 2024, the General Office of the State Council of the People's Republic of China issued the Guiding Opinions on Promoting the High-Quality Development of the Instant Delivery Industry, which stated that the service capacity of the instant delivery industry should be enhanced and related industries should be driven to achieve win-win outcomes on multiple fronts. The semi-pre-order model of "ordering online and collecting in person" has attracted national attention. In 2022, the Opinions of the Central Committee of the Communist Party of China and the State Council on Accelerating the Building of a Unified National Market proposed "optimising the layout of commerce and circulation infrastructure, promoting the integrated development of online and offline channels, and forming more new platforms, new business forms and new models of commerce and circulation", which provided favourable policy support for the development of the semi-pre-order model and promoted the high-quality development of the instant delivery industry. This has prompted an increasing number of traditional Chinese enterprises to shift towards e-commerce and to launch "Internet Plus" initiatives one after another [4]. With the vigorous development of the Chinese economy, instant delivery, as an emerging service model, has entered a stage of rapid growth in recent years. Data from the 54th Statistical Report on Internet Development in China show that, as of June 2024, the number of online food delivery users in China reached 553 million, an increase of 8.5 million compared with December 2023. The rapid rise of online sales has not only become an innovative path for merchants to sell

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products but has also expanded a broader consumption space for consumers, gradually enlarging the market scale and powerfully driving economic development [5]. In the post-pandemic era, social lifestyles and residents' consumption habits have changed significantly, and the public is gradually accepting the idea of purchasing fresh products through the semi-pre-order model of "ordering online and collecting in person", which has brought long-term and far-reaching effects on the fresh produce e-commerce industry. At the same time, with the online shopping preferences of the younger generation, the mainstream consumer group has gradually shifted towards Internet consumption, and the post-1990s generation has become the main force of consumption, further expanding the scale of China's fresh produce e-commerce industry [6]. In addition, food delivery platforms have continuously expanded the scope of their services by persistently innovating the consumption experience, achieving all-round coverage of life services. Online shopping has gradually become an important part of people's daily lives. With the development of the Internet and the continuous improvement of modern cold-chain logistics technology, the fresh produce e-commerce industry has gained better technical support, enabling platforms operating under the semi-pre-order model such as JD Daojia, Meituan Youxuan and Duoduo Maicai to achieve relatively large sales growth, with business volumes growing even faster for vegetables, fruit, eggs, dairy products and quick-frozen foods. Relying on technological innovation, food delivery platforms have continuously raised their level of intelligence and empowered the innovative development of the industry [7]. For example, Ele.me has realised functions such as personalised recommendation and intelligent dispatching through AI technology, while Meituan Waimai uses big data to provide a more personalised service experience.

The above analysis shows that the semi-pre-order model has expanded rapidly under the dual drivers of policy support and technological development, yet existing research mostly focuses on the fresh produce e-commerce industry as a whole or on the business model of community group buying, and dedicated studies on differences in consumer behaviour within a regional market remain insufficient. On this basis, the Guangxi Zhuang Autonomous Region was taken as the survey area and respondent-driven sampling was used to conduct a questionnaire survey. In terms of the analytical framework, descriptive statistics were first used to present the sample structure and consumption behaviour characteristics, and chi-square tests were used to compare differences in usage rates across groups; on this basis, a logistic regression model was established to analyse the purchase intention of non-users and its influencing factors; K-means clustering was further employed to uncover the characteristic types of potential consumers. Through the above progressive analysis, this study aims to answer questions such as which factors affect consumers' purchase intention and satisfaction with respect to the semi-pre-order model, and what characteristics and needs potential consumers have, in order to provide empirical evidence for the precision marketing and regional market expansion of the semi-pre-order model.

2 DATA SOURCES AND RESEARCH METHODS

To answer the aforementioned research questions, a questionnaire survey on consumption behaviour under the semi-pre-order model was carried out in the Guangxi Zhuang Autonomous Region. The following explains three aspects: data sources, questionnaire design and reliability and validity testing, and analytical methods.

2.1 Data Sources

The data come from a questionnaire survey on consumption behaviour under the semi-pre-order model conducted in the Guangxi Zhuang Autonomous Region in 2024. The survey adopted respondent-driven sampling. According to the regional differences in population within Guangxi, residents were divided into three regions, and all cities covered by each region constituted the basic framework of the first-level sampling unit. During data collection, distribution through online social platforms was the main approach, supplemented by interviews at offline community self-pickup points. The offline survey distributed paper questionnaires to university students during class breaks, or recorded and interviewed consumers about their behavioural characteristics under the "online pre-order + offline self-pickup" model at Meituan Youxuan community self-pickup points. The online survey posted on social media and forums, and respondents forwarded the questionnaire to at least two eligible peers in order to expand sample coverage. All cities in Guangxi were included in the first-level seed selection scope of the respondent-driven method, and the central urban area of each city was further used as the second-level sampling frame, from which individuals were randomly selected to constitute the final sample. A total of 650 questionnaires were returned, and after screening out those with internal contradictions or a large number of unanswered items, 639 valid questionnaires were obtained, giving a valid response rate of 98.31%.

