

"Old Wine in a New Bottle"

– A Study on Consumer Acceptance of "Blind Leftovers Box"

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Abstract: The blind box of leftovers is an innovative catering marketing model. In recent years, this marketing model has been regarded as an effective measure to reduce food waste in Chinese cities and relieve the operating pressure of catering enterprises. This study uses the literature review method to search and sort out the practical experience of some enterprises in the blind leftover box business and reports on the blind leftover box; Then the questionnaire survey method is adopted to explore whether consumers accept the blind leftovers box. The purpose is to investigate the acceptance degree of consumers to the blind leftovers box and the factors affecting the acceptance degree and provide feasible suggestions for catering enterprises to adjust the relevant product marketing strategy in the future. Based on the results of the questionnaire survey, it is found that consumers who accept the blind leftover box generally think that the blind leftover box has the advantages of the novel form, high-cost performance, and food saving. Consumers who reject the blind leftover box are concerned about the reasonable value and food safety of the blind leftover box. The research shows that relevant catering enterprises should strengthen the publicity of blind leftover boxes, and carry out differentiated marketing for people of different ages and different consumption levels.

Keywords: Blind leftovers box, consumer acceptance, influencing factors

1. Introduction

In November 2021, the General Office of the CPC Central Committee and The General Office of the State Council issued the *Food Conservation Action Plan*. The action link of resolutely curbing waste in catering consumption, calls for strengthening management of business behaviors in the catering industry and calling for reducing household and personal food waste [1]. Shanghai, Chengdu, Wuhan, and other cities at all levels of the positive response TO the action plan, the relevant enterprises learn from the successful experience of foreign "To Good To Go" platforms, establish an Internet platform to coordinate the catering enterprises' leftovers blind box business and promote many catering enterprises to add a variety of new styles, low prices of leftovers blind box products. Blind leftovers box refers to the catering business that will be in the deadline, inventory is too much or needs to be

sold out before the closing of the day of the unsalable food, in the form of a random combination into a blind box to sell to consumers. This innovative catering marketing model has been widely used by urban residents, news media, and related scholars since its launch, and is regarded as an effective measure to reduce food waste in Chinese cities and relieve the operating pressure of catering enterprises. This study finds that most of the news media and scholars focus on the development of domestic blind leftover box business and the social benefits brought by blind leftover box products, while from the perspective of consumer behavior, there are few discussions on whether consumers are willing to buy blind leftovers boxes and the specific reasons for consumers to try blind leftovers box products. Therefore, this study sorted out the practical experience of some catering enterprises in the blind leftovers box business and related news media reports on the blind leftovers box; A Field questionnaire survey was conducted to understand whether consumers accept the blind leftovers box and the reasons for accepting or rejecting the related blind leftovers box products, aiming to investigate the acceptance degree of consumers and the factors affecting the acceptance degree, and provide feasible suggestions for catering enterprises to adjust the marketing strategy of related products in the future.

2. Literature Review

Blind leftovers box is an innovative catering marketing model, which refers to the catering business selling unsalable food that is on time, has too much inventory, or needs to be sold out before closing time of the day to consumers in the form of blind boxes with random combinations. The goods in the leftovers box are randomly mixed by the merchants and belong to non-deterministic products, that is, consumers are not sure about the contents of the purchased products before they buy them. The influence of such non-deterministic goods on consumer psychology and behavior can be analyzed based on the hedonic and practical dual shopping value theory. From the perspective of pragmatism, the diversity, convenience, price, and functional value of blind leftover box products will affect consumers' purchase intention. Consumers perceive that the blind leftover box is rich in content, fast and convenient to purchase, and low in price, which will increase consumers' purchase intention of the blind leftover box. The unknown contents of the blind box and the concern about the value of the products in the blind box and the food safety risk will reduce consumers' purchase intention of the blind leftover box [2]. Related news reports have confirmed this point. In an on-the-spot interview, the reporter found that the price is an important factor in deciding consumers to buy the blind leftover box. Some restaurants sell the blind leftover box to consumers at 30% of the normal price, and consumers scramble to buy the blind box goods at a lower price, which is far beyond the value. While those food boxes whose value is only slightly more than the price will be ignored by consumers [3]. This means that on the one hand, the low price of the blind leftovers box and the high perceived value of consumers to the blind leftovers box can increase consumers' purchase intention and promote the generation of purchase behavior; On the other hand, the unknown contents of the blind leftovers box will reduce consumers' purchase intention, making the market performance of the blind leftovers box lower than that of similar foods sold at normal prices. The hot sale of blind leftovers boxes in cities has attracted the intervention of a large number of third-party platforms, such as "cherish magic bag", "bag goes - package", "Go Around", "Rice Box" and other blind leftovers box mini-programs integrate the business resources of blind leftovers box in the region, effectively connecting consumers and stores [4]. Taking the single platform of "Saving Food Magic Bag" as an example, as of May 2023, "Saving Food Magic Bag" has been settled in more than 30 cities across the country, connecting more than 3,000 catering stores, and the number of users exceeds 2 million [5]. It can be seen that the involvement of third-party platforms in the blind leftover box business and the use of emerging network media technologies have greatly improved the diversity and convenience of blind leftover box products, won wide support from consumers, and increased consumers' recognition of blind

