

Exploring the Influence of Milk Shelf Life on Chinese Consumers' Choice Preferences: A Qualitative Research Analysis

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Abstract: *Increasingly fierce market competition and highly personalized user needs are promoting enterprises to dig out new sales growth points, therefore, deep understanding of consumer choice behaviour and precision marketing have become a mainstream trend in daily commercial activities. Except on the marketing side, manufacturers can also optimize product structure by capturing the constantly changing consumer demands. However, consumers' choice preference for goods is based on the attributes of different products and affected by consumers' own factors. In a word, nowadays consumers' demands and preferences for products are becoming more and more refined. Therefore, it is necessary to analyze user preferences of different products in different industries accurately and timely. In the context of China's milk market, this research attempts to explore the present needs and preferences of Chinese consumers for the milk product.*

Keywords: *consumer preference, Chinese dairy market, the extended TPB*

1. Introduction

Entering the 2020s, the changes in the world economic situation and the market have entered a new normal, which is represented and characterized by the COVID-19 pandemic and anti-globalization. Consumer preferences and choice behavior have been updating and changing with the times, and the COVID-19 pandemic has accelerated this change, especially in the health consciousness dimension. Consumer preference is an important determinant of enterprise product development and marketing strategy. Therefore, this trend brings risks and challenges to enterprises, whether entrepreneurs can seize new opportunities in the rapidly changing market environment becomes particularly important. Based on the background of Chinese dairy industry, this paper investigates the changes of Chinese consumers' preference under the new situation.

2. Literature review

2.1. Introduction

Consumer choice behavior and preference is an important reference factor in the business field, whether in the production end or marketing link. In addition to individual factors, such as demographic differences, consumers' choice behavior is also influenced by external environment, such as geographical location and cultural differences. Moreover, consumers have different preferences for different kinds of products or services. Therefore, the exploration of consumer choice preference cannot be generalized, and researchers need to make accurate analysis based on consumer characteristics, geographical environment, product attributes and other factors[1].

This section divides research topics into four different themes, including Classification of milk products, current situation of milk consumers in Chinese market, factors influencing consumers' decision-making, and application of relevant theories in consumers' food preferences. The purpose of breaking down the elements of the research topic is to determine the specific types of research products and to accurately target the study population. Through the critical analysis of the relevant theoretical literature and the study of specific industries in certain countries, this paper finds that there are few academic studies focusing on the choice preference for milk shelf life in Chinese dairy market.

2.2. Milk products

2.2.1. Dairy classification

Dairy products refer to the use of cow's milk or sheep's milk and its processed products as the main raw materials, adding or not adding appropriate amounts of vitamins, minerals and other accessories, using laws and regulations and standards required conditions, processed into various foods. Dairy products mainly include liquid milk, milk powder and other dairy products. Liquid milk mainly includes bactericidal milk, bactericidal milk, yogurt and so on. Milk powder mainly includes whole milk powder, skim milk powder, whole fat and sugar milk powder, flavoring milk powder, infant milk powder and other formula milk powder. Other dairy products are condensed milk, milk fat, cheese, milk ice cream and so on. Thereinto, liquid milk and milk powder are the main consumer products in the market, and the sales volume of liquid milk is much higher than other categories.

Different kinds of dairy products are processed in different ways to meet the different needs of consumers. Specifically, dairy products mainly meet three consumer needs: nutritional supplements, digestion auxiliary, sensory needs and emotional value. In terms of nutritional supplements, liquid pure milk is rich in protein and calcium elements beneficial to human health, so consumers mainly buy liquid milk to meet their nutritional supplements. In addition, by adding a variety of micronutrients that are beneficial to human health, Consumers can drink milk formula to meet their needs for specific nutrients, which is common in infants and children. In terms of digestion aid, yogurt is rich in probiotics that help digestion in the gastrointestinal tract after fermentation. Yogurt can promote consumers' digestion and absorption of food after meals[2].

2.2.2. Short shelf life --- Pasteurisation milk

Pasteurization technology is a disinfection method invented by Pasteur, a French scientist. It was first proposed at the founding conference of the International Dairy Federation (IDF) held in Brussels, the capital of Belgium in 1903, and gradually became a mandatory milk product standard after 1940. Pasteurized milk is made from fresh milk, which is heated at 75-85 degrees Celsius for 10-15 seconds to kill all disease-causing microorganisms in fresh milk. This technology can maximize the preservation of milk's natural, original nutrients and flavor on the basis of ensuring the quality and safety of milk products. However, after pasteurization, milk still retains a small number of harmless or beneficial, more heat-resistant bacteria or bacterial spores. Therefore, pasteurization is not a "sterile" process and has high requirements for product storage. Typically, canned pasteurized milk needs to be transported and stored in the cold chain at 2-6 degrees Celsius, with a shelf life of 2-15 days[3].