2.2 Questionnaire Design and Reliability and Validity Testing

The questionnaire was designed around dimensions such as respondents' basic information, fresh produce purchasing habits, awareness and use of the semi-pre-order model, and satisfaction and purchase intention, with 32 items in total. Reliability was tested using Cronbach's α coefficient. The overall reliability of the questionnaire was 0.876, and the Cronbach's α coefficients for both the user and non-user categories were greater than 0.60, as shown in Table 1. Validity was tested using the KMO and Bartlett tests of sphericity; the KMO value was 0.921 and the significance of Bartlett's test of sphericity was 0.000, as shown in Table 2. The factor analysis results are shown in Table 3, with a cumulative variance explanation rate of 92.253%, indicating that the questionnaire structure and item design are scientific and reasonable.

Table 1 Formal Survey Reliability Analysis

Cronbach's α Reliability Analysis	
Sample Size	Cronbach's α Coefficient
639	0.876

Table 2 KMO and Bartlett's Test of Sphericity Results

KMO and Bartlett's Test		
KMO Value	0.921	0.921
Bartlett's Test of Sphericity	Approx. Chi-Square	3295.743
	df	120
	p-value	0.000

Table 3 Factor Analysis Results

Name	Cumulative Rotated Variance Explanation Rate (%)
Factor 1	83.932
Factor 2	92.253

Extraction method: principal component analysis.

2.3 Research Methods

2.3.1 Logistic regression model

Logistic regression is a regression analysis method suitable for a binary dependent variable, in which the regression coefficients are estimated by maximum likelihood estimation. The model is expressed as:

$$p = 1 / (1 + e^{-(\beta_0 + \beta_1 x_1 + \beta_2 x_2 + \ldots + \beta_i x_i)}) \quad (1)$$

where p denotes the probability of the event occurring, x_i denotes the independent variables and β_i denotes the regression coefficients. In this study, consumers' purchase intention towards the semi-pre-order model was taken as the dependent variable, and individual characteristics, information acquisition channels, product preferences and purchase concerns were taken as independent variables, so as to establish a logistic regression model and, by testing the significance of the regression coefficients, to determine the direction and degree of influence of each factor on purchase intention.

2.3.2 K-means clustering algorithm

The K-means clustering algorithm is a method that divides samples into categories by iteratively computing the distance between sample points and cluster centres, so that samples within the same cluster are highly similar while samples in different clusters differ considerably. This study used K-means clustering to segment potential consumers in order to reveal the characteristic differences between groups, thereby providing an effective reference for the industry to identify consumers [8].

3 CONSUMER GROUP CHARACTERISTICS AND USAGE DIFFERENCES

Before analysing consumers' purchase intention, it is first necessary to form an overall understanding of the basic structure of the sample and to identify whether there are significant differences in usage rates across groups. Based on 639 valid questionnaires, the demographic characteristics of respondents were described in terms of gender, age, education, occupation and monthly income, and chi-square tests were further used to compare differences in usage rates between groups, so as to determine the key demographic variables affecting whether consumers adopt the semi-pre-order model.

3.1 Demographic Characteristics of Consumer Groups

Females are more numerous among consumers, and consumers of different genders may differ in usage experience, usage frequency and price sensitivity; consumers aged 18-24 account for the largest proportion, indicating that younger groups are more interested in the semi-pre-order model; education is mainly at bachelor's degree level, occupation is mainly student and corporate employee, and monthly income is concentrated at 1,500-1,999 yuan. This is shown in Table 4.

Table 4 Main Content and Proportions of Consumers' Basic Information

Variable	Category	Frequency	Percentage
Gender	Female / Male	351 / 288	54.94% / 45.06%
Age	18-24 / 24-30 / 30-35 / Over 35	269 / 189 / 152 / 29	42.11% / 29.62% / 23.71% / 4.56%
Education	Bachelor's and above / Associate degree / High school and below	281 / 164 / 194	44.00% / 25.60% / 30.36%
Occupation	Student / Corporate employee / Other	196 / 166 / 277	30.63% / 26.00% / 43.37%
Monthly Income	1,000-1,499 / 1,500-1,999 / 2,000-4,999 / 5,000 and above	154 / 214 / 203 / 68	24.13% / 33.48% / 31.76% / 10.63%

3.2 Comparison of Usage Rates Across Groups

To explore the relationship between gender, age, education, occupation, monthly income, marital and parental status and whether the semi-pre-order model is used, chi-square tests and contingency analysis were carried out respectively. The results are shown in Table 5, and the null hypothesis H0 is that the basic information variables have no significant effect on whether the semi-pre-order model is used.