leftover box products. However, as the blind leftovers box business is fully rolled out in cities, frequent food safety problems make a large number of consumers conflict with this kind of uncertain food set meal. Some consumers have reported that the purchased blind leftover box has problems such as poor taste, shoddy food, out-of-date sales, and stale food. A few merchants blur the production date and shelf life of the blind box food [6]. In December 2023, the China Consumers Association issued a consumption reminder of blind leftover boxes, pointing out that the certainty of the blind box itself and the safety of the food in stock shortly make the blind leftover box have food safety risks [7]. In summary, from the perspective of pragmatism, the diversity, convenience, and price of blind leftover box products, the value of blind leftover box itself, and food safety issues will affect consumers' acceptance of blind leftover boxes.

From the perspective of hedonism, blind leftover box products can stimulate consumers' curiosity and inference through the information gap, and consumers will have a feeling of surprise when they open the blind box. Therefore, consumers' curiosity can increase their acceptance of the blind leftover box [2]. Some consumers said in an interview with reporters that they chose the blind leftover box not only because of the cheap price but also because the blind leftover box can bring novelty and excitement [5]. Uncertain goods can bring social experience to consumers [2]. Positive consumption experiences will make consumers willing to introduce or recommend the leftover blind box to people around them, and more people will try it. On the contrary, negative consumption experiences will make consumers persuade others not to buy the leftover blind box, which will reduce consumers' acceptance of the leftover blind box. Since its launch, the blind leftovers box has been regarded as an effective measure to reduce urban food waste and an important link in the formation of residents' awareness of food saving and loss reduction. In June 2016, the blind Leftovers box app "To Good To Go" was launched in France for the first time, and by the end of 2021, the app has helped save about 17 million meals worldwide in the form of blind leftovers boxes [1]. In 2021, the Chinese government issued the *Anti-Food Waste Law of the People's Republic of China* and the *Food Conservation Action Plan*, calling on all departments to do a good job in food conservation [8]. With the popularization of food conservation and loss reduction education among urban consumers, consumers with awareness of food conservation are more inclined to support the sales form of blind boxes of leftovers, but some consumers are resistant to the concept of "leftovers", and the traditional food concept has laid the solemn and ritualistic sense of Chinese People's Daily dining. In summary, from the perspective of hedonism, consumers' curiosity, people's evaluation of blind leftover box consumption experience, and the social benefits of food saving and loss brought by blind leftover boxes will affect consumers' acceptance of blind leftover boxes.

In this study, the practical experience of some catering enterprises in the blind leftovers box business and related news media reports on the blind leftovers box were extensively searched and sorted out; a Field questionnaire survey was conducted to understand whether consumers accept the blind leftovers box and the reasons for accepting or rejecting the relevant blind leftovers box products, aiming to investigate the acceptance degree of consumers and the factors affecting the acceptance degree and provide feasible suggestions for catering enterprises to adjust the marketing strategy of relevant products in the future.

In the process of literature collection and collation, this study found that based on the hedonic-practical binary shopping value theory, the diversity, convenience, price of blind leftovers box products, the value of blind leftovers box itself, food safety issues, consumers' curiosity, etc. People's evaluation of blind leftover box consumption experience and the social benefits of food saving loss brought by blind leftover boxes will affect consumers' acceptance of blind leftover boxes, which points out the direction for the follow-up questionnaire research of this study.

3. Research Methods

3.1. Research Process

Through the collection of existing literature and news reports, different factors of blind leftover box products will affect consumers' acceptance of blind leftover boxes. From the perspective of blind leftover box products, the diversity, convenience, price, food safety, and the benefit of food saving and loss of blind leftover boxes will affect the acceptance degree of consumers. From the perspective of consumers, curiosity and the evaluation of the surrounding people on the consumption experience of the blind leftovers box will also affect the acceptance level.

