

Analysis of Consumer Awareness and Acceptance of Expired Foods

Xinyang Wang, Jinrui Gou

School of Xi'an Shiyou University, Xi'an Shaanxi, 710065, China

Abstract: At present, China's adventitious food industry is booming and the market is expanding rapidly, while there are still bad factors restricting the development of the industry. It is particularly important to enhance the degree of regulation of the expiration date food industry and promote the healthy development of the expiration date food industry. Based on the empirical research of questionnaire and literature analysis, this paper investigates consumers' awareness, purchase intention, and choice of types of expired food. It is concluded that recognition, price sensitivity and food safety are important factors affecting consumers' acceptance of expired food.

Keywords: Expired Food; Food Safety; Consumer Psychology.

1. Introduction

Temporary food is food that is close to its expiry date but is still within its shelf life. Although approaching its shelf life, temporary food belongs to the scope of safe food, which is permitted by laws and regulations to be sold and consumed, and is fundamentally different from expired food. With its favourable price, expired food is being accepted by more and more consumers at a time when the consumer mindset is changing. The expired food industry has a large number of market players, including traditional food manufacturers, distributors and retailers, as well as emerging expired food discount shops and e-commerce platforms. A number of competitive players have emerged in the advent food industry, which compete for market share through different business models and strategies. Online channels include e-commerce platforms such as Pinduoduo and Taobao, as well as live streaming platforms such as Jieyin and Shutterbug. Offline channels include small shops, supermarket chains, and emerging discount shops for expiration date food. Since 2023, China's expiration date food industry has accelerated, with a market size of \$35.7 billion.

Along with the rapid expansion of the expiration date food market, there are also factors that hinder its further development. Consumers are always worried about food safety issues when buying expiration date food. In the end, how close to the shelf life of how long is considered to be "close to expiry"? On 27 January 2012, the State Administration of Market Supervision issued a clear requirement, food operators on the expiry of the food should be made to consumers to make a conspicuous tip. Specifically, the food near shelf life is divided into six categories: the first category, marked shelf life of 1 year or longer, the critical period for the expiry of 45 days before the expiry date; the second category, marked shelf life of 6 months to less than 1 year, the critical period for the expiry of 20 days before the expiry date; the third category, marked shelf life of 90 days to less than half a year, the critical period for the expiry of 15 days before the expiry date; fourth, marked shelf life of 30 days to less than 90 days, the critical period for the expiry of 10 days before expiry; Category V, with a shelf life of 16 days to less than 30 days, the critical period is 5 days before expiry; Category VI, with a shelf life of less than 15 days, the

critical period is 1 to 4 days before expiry.

Currently, China's expiration date food industry is booming, and the outlook for sales of expiration date food is optimistic, against the backdrop of increased consumer acceptance and enhanced product promotion by merchants. However, there are still problems and chaos in the expired food market. On the one hand, consumers are concerned about the safety risks of expired food and have limited acceptance of such products, which leads to a low willingness to buy expired food; however, some food producers and sellers have provided false shelf-life, substituting good for bad, and false branding, which has led to scandals in the expired food industry and undermined the confidence of the market.

Therefore, against the background of the rapid development of China's expiration date food industry, but still in chaos, analyzing consumers' willingness to buy expiration date food can help derive the market acceptance of expiration date food. Consequently, the sensitive areas of the market that affect the development of the expiration date food industry are of great significance for enhancing the benign development of China's expiration date food industry, realizing the rational allocation of food resources, and protecting consumers' rights and interests, among other factors.

2. Literature Review

The market acceptance and consumers' purchase intention of expired food are affected by the behaviour of the production and sales sides as well as relevant policies, showing a complex formation process in which objective and subjective factors are intertwined, and scholars at home and abroad have carried out in-depth studies from the following aspects. From the product perspective of expired food, Zhang Bei (2022) argues that factors such as product quality, the atmosphere of the shop scene, and the quality of service provided by the seller will have an important impact on consumers' consumption experience and purchase intention, and at the same time, the price sensitivity of consumers to expired food will also play an intermediary role in the purchase intention [1]. Wang Haiyan (2020) argued that the comprehensive quality of expiration date food is an important influencing factor for consumers to carry out consumption, based on this, food safety for quality of expiration date food

is particularly important [2]. At the consumer level, Xu Linjing (2013), in a related paper many years ago, explored the status of consumers' perceptions of expiration date foods through observation and questionnaire survey methods, and found that consumers also showed deficiencies of insufficient perceptions of expiration date foods [3]. Chen Guanjin (2020) explored the factors of consumers' purchase intention towards expired food and found that the price of expired food has an important influence on consumers' purchase intention [4].