Table 5 Chi-Square Test Results

Basic Information	Chi-Square Value	P-Value	Significance
Gender	1.243	0.265	Not significant
Age	29.870	***	Significant
Education	5.359	0.374	Not significant
Occupation	55.335	***	Significant
Monthly Income	29.963	***	Significant
Marital and Parental Status	44.089	***	Significant

*p<0.05 **p<0.01 ***p<0.001

As can be seen from Table 5, age, occupation, monthly income and marital and parental status pass the test at the 5% significance level, indicating that these factors have a significant effect on the use of the semi-pre-order model; gender and education do not pass the significance test.

3.3 Consumer Behaviour Characteristics and Satisfaction Distribution

In terms of purchase frequency, as shown in Figure 1, among the group that is "very familiar" with the semi-pre-order model, the proportion buying 4-5 times is relatively high, whereas among the group that "knows something about it", the proportion buying once or less is higher, indicating a positive correlation between degree of familiarity and purchase frequency. Purchase frequency is an important indicator of user stickiness and the sustainability of the model. The higher the degree of familiarity, the higher the purchase frequency, which shows that the level of awareness clearly promotes the conversion of consumption behaviour. However, whether the group is "very familiar" with the semi-pre-order model or only "knows something about it", the proportion buying 2-3 times occupies a relatively high share, indicating that most consumers are still at the trial consumption stage and have not yet formed a stable cyclical purchasing habit. The semi-pre-order model has shortcomings in user retention; consumers are attracted to try it because of price discounts or novelty, but the model itself has not yet established irreplaceability, and the conversion rate to high-frequency repurchase is limited [9]. Among groups with a lower degree of familiarity, the proportion buying only once is relatively high, indicating that insufficient awareness of the model directly affects the depth of use.

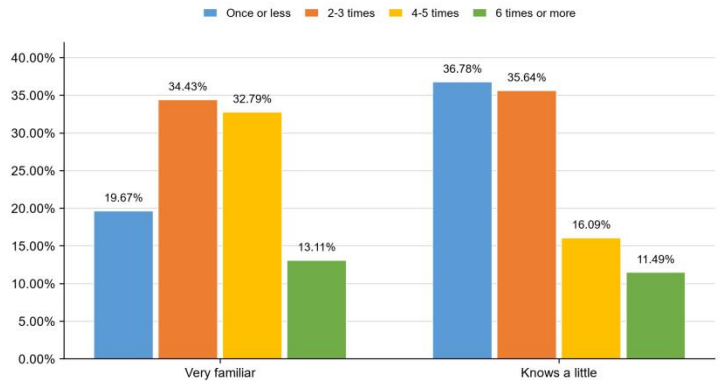


Figure 1 Purchase Frequency

In terms of motivation for choice, as shown in Figure 2, price discounts are the most important factor, accounting for 34.25%; this is followed by time savings, accounting for 31.04%; guaranteed freshness and a rich variety of choices account for 16.37% and 14.46% respectively. Taken together, price discounts and time savings account for more than 65%, indicating that the model mainly satisfies consumers' dual demands for cost-effectiveness and convenience. The share of the price factor is higher than that of time savings, indicating that the primary driver for current users to choose the semi-pre-order model is still price sensitivity rather than time constraints. Short-term price advantages are an effective means of attracting users, but relying solely on subsidies and discounts over the long term makes it difficult to maintain a sustainable competitive advantage, and once the price advantage weakens, the risk of user loss is relatively high [10]. The relatively low proportions of guaranteed freshness and a rich variety of choices indicate that users' understanding of the semi-pre-order model remains at the level of being cheap and convenient, and that they have not yet fully perceived its advantages in supply chain efficiency and product quality.