In this study, a field questionnaire survey was used to investigate the awareness and acceptance of the "blind leftovers box" among random people. The study selected Tianjin Hedong District Yuanyang Xintiandi business district, Tianjin Nankai District Joy City business district, and Tianjin Heping District Binjiang Road business district as the investigation sites and surveyed randomly. Pedestrians along the street during the morning and evening meal hours. The questionnaire used in this study is divided into three parts: personal situation survey, awareness survey, and attitude survey. The purpose of the personal situation survey is to distinguish the personal situation of consumers according to gender, age, and income level, and explore whether there are significant differences in the acceptance degree and influencing factors of different consumers on the blind leftovers box. The surveyed consumers will fill in the gender, age, and average monthly consumption of the past six months. The purpose of the awareness survey is to screen out the respondents who have some understanding of the leftovers blind box, guide them to further fill in the questionnaire, understand the channels through which the respondents are informed of the leftovers blind box, and find out the shortcomings and focus of relevant enterprises in promoting the leftovers blind box business. In addition, the awareness survey can also avoid the errors caused by consumers who do not know the relevant information entering the attitude survey. The purpose of the attitude survey is to study the acceptance of consumers and verify the hypothesis of this study. First, the respondents are divided into two groups according to whether they have purchasing experience with blind leftover boxes. The purchasing motivation of the respondents who have purchasing experience of blind leftover boxes is asked and the reasons for rejecting such products of the respondents who have not.

3.2. Data Analysis and Research Results

During the one-week field questionnaire survey, a total of 477 valid results were collected, including 364 valid attitude survey results, which were analyzed using SPSSAU software.

3.2.1. Survey of Consumers' Conditions

In the personal information survey section, a total of 477 people were surveyed, including 258 men and 219 women, for a total ratio of nearly 1:1. Regarding the age survey, 115 persons were below 18 years of age, 155 persons were between 18 and 35 years of age, 103 persons were between 35 and 50 years of age, and middle-aged and old-aged respondents over 50 years of age accounted for about 25% of the total number of respondents. Regarding the survey on average monthly dietary consumption level, 60% of the respondents had an average monthly dietary consumption of less than RMB 3,000 in the past six months, which is a medium-low dietary consumption input group; 40% of the respondents had an average monthly dietary consumption of more than RMB 3,000 in the past six months, which is a high dietary consumption input group.

3.2.2. Blind Box Awareness Survey of Leftovers

In the awareness survey section, 364 respondents, or 76.3% of all respondents, learned about leftover blind boxes and similar businesses through various means. Correlation analyses were used to investigate the correlations between gender, age, average monthly dietary consumption level, and knowledge of blind leftover food containers, respectively, and Pearson's correlation coefficients were used to indicate the strength of the correlations. Specific analysis can be seen: Gender and knowledge do not show significance, the correlation coefficient value is -0.068 respectively, all of them are close to 0, and the p-value is greater than 0.05 in all of them, which means that there is no correlation between gender and knowledge in any of them. The correlation coefficient values between age and awareness showed significance, -0.352 respectively, and the correlation coefficient values were less than 0, implying that there is a negative correlation between age and awareness and that the older the population, the lower the level of awareness of blind boxes of leftovers and their similar businesses. The correlation coefficient values between the average monthly dietary consumption level and the degree of awareness were significant, 0.134 respectively, and the correlation coefficient values were greater than 0, implying that there was a positive correlation between the average monthly dietary consumption level and the degree of awareness and that the respondent groups who invested more in their diets had a high degree of awareness of the leftover blind boxes.

3.2.3. Consumer Attitude Survey

In the attitude survey section, a total of 364 respondents were surveyed on their attitudes, of which 230 respondents indicated that they had experience in purchasing leftover blind boxes and similar businesses; while another 134 respondents indicated that although they had heard of the introduction of leftover blind boxes by some catering companies, they did not ultimately choose to purchase such products due to various reasons.