3. Research Design

This study considers consumers' awareness of expired food, purchase intention, food choice, and other aspects as a starting point, obtains data samples through the questionnaire survey method, and carries out empirical analyses on consumers' comprehensive consumption intention of expired food, providing a data basis and suggestions for promoting resource allocation and healthy development of the expired food industry, researching the consumer market, and protecting the rights and interests of consumers.

3.1. Questionnaire Design

"The survey was conducted through a web-based questionnaire, 500 questionnaires were distributed, and 483 valid questionnaires were returned. Consumers were surveyed on their knowledge of expired food products, their willingness to buy products in the expired food category, and their specific choices of product categories, as well as basic information such as gender and age of the respondents."

3.2. Basic Information on the Sample Survey

3.2.1. Perceived Status of Expired Food Among the Surveyed Population

"Of the 483 valid questionnaires returned from consumers, 14.39 per cent were very aware of adventitious foods, 62.17 per cent said they were aware of them but not very well, 19.23 per cent said they had only heard of the term adventitious foods, and 3.06 per cent had not been exposed to adventitious food products at all, and 1.15 per cent of the respondents indicated that they had never heard of expired food products specifically categorized as such."

3.2.2. Willingness to Buy Expired Food

"About 82.74 per cent of the consumers surveyed said they would buy expired food, accounting for the majority of respondents; 17.26 per cent chose not to buy expired food, 22.39% said that they had already bought expired food, 60.35% had not bought but were willing to try, 14.37% said that they would be willing to buy expired products if they could make them feel at ease, and 2.89% said that they were not willing to buy expired food at all."

3.2.3. Gender and Age Distribution of Respondents

"The survey on consumers' basic information, such as gender and age, aimed to study whether their awareness and willingness to buy expired food were influenced by gender and age.

In terms of gender, of the 483 valid questionnaires returned, 34.82 per cent were male and 65.18 per cent were female. The gender ratio of consumers who would actively or willingly try to buy foods with expiry dates was 72.34% for males and 27.66% for females; the gender ratio of consumers who expressed reluctance or total unwillingness to buy foods with expiry dates was 21.26% for males and 78.74% for females.

In terms of age, of the 483 valid questionnaires returned,

0.41 per cent were under 18 years, 52.33 per cent were between 18 and 25 years, 27.81 per cent were between 26 and 35 years, 18.42 per cent were between 36 and 55 years, and 1.03 per cent were between 56 and 65 years. Finally, valid questionnaires were not collected from consumers aged 70 years and above.

Based on the above gender and age distribution, the questionnaire surveyed more than half of the 18 to 25 years old group, with female respondents accounting for the majority. At the same time, due to differences in the delivery and use of online questionnaires, the number of questionnaires collected from older consumers is scarce, which may lead to insufficient analysis of data related to older consumers."

3.3. Analysis of Consumers' Choice of Expiry Date Foods

"Of the 483 valid questionnaires returned, in addition to 2.89% of consumers who indicated that they would not buy expired food products at all, 97.11% of consumers with varying degrees of willingness to buy were also surveyed on their consumption behavior, mainly investigating which situations of expired food products were of greater concern to consumers."

3.3.1. Respondents' Concerns about Shelf Life and Analyses

"Among the consumers who intended to purchase expired food, 83.01% paid attention to the remaining shelf life, while 16.99% said they would not. Meanwhile, 61.44% of the respondents said they would not buy the expired food product if the remaining shelf life was not within their expectations, 35.44% would still buy the product even if the remaining shelf life was already very short, and 3.12% of the respondents indicated that they would still be willing to buy the expired food product even if it almost exceeded or had already exceeded its shelf life.

This shows that the vast majority of consumers are highly concerned about the remaining shelf life of expired food products, and attach great importance to food safety. However, some consumers are willing to buy foods very close to their expiry dates for the sake of low prices."