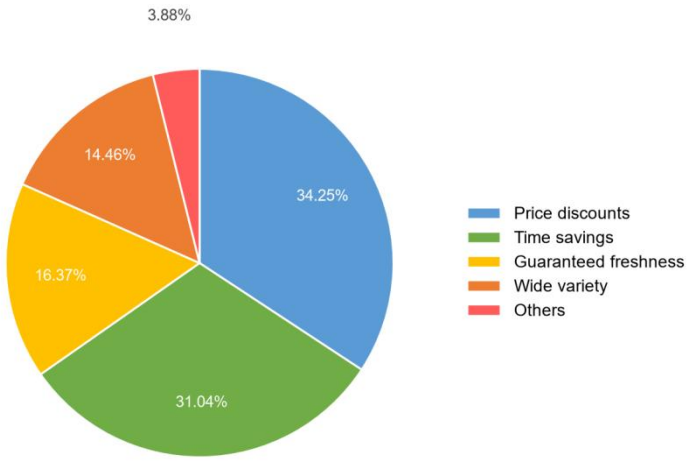


Figure 2 Reasons for Choosing the Semi-Pre-Order Model

In terms of the satisfaction distribution, as shown in Figure 3, the item "the fresh products purchased are of better quality" has the highest satisfaction, with nearly 50% of respondents indicating that they are relatively satisfied or very satisfied; the item "better after-sales service" has lower satisfaction, with most respondents giving only an average rating. The higher satisfaction with product quality indicates that platforms have indeed been effective in supply chain management and quality control. Low satisfaction with after-sales service is a signal worth watching. Fresh products are non-standardised and perishable, and problems such as damage or spoilage during delivery cannot be completely avoided; as the last line of defence for user rights, the quality of the after-sales experience directly affects users' trust in the platform and their willingness to repurchase. At present, most users give only an average rating for after-sales service, and platforms still have clear room for improvement in the convenience of return and exchange procedures, the timeliness of customer service responses and the thoroughness of problem resolution. Under the semi-pre-order model, users cannot open and inspect the goods on the spot at pickup, and problems are often discovered only after unpacking at home, which further increases the complexity of after-sales handling. If the after-sales experience remains merely at a passing level for a long time, the goodwill accumulated among users through product quality and price advantages will gradually be eroded [11]. Overall, users are relatively satisfied with the semi-pre-order model in terms of product quality and price reasonableness, while after-sales service is a clear shortcoming.

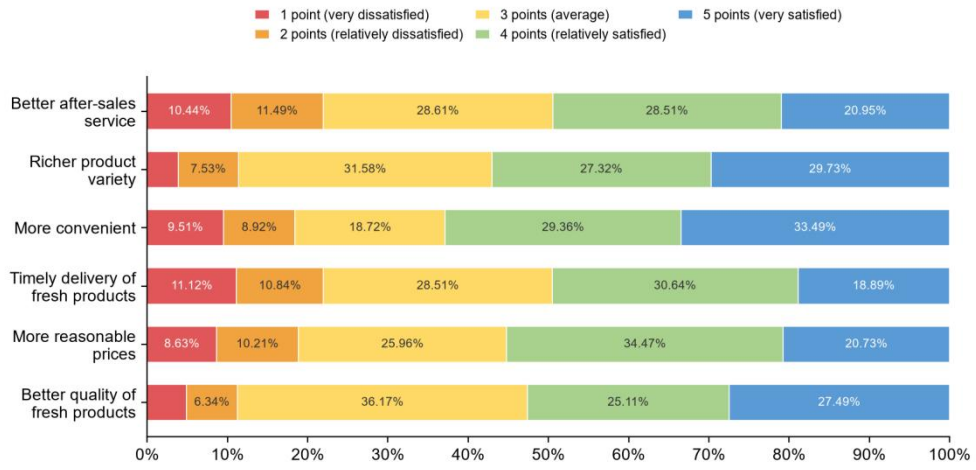


Figure 3 Satisfaction Distribution with the Semi-Pre-Order Model

4 PURCHASE INTENTION OF NON-USERS AND ITS INFLUENCING FACTORS

After identifying the key demographic variables affecting consumers' usage rates, it is necessary to further examine the concerns and purchase intentions of the non-user group. As a core indicator for measuring the market potential of the semi-pre-order model, purchase intention is directly related to the conversion of potential users and market expansion. This chapter first presents the concerns and factors of interest of non-users through descriptive statistics, and then establishes a logistic regression model to systematically identify the key variables affecting consumers' purchase intention.

4.1 Concerns and Purchase Intentions of Non-Users

As shown in Figure 4, among consumers who have not used the semi-pre-order model, those who are accustomed to the traditional method of buying and paying on the spot account for 65.12%, which is the main factor; those worried that fresh product quality cannot be guaranteed account for 55.81%; those worried about payment security account for 51.16%; those who find that it cannot meet temporary needs account for 24.86%; and other reasons account for 10.47%.