Firstly, 230 respondents who had the experience of purchasing leftover blind boxes were analyzed on the reasons for choosing such products. 58.7% of the respondents believed that the cost-effectiveness of the leftover blind box products was one of the reasons that drove them to choose such products; 41.7% of the respondents believe that the Leftover Blind Box can provide diversified choices of dishes; 41.3% of the respondents believe that the Leftover Blind Box products are more conveniently available in their living area; 69.6% of the respondents believe that the Leftover Blind Box can save food and bring certain social benefits; 79.1% of the respondents believe that the Leftover Blind Box is a novel food service, and their curiosity about the Leftover Blind Box has prompted them to make a purchase decision; among the 79 respondents who learned about the Leftover Blind Box products through friends and relatives, 60.7% believe that it was their friends and relatives who introduced the products to them. 79.1% of the respondents believe that Leftover Blind Box is a novel food service and their curiosity about Leftover Blind Box prompted them to make a purchase decision. Among the 79 respondents who learned about Leftover Blind Box through friends and relatives, 60.7% of them believe that their friends' and relatives' comments on Leftover Blind Box influenced them to choose this kind of product on their recommendation. The results of this study suggest that value for money, convenience, variety, food savings, neighbor evaluation, and curiosity all have a significant impact on consumer acceptance, with value for money, curiosity, and the food-saving benefits of blind leftover boxes being the more prominent influences. Among consumers who were introduced to leftover blind boxes through friends and family, the experience ratings of friends and family significantly influenced their acceptance.

The chi-square test was used to investigate the relationship between the differences in average monthly consumption levels on six factors: value for money, variety, convenience, food conservation, curiosity, and evaluation of people around them, and the results showed that respondents with

different average monthly consumption levels would not show significance for five items: variety, convenience, food conservation, curiosity, and evaluation of people around them ($p > 0.05$), but showed significance for the value for money factor ($p < 0.05$). The average monthly consumption level showed a 0.01 level of significance for the value-for-money factor, and the proportion of respondents whose average monthly dietary consumption level was in the range of 0-1,000 yuan who chose to buy leftover blind boxes due to the value-for-money factor was 87.50%, significantly higher than the average level of other consumption level segments, which was 58.70%. The proportion of respondents whose average monthly dietary consumption level was in the range of RMB 1,000-2,000 who chose to buy leftover blind boxes due to the value-for-money factor was 71.43%, which was significantly higher than the average of 58.70%. Nearly 60% of the consumers with an average monthly dietary spending level in the range of RMB 4,000 or above considered that value-for-money was not a necessary factor in their purchasing decision. The results of this study suggest that the value for money of leftover blind boxes affects consumers at different average monthly spending levels to different degrees. For consumers with low to medium average monthly spending levels, the value for money of leftover blind boxes is a key factor in attracting them to make purchasing decisions, but for consumers with high average monthly spending levels, are more concerned about the other attributes of the leftover blind boxes.

The chi-square test (cross-tabulation analysis) was used to investigate the relationship between the differences in age on the six factors of value for money, variety, convenience, food conservation, curiosity, and evaluation by people in the neighborhood, and the results showed that three factors, convenience, food conservation, and curiosity, showed significance ($p < 0.05$) for respondents of different ages. Age presents a 0.05 level of significance for convenience, and by comparing the difference in percentages, it can be seen that middle-aged and elderly people aged 50-80 years old will be attracted by the convenience of the leftover blind box, and convenience will be one of the most important reasons for them to buy the leftover blind box. Seventy-three percent (73%) of teen respondents believe that leftover blind boxes are not convenient or that their convenience is not an important factor in the decision to purchase them. Age shows a 0.01 level of significance for food saving and the difference in percentage comparison shows that the group of respondents aged 18-35 years are concerned about the food saving and loss reduction benefits of leftover blind boxes and consider responding to the slogan of food saving and loss reduction as an important reason for purchasing leftover blind boxes. Age shows 0.01 level of significance for curiosity and the difference in percentage comparison shows that curiosity factor is not an important factor in the purchasing decision of the respondents who are above 50 years of age. Nearly 80% of respondents aged 0-18 are influenced by curiosity, citing it as an important factor in driving their purchasing decisions. The results of this study suggest that middle-aged and older adults focus on the convenience of leftover blind boxes and that curiosity and the food-saving and loss-reducing benefits of leftover blind boxes are important factors in attracting young people to these products.

The 134 respondents who refused to buy blind boxes of leftovers were then analyzed for their reasons for refusing this type of product. 30% of the respondents believed that, although leftover blind boxes are generally favorable to consumers in terms of price, there is no obvious advantage in terms of cost-effectiveness compared with other products purchased at normal prices; 57.4% of the respondents were not interested in the existing means of publicity; 61.9% of the respondents believed that leftover blind boxes do not have the convenience of access to the leftover blind boxes in their living area is very little; 77.6% of the respondents were worried that the leftover box would cause food safety problems. Among the 58 respondents who learned about the leftover box through friends and relatives, 63.7% thought that their friends and relatives had bad experiences in using the leftover box, and they would not choose to buy this kind of product because of the influence of this. The results of this study suggest that the lack of convenience and safety of