2.2.3. Long shelf life --- Ultra - high temperature (UHT) instantaneous sterilization milk

Preservation technology	Processing/sterilization method	The mode of transportation	Shelf life	Nutritional quality
The original method	Less or no processing method, remain a certain amount of lactic acid bacteria, yeast and mold	Transport in glass bottles and require a cold chain	Shorter, 24-36 hours	Completely retained, but perishable
Pasteurization	Sterilize milk at 72-85°C for 15 seconds to kill harmful microorganisms (e.g. pathogens, non-pathogens, spores, etc). But can not completely destroy the toxin	Cold chain transportation	Shorter, 7-15 days	Most nutrients are retained, free of pathogens, safe, and similar in flavor to fresh milk
UHT	The milk is sterilized at 135-140°C for 2-4 seconds, and the microorganisms are completely inactivated	Normal transport	Longer, can be stored for 6-9 months	The main nutrients such as protein and calcium are maintained, the heat sensitive substances such as vitamins are destroyed, and the unique flavor of milk changes

Figure 1: Contrast of sterilization and preservation technology (Source: EO Intelligence, 2020)

UHT is a sterilization process for processing fresh milk. The main principle is to sterilize fresh milk at a high temperature of 135-150 degrees Celsius, which generally lasts 2-8 seconds. UHT milk has been developed as early as 1961, which is a technological upgrade after the advent of pasteurized milk and is also a very mature milk processing technology. Besides, the emergence of UHT sterilization technology has greatly extended the shelf life of fresh milk on the basis of ensuring food safety, thus expanding the transportation radius of milk products. UHT sterilization technology can effectively kill and inhibit the growth of microorganisms and spores in fresh milk, combined with aseptic filling technology and barrier

packaging technology, so long shelf life milk does not need to add preservatives and food additives, and can be stored at room temperature. UHT technology, however, due to the use of the higher processing temperature, compared with pasteurized milk, UHT milk in nutrition elements (calcium, vitamin, protein) there will be a bigger loss, and high temperature heat treatment technology will affect milk fragrance ingredients (dimethyl sulfide, aromatic hydrocarbon, etc.) of the structure, resulting in a 'cooking flavor', so as to affect the flavor of milk. However, from the perspective of nutritional supplement and intake, there is no big difference between UHT milk and pasteurized milk in nutritional elements the Figure1.

2.3. Milk products consumption in China

2.3.1. The overall trend

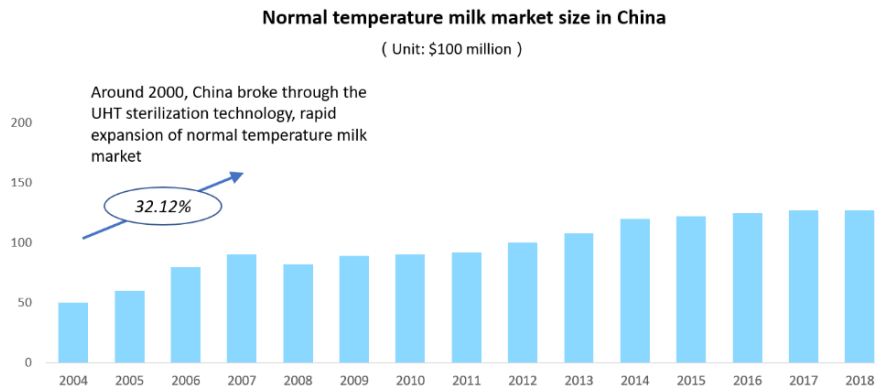


Figure 2: Normal temperature milk market size in China (Source: EO Intelligence, 2020)

At present, due to China's huge population and the continuous improvement of per capita income level, dairy products as an important part of a healthy diet, the industry scale has exceeded 300 billion yuan. For liquid milk, after the rapid development in the early 21st century, its sales growth has come to a bottleneck period the Figure 2. On the whole, since 2014, China's per capita milk consumption has been growing sluggishly for many years and the trend has been stable. However, compared with developed countries, the annual per capita consumption of milk products by Chinese consumers is still at a low level, among which, as countries with similar food culture to China, the per capita consumption of milk in Japan and South Korea is also much higher than that in China[4].