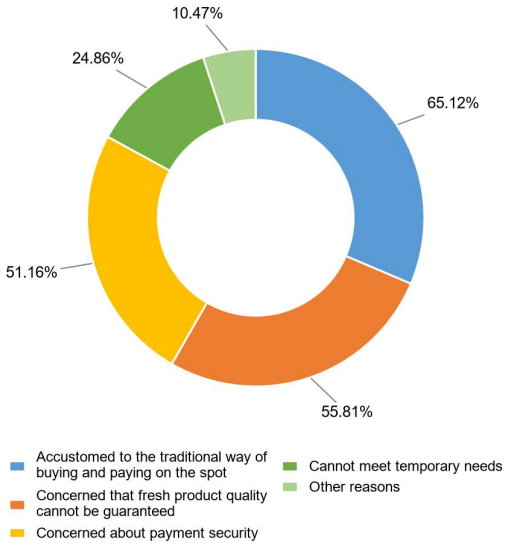


Figure 4 Reasons for Not Using the Semi-Pre-Order Model

As shown in Figure 4, being accustomed to immediate offline purchase is the most prominent obstacle; more than 60% of non-users still rely on the traditional consumption method of "seeing the goods before paying", and lack trust in the indirect purchasing chain of online pre-order and offline pickup. Quality concerns and payment security issues also occupy relatively high proportions, each exceeding half, indicating that consumers generally have doubts about the safety and reliability of purchasing fresh products online. The non-standardised nature of fresh products makes it difficult for consumers to judge the actual state of the goods from pictures and text descriptions, and this information asymmetry is amplified among the non-user group [12]. The factor of being unable to meet temporary needs accounts for a relatively low proportion, indicating that most consumers can accept a certain time gap, but about 40% of non-users still have concerns about the usage scenario of "ordering in advance". Overall, the rejection of the semi-pre-order model by the non-user group is not caused by a single factor, but is the combined result of consumption habits, lack of trust and usage scenario constraints.

As shown in Figure 5, when purchasing fresh products, consumers who have not used the semi-pre-order model mainly value quality and price, and also pay a certain degree of attention to purchase convenience, variety and after-sales service.

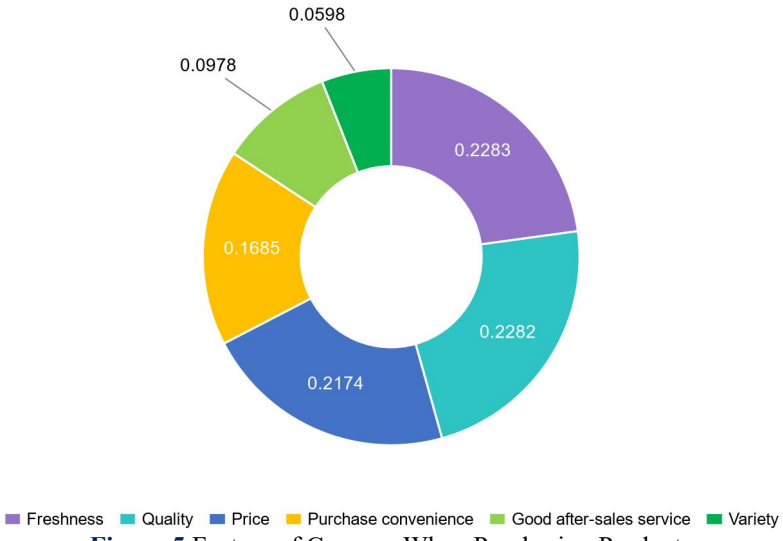


Figure 5 Factors of Concern When Purchasing Products

As shown in Figure 5, quality and price are the core dimensions of consumer decision-making, which is highly consistent with the motivations for choice of the user group; consumers' concerns are concentrated on whether quality can be guaranteed and whether payment is safe, which is essentially a problem of trust rather than a lack of demand.

Attention to convenience and variety is relatively low, and consumers do not have a strong perception of the advantages of the semi-pre-order model in saving time and expanding the range of choices.

Data from the survey on the willingness to accept the semi-pre-order model in the future show that 71.64% of consumers indicated that they are "relatively willing" or "very willing" to try the model, 14.94% indicated that they are "not sure", and 13.42% indicated that they are "relatively unwilling" or "very unwilling", as shown in Figure 6.

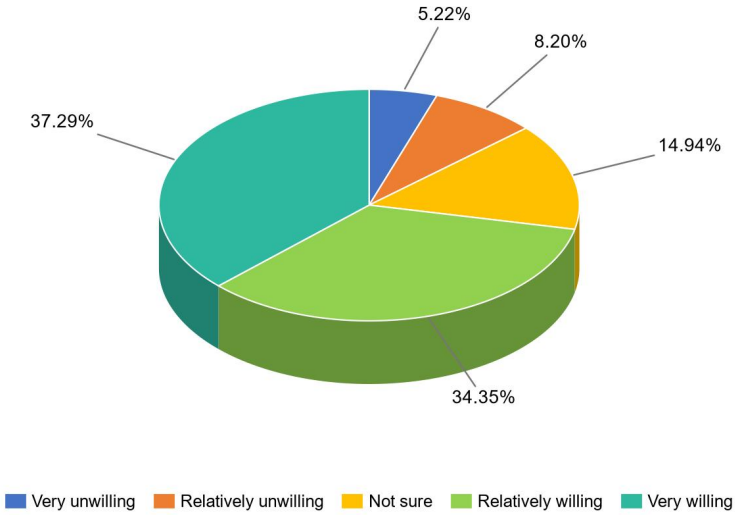


Figure 6 Willingness to Accept the "Semi-Pre-Order Model"

As shown in Figure 6, more than 70% of non-users show a willingness to try, indicating that the semi-pre-order model has considerable incremental space in the Guangxi market. Although the non-user group has not yet been converted into actual users because of habits, quality concerns and other reasons, its potential demand genuinely exists. The uncertain group and the unwilling group together account for less than 30%, among which the uncertain group are wavering users who can be won over by optimising services and strengthening publicity, and the proportion that genuinely resists the model is relatively low.