leftover blind boxes significantly reduces consumer acceptance; the lack of promotion by food service companies and the negative experiences of friends and family with leftover blind boxes are also important factors in consumer rejection of leftover blind boxes. The chi-square test was used to study the difference between age and cost-effective, uninterested, food safety, convenience, and evaluation of people around the five factors, the results show that: the age of the sample for cost-effective, food safety, and evaluation of people around the three factors do not show significance ($p > 0.05$), and the age of the sample for the uninterested, inconvenience of the two factors show significance ($p < 0.05$). Age for no interest showed a 0.05 level of significance, the existing means of publicity is more attractive to 18-50 years old young and middle-aged people, and less attractive to middle-aged and older people and teenagers and children, nearly 70% of the respondents aged 0-18 years old believe that the means of publicity of the leftover food blind box is not interested in. Age showed a 0.05 level of significance for inconvenience, and by comparing the difference in percentages, it is clear that respondents above 50 years of age think that leftover blind boxes are not convenient at present and that they do not have a channel through which they can purchase leftover blind boxes.

4. Discussion

Blind leftover boxes are a meaningful marketing strategy that aims to reduce food waste while also providing consumers with a novel, interesting consumption experience. To better promote the concept, the relevant catering companies should indeed enhance their publicity efforts and differentiate their marketing according to different target groups. Different promotional strategies can be used to target consumers of different age groups. For example, young people are usually more interested in new things and more receptive to novel ways of consumption such as blind boxes of leftovers.

Therefore, publicity aimed at young people can pay more attention to elements of fashion and trends, such as short videos on social media and live broadcasts. While middle-aged and elderly people pay more attention to practicality, so in the publicity aimed at them, the economic and environmental protection characteristics of the leftover blind box can be highlighted. For people with different consumption levels, differentiated marketing can also be carried out. People with higher consumption levels are more willing to try fresh, high-quality food, so the high quality and unique taste characteristics of the leftover blind box can be emphasized in the publicity.

People with lower consumption levels, pay more attention to the cost performance, so the price advantage and affordability of the leftover blind box can be highlighted in the publicity.

In addition, to better promote the leftover blind box, it is also possible to consider cooperating with related Internet enterprises, such as e-commerce platforms and community group buying. Through cooperation, the scope of publicity can be expanded, visibility can be improved, and consumers can also be provided with more convenient purchase channels.

To sum up, to better promote the blind leftovers box, relevant catering enterprises should enhance publicity, carry out differentiated marketing according to different target groups, and cooperate with relevant enterprises to improve the convenience of purchase. Through these measures, it is believed that the concept of blind leftover boxes can be more widely recognized and accepted. The government should strengthen the management and supervision of food safety and formulate effective regulations to regulate the blind leftover box market. This can ensure that consumers' rights and interests are protected and reduce food safety risks, while also promoting the healthy development of the market. Enterprises are encouraged to adopt more environmentally friendly ways to dispose of leftovers to reduce waste and environmental pollution, and publicity and education should be strengthened to raise public awareness of food safety and environmental protection. Only with the joint efforts of the government, enterprises, and consumers can the cause of food safety and environmental protection be promoted.

5. Conclusion

This study found that the diversity, convenience, price, food safety, and food-saving benefits of blind leftover boxes will affect the acceptability of consumers. Consumers' curiosity about the blind leftover box and people's evaluation of the blind leftover box are also important factors influencing consumers' decision to buy the blind leftover box. From the perspective of age of the respondents, young people pay attention to the cost performance and food saving and loss reduction benefits of the blind leftovers box, and curiosity is an important factor driving them to try the blind leftovers box; Middle-aged and elderly people pay attention to the convenience of the blind leftovers box; Respondents of all ages generally pay attention to the food safety of blind leftovers boxes. From the perspective of respondents' average monthly consumption level, people with middle and low consumption levels pay more attention to the cost performance of leftover blind boxes. The further research conclusions are as follows relevant catering enterprises should strengthen the publicity of blind leftover boxes and carry out differentiated marketing for people of different ages and different consumption levels; The government should strengthen the supervision and management of food safety and introduce effective laws and regulations to reasonably regulate the blind leftovers box market. This study provides a lot of valuable reference significance for future research in this direction, hoping to influence the personalized publicity strategy of catering enterprises on the blind leftover box and the formulation, adjustment, and implementation of regulations regulating the blind leftover box market. With the continuous expansion of the blind leftovers box market, future research should expand the scope of research, focusing on the influence of urban and rural residents with different ages, consumption levels, living environments, and educational backgrounds on the acceptance degree of such products.

Authors Contribution

All the authors contributed equally and their names were listed in alphabetical order.

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