3.3.2. Respondents' Price Sensitivity Situation and Analysis

"An important reason for the acceptance of expired food is its favorable price. Among the consumers who are willing to buy, almost all of the interviewees think that expired food should have a discount of 50% or even higher; specifically, 82.89% of the interviewees believed that expired food with a shelf life of more than 1 month should have at least a 70% discount, while 97.35% of the interviewees believed that fresh food and other expired food with a shelf life of only one week or a few days should have a super-high discount of 1 to 50%, which occupies almost all of the interviewees.

It is not difficult to see that higher price sensitivity is the fundamental reason for consumers to choose expiry date food, and it is in the case of fierce competition among expiry date food merchants that consumers are more likely to pick fresher food with similar discounts. Consumers' high demand for value for money is an issue that must be taken into account on the sales side of adventitious foods."

3.3.3. Respondents' Acceptance of Various Categories of Prophylactic Foods

"Among the consumers who have the willingness to

purchase, 94.21 per cent of consumers indicated that they are willing to purchase snack products with relatively long shelf life, which accounted for the majority of the respondents. 81.71 per cent of consumers indicated that they are willing to consume milk and other dairy products with expiry date, which also accounted for the majority of the respondents. 71.26 per cent of consumers are willing to consume beverage products, and 59.63 per cent of consumers are willing to consume confectionery products. Consumer acceptance of fresh products with a short shelf life, such as meat products and fruits and vegetables, was lower, with only 12.59% of consumers willing to purchase them. On the other hand, egg and milk products such as cakes, which also have a shorter shelf-life, have a higher willingness to purchase, with 54.37% of consumers indicating that they are willing to make purchases."

4. Analyses of Consumer Purchasing Intentions

"Based on the above statistics and related literature, this study analyzed three factors—awareness, price, and food safety—to explore their impact on consumers' purchase intentions."

4.1. Consumer Awareness

Despite the rapid expansion of the expired food market in China, the questionnaire shows that 62.17% of consumers are still unaware of it, while more than 4% of consumers have never heard of or come into contact with expired food at all. The majority of consumers are still unaware of the existence of expired food, which prevents them from consuming expired food, and the transmission from the consumer side to the sales and manufacturing side will hinder the healthy and sustainable development of the expired food industry.

It can thus be seen that stepping up promotional efforts to bring adventurous food into the eyes of more consumers is a work that the adventurous food industry needs to pay attention to at present.

4.2. Consumer Price Sensitivity

The fundamental reason for consumers to choose adventurous foods is the low price, and the data from the questionnaire lead to the conclusion that value for money is the consensus of almost all consumers.

The current competition in the adventitious food industry, there is room for concessions in terms of price. While attempting to acquire customers through more caring services, marketing strategies should also be more inclined to lower product prices, and customer acceptance should be improved by further opening the supply chain, issuing additional coupons, and offering tiered discounts for different types of products.

4.3. The Important Role of Food Safety in Influencing Consumer Psychology

Negative issues of food safety and integrity are important reasons for the lack of consumer acceptance of adventitious foods; more than half of the respondents said that food safety is an important factor affecting their consumption of expired food; in order to chase profits, some food producers and sellers have bad behaviors that endanger food safety and consumers; legal regulation and market supervision to regulate the production and operation of the expired food industry, to ensure the food safety of expired food, is an important condition for consumers to improve their acceptance of the expired food industry.

5. Summary

Based on the above empirical investigation and literature analysis, the following conclusions are drawn: first, although consumer awareness of expired food has tended to be widespread, most consumers have never taken the initiative to buy expired food, and expired food still has huge market potential, which needs to be further improved through enhanced publicity and other means; second, low price is the fundamental reason for consumers to buy expired food, and expired food is the only way for consumers to buy expired food; second, low price is the fundamental reason for consumers to buy expired food, and expired food still needs to reduce the price of products as the most important competitive strategy; third, the food safety of expired food is an important factor affecting consumers' willingness to buy, and regulating some of the chaotic phenomena that still exist in the expired food industry is a way to improve consumers' confidence and promote the healthy and sustainable development of the expired food industry.

Acknowledgments

Funded Project: Shaanxi Provincial University Students' Innovation and Entrepreneurship Training Project "Ruimu' Provisional Food Trading Network" (S202310705148X).

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