4.2 Logistic Regression Analysis of Factors Influencing Non-Users' Purchase Intention

To identify the key factors affecting non-users' purchase intention, the purchase intention of the non-user group was taken as the dependent variable, and individual characteristics, information acquisition channels, product preferences and purchase concerns were taken as independent variables, so as to establish a logistic regression model.

Because the questionnaire contains a large number of categorical variables — for example, age is divided into four intervals and education into five levels — if they were directly numbered in numerical order and included in the model as independent variables, this would be equivalent to assuming that the gaps between levels have the same effect on the dependent variable. In addition, for unordered multi-category variables such as occupation, there is no numerical ranking between the options. Therefore, dummy variables were used to process each categorical independent variable before it was entered into the model for logistic regression. The assignment of each independent variable is shown in Table 6.

Table 6 Letter Representation of Each Independent Variable

Letter of Independent Variable	Meaning of Independent Variable
Gender	Gender
Age	Age
Edu	Education
Job2	Professional and technical personnel (teachers, doctors, engineering technicians, writers and other professionals)
Job3	Tertiary industry service personnel
Job4	Agriculture, forestry, animal husbandry and fishery workers
Job5	Homemaker
Job6	Merchant employee
Job7	Staff of government departments, public institutions and Party and government organs
Job8	Student
Job9	Other (unemployed, jobless, retired, etc.)
Job10	Self-employed individual
Income	Income
Loc2	Baise, Wuzhou, Hezhou, Hechi, Laibin, Fangchenggang, Chongzuo
Loc3	Beihai, Yulin, Qinzhou, Guigang
Loc4	Nanning, Liuzhou, Guilin

Letter of Independent Variable	Meaning of Independent Variable
Kwon2	News reports
Kwon3	Recommendation by friends or family
Kwon4	Platform advertising
Kwon5	Social media (such as Weibo, Douyin, Xiaohongshu, etc.)
Kwon6	Other
Kind1	Fruit
Kind2	Vegetables
Kind3	Fresh seafood
Kind4	Other
Focus1	Purchase convenience
Focus2	Price
Focus3	Freshness
Focus4	Quality
Focus5	Variety
Focus6	Good after-sales service
Focus7	Other

As for the selection of the reference category, the last option of each influencing factor was set as the reference category. When the last option was "other" or was selected fewer than 40 times, the second-to-last option was set as the reference category, and so on. Job10, Loc4, Loc3, Kwon5, Kind1, Kind2 and Focus6 were selected respectively as the reference categories, namely occupation as self-employed individual, place of residence as Nanning, Liuzhou and Guilin plus Beihai, Yulin, Qinzhou and Guigang, information acquisition method as social media, purchase type leaning towards fruit and vegetables, and purchase concern as after-sales service. The independent variables were selected by backward stepwise regression based on maximum likelihood estimation, and the variables selected into the model were occupation, place of residence, information acquisition method, purchase type and purchase concern. After excluding insignificant variables, the logistic regression results are shown in Table 7.

Table 7 Logistic Regression Model Results

Variable	Standard Coefficient	Standard Error	Significance	VIF
Job10	0.211	0.170	0.051	1.000
Loc4	2.902	1.177	0.006	6.427
Loc3	1.921	0.649	0.060	3.714
Kwon5	1.543	0.345	0.053	2.383
Kind1	1.656	0.386	0.021	2.632
Kind2	1.676	0.414	0.036	2.729
Focus6	0.659	0.147	0.061	1.031

As shown in Table 7, the significance levels of occupation (self-employed individual), place of residence (Nanning, Liuzhou and Guilin plus Beihai, Yulin, Qinzhou and Guigang), information acquisition method (social media), purchase type (fruit, vegetables) and purchase concern (after-sales service) are all less than 0.1, indicating that the coefficients of the above variables pass the significance test and are statistically meaningful.

Being self-employed, living in a relatively developed city, obtaining information through social media, preferring to buy fruit and vegetables, and paying attention to after-sales service are significant factors affecting purchase intention towards the semi-pre-order model. The purchase intention of self-employed individuals is significantly higher, which may be related to the characteristics of their occupation: long business hours and fragmented spare time make it difficult for them to find time to shop in physical stores, and the online ordering and offline self-pickup of the semi-pre-order model exactly fits their time constraints. Residents of relatively developed cities have a stronger purchase intention, which may be related to the degree of development of urban delivery infrastructure; as major cities in Guangxi, Nanning, Liuzhou and Guilin have a higher density of community self-pickup points and faster delivery times, which lowers the threshold for using the model. The significance of the social media information channel shows that short videos and social platforms have unique advantages in disseminating information about the semi-pre-order model, and that users are more persuaded by the actual experiences shared by others than by traditional advertising. Fruit and vegetables are high-frequency, rigid-demand categories, and consumers are more sensitive to their price fluctuations, so the price advantage of the semi-pre-order model is more easily perceived in these categories [13]. The significant effect of attention to after-sales service on purchase intention reflects consumers' high vigilance regarding the risks of buying fresh products online.

5 MINING THE CHARACTERISTICS OF POTENTIAL CONSUMERS AND PRODUCT OPTIMISATION PATHS

The logistic regression identified the significant factors affecting purchase intention, but regression analysis can hardly present the full picture of the potential consumer group. The question of "what group characteristics do these consumers who have purchase intention but have not yet acted have" requires cluster analysis for exploration. The K-means

clustering method was used to segment potential consumers in order to reveal the characteristic differences between groups and provide a basis for formulating differentiated market strategies.

5.1 Definition of Potential Consumers and the Clustering Process

Potential consumers refer to individuals or groups that have not yet used the semi-pre-order model but have a certain purchase intention. The survey found that among consumers who have never used the semi-pre-order model, a considerable proportion of respondents expressed a willingness to try, and this group is the most likely to be converted into actual users in the future. Using the questionnaire data, respondents who chose "I don't know" to Question 12, "Are you familiar with the semi-pre-order model", were initially screened out, and then, in combination with Question 14, "Your attitude towards purchasing fresh products through the semi-pre-order model", the group with purchase intention was selected and defined as potential consumers.

Seven factors were selected from the questionnaire items as clustering indicators, including gender, age, highest education, occupation, monthly income, city of residence and the main reason for not using the semi-pre-order model. Because the above indicators are all categorical variables, they were converted into numerical variables before clustering. SPSSPRO was used to perform K-means clustering, and potential consumers were divided into 4 categories. The clustering results are shown in Table 8.

Table 8 Final Clustering Results

Final Clustering Results				
	Category I	Category II	Category III	Category IV
Gender	2	2	2	2
Age	2	4	3	3
Highest Education	5	4	2	3
Occupation	8	10	6	3
Monthly Income	2	5	4	4
Place of Residence	1	3	2	1
Reason for Not Purchasing	2	4	3	1

According to the assignment of the options, the cluster centre of each category was converted back into the original option data. The original characteristics of each category are shown in Table 9.

Table 9 Original Characteristics of Each Category

Final Clustering Results				
	Category I	Category II	Category III	Category IV
Gender	Female	Female	Female	Female
Age	18-24 years	30-35 years	24-30 years	24-30 years
Highest Education	Bachelor's and above	Associate degree	Junior high school	High school or vocational school
Occupation	Student	Self-employed individual	Merchant employee	Tertiary industry service personnel
Monthly Income	1,000-1,499 yuan	5,000 yuan and above	2,000-4,999 yuan	2,000-4,999 yuan
Place of Residence	Nanning, Liuzhou, Guilin	Baise, Wuzhou, Hezhou, Hechi, Laibin, Fangchenggang, Chongzuo	Beihai, Yulin, Qinzhou, Guigang	Nanning, Liuzhou, Guilin
Reason for Not Purchasing	Concerned that product safety cannot be guaranteed	Cumbersome operation and inconvenient to use	High price	Plan to buy in the future, currently taking a wait-and-see attitude

The number of cases of the four types of potential consumers was counted and their proportions calculated, giving the results shown in Table 10.

Table 10 Cluster Case Counts

Number of Cases in Each Cluster		
Cluster	Category I	266.000
	Category II	59.000
	Category III	59.000
	Category IV	133.000
Valid		517.000
Missing		0.000

5.2 Profiles of the Four Types of Potential Consumers

The first group consists of 266 people, mainly female college students aged 18-24 who are currently studying, with a bachelor's degree or above and a monthly income of 1,000 to 1,499 yuan, living in major cities such as Nanning,

Liuzhou and Guilin, who have not used the model because they worry that product safety cannot be guaranteed. This group accounts for the largest proportion of potential consumers, has a strong ability to accept new things, and the price advantage of the semi-pre-order model fits the consumption psychology of young people pursuing cost-effectiveness; it is the group with the greatest conversion value and can be regarded as important development consumers.
The second group consists of 59 people aged 30 to 35, with an associate degree, who are self-employed individuals with a monthly income of 5,000 yuan or above, living in cities such as Baise, Wuzhou and Hezhou, who have not purchased because of cumbersome operation and inconvenient use. This group is economically independent, and its spending power is the highest among the four categories; if the operating process can be simplified, the conversion potential is considerable, and it can be regarded as important potential consumers.
The third group consists of 59 people aged 24 to 30, with junior high school education or below, working as merchant employees with a monthly income of 2,000 to 4,999 yuan, living in Beihai, Yulin, Qinzhou and Guigang, who have not used the model because they consider the price too high. Their medium income level determines that this group is highly price-sensitive and that cost-effectiveness is the core consideration in consumption decisions; they belong to general potential consumers.
The fourth group consists of 133 people aged 24 to 30, mainly with high school education or below, mainly working as tertiary industry service personnel, with a monthly income of 2,000 to 4,999 yuan, living in Nanning, Liuzhou and Guilin. This group has already formed purchase intentions but is still taking a wait-and-see attitude, making relatively cautious consumption decisions and having not yet found a product that fully meets its needs; they are classified as low-value potential consumers.

6 CONCLUSIONS AND RECOMMENDATIONS

Taking the Guangxi Zhuang Autonomous Region as the survey area, this study analysed consumers' purchase intention towards and satisfaction with the semi-pre-order model through a questionnaire survey and multivariate statistical methods, and uncovered the characteristics and needs of potential consumers. The main conclusions and recommendations are as follows.

6.1 Conclusions

First, consumers' overall satisfaction with the semi-pre-order model is relatively high, but after-sales service is a clear shortcoming. Product quality and price reasonableness are highly recognised, with nearly 50% of respondents satisfied with the quality of fresh products, whereas after-sales service receives only an "average" rating from most respondents. The non-standardisation and perishability of fresh products determine the importance of after-sales protection, and the inadequacy of the current after-sales experience may gradually erode the user goodwill accumulated through quality and price advantages [14].
Second, price discounts and time savings are the two core motivations for users to choose the semi-pre-order model, together accounting for more than 65%, among which the share of the price factor is higher than that of the time factor. This indicates that the primary driver for users at the present stage is still price sensitivity [15]. More than 70% of non-users expressed a willingness to try the model, indicating that the semi-pre-order model has considerable incremental space in the Guangxi market, but the process from intention to actual use still requires trust building and habit formation.
Third, age, occupation, monthly income and marital and parental status have significant effects on the usage rate of the semi-pre-order model. The logistic regression further shows that groups who are self-employed, live in relatively developed cities, obtain information through social media, prefer to buy fruit and vegetables, and pay attention to after-sales service have stronger purchase intentions [16]. The main obstacles for the non-user group are concentrated in the solidification of consumption habits, lack of quality trust and concerns about payment security.
Fourth, potential consumers can be subdivided into four categories, whose reasons for not purchasing differ, requiring differentiated strategies. K-means clustering divided potential consumers into four categories. Important development consumers are female college students aged 18 to 24 who are currently studying, accounting for the largest proportion, who pursue cost-effectiveness but worry about product safety; important potential consumers are self-employed individuals aged 30 to 35 with the highest income level, who have not purchased because of cumbersome operation; general potential consumers are merchant employees aged 24 to 30 who are highly price-sensitive; and low-value potential consumers are tertiary industry service personnel aged 24 to 30 who already have purchase intentions but are still taking a wait-and-see attitude.

6.2 Recommendations

In response to the above conclusions, the following recommendations are put forward from the perspectives of the government and merchants.
At the government level, relevant policies should be issued to encourage innovation in and the development of the semi-pre-order model, and merchants adopting this model should be given tax preferences or financial support to promote their exploration in supply chain optimisation and delivery efficiency improvement [17]. Green consumption publicity and education should be used to guide consumers to accept the semi-pre-order model, for example by carrying out green consumption month activities to publicise the model's advantages in reducing food waste and lowering

carbon emissions, thereby raising public awareness [18]. Through policy guidance and financial support, the construction of infrastructure such as community self-pickup points and cold-chain logistics should be promoted, providing hardware guarantees for the semi-pre-order model.

At the merchant level, digital and intelligent technologies should be taken as the foundation, and technical means such as big data and artificial intelligence should be fully used to improve service quality and user experience. A supplier access mechanism should be established, and suppliers should be regularly evaluated and screened to ensure the freshness and safety of goods. Blockchain technology can be introduced to achieve full-process traceability of goods from production to delivery, and QR codes can be added to packaging for users to scan and view production, transportation and delivery information, thereby enhancing consumer trust [19-20]. For important development consumers, the focus should be on guaranteeing product quality and safety and strengthening price advantages; for important potential consumers, the operating process should be simplified, the App page design optimised and complicated steps reduced [21]; for general potential consumers, price-sensitive users can be attracted through coupons and spend-and-save promotions; and for low-value potential consumers, product quality should be demonstrated through user reviews and case sharing, and a rapid-response after-sales service system should be established to eliminate worries [22-23].

COMPETING INTERESTS

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