2.3.2. Milk with different shelf life in China

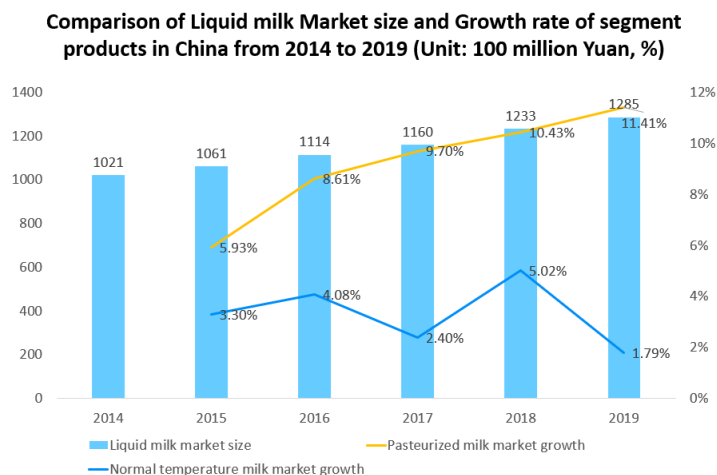


Figure 3: Comparison of Liquid milk Market size and Growth rate of segment products in China from 2014 to 2019 (Source: EO Intelligence, 2020)

Since the 1990s, Chinese milk market has experienced four stages: 'storing up energy', 'explosion', 'cooling adjustment' and 'high-end products indigenization'. To be specific, during the 'storing up energy' period, milk, as a product of western food culture, was gradually recognized by Chinese consumers.

However, limited by the production, packaging and logistics technology at that time, Chinese consumers had limited choices when buying milk products. Almost all of the products were fresh milk with short shelf life provided by local milk processing factories. The main purchasing channels were 'milk station daily delivery service' and 'milk retail point'. The main mark of the 'explosion' stage is technological innovation, with the introduction of ultra-high temperature sterilization production line by Chinese milk manufacturers, domestic long-shelf milk appeared in the Chinese market and was widely recognized and welcomed by Chinese consumers, and its sales volume increased rapidly for many years in a row the Figure 3. In the meantime, with the rapid development of online shopping malls and international logistics systems, more and more imported long-shelf-life milk entered the Chinese market, 'imported milk' not only met the curiosity and freshness of Chinese consumers, but also expanded the range of milk products in China. In a period of time, 'imported milk' has become a synonym of 'high quality' in China. At present, the annual output and per capita consumption of liquid milk in China tend to stabilize, but the per capita consumption of milk is only one third of the world average.

2.4. Factors influencing decision-making of consumers

Consumer behaviour consists of personal, psychological and social factors. However, these factors affect different types of products or services in different ways and degree. The study of consumer behaviour and its decision-making process has become an important topic in the field of marketing. As for how to explore the factors that influence consumer decision making, "go deep" and "keep pace with the times" have been repeatedly emphasized by researchers.

2.4.1. Personal factors

Consumers' preferences and purchase decisions are influenced by certain personal characteristics, including gender, age, occupation, income, family status, ethnicity and so on. Based on the studies of these characteristics under different conditions, when considering consumer decisions, different characteristics have different effects on different kinds of products, furthermore, even within the same kind of goods, a specific individual characteristic of consumers have different effects on different specific goods as well. For instance, with regard to the vegetable category, the researchers' study of European consumers showed that age had a significant impact on food preferences. To be specific, the elderly prefers traditional vegetables and pay more attention to the natural aspects, on the contrary, they show resistance to exotic and unfamiliar varieties. In addition, for some bitter vegetables, the elderly consciously eliminates the strong rejection of bitterness for the sake of health properties. According to the study of Zonneveld et al (2019), in general, factors that affect young children's food choice and preference include food quality, continuous presentation, immediacy of food acquisition and effort required to obtain food, and they unconsciously develop preferences for unhealthy foods. When it comes to vegetables, children prefer to choose foods based on taste rather than health attribute, and they tend to be attracted to sweet vegetables. However, children showed a much lower preference for fruits and vegetables than for other types of food, such as cake and ice cream. Compared with the elderly, children's food choices are more likely to be influenced by family members. However, some objective physiological factors brought by age can affect food choice decisions in old age, for example, the decline in masseter muscle strength that comes with age can affect older adults' ability to eat vegetables that have hard fibrous texture[5].

2.4.2. Psychological factors

In general, the main psychological factors affecting consumers' purchasing decisions include feeling, motivation, experience, attitude and personality. However, the influence of psychological factors on consumption decisions is extremely complex, and scholars use a variety of models and methods to explore the correlation among them.

There are generally eight steps for humans to process information received from the outside world: exposure, perception, comprehension, agreement, retention, retrieval, decision making and action, McGuire (1976) integrated human personality motivation into these steps to analyze and found that people tend to expose themselves to information they may agree with and avoid incongruent information, but sometimes this phenomenon can also be changed by other factors, such as the wave of emotion and attraction brought by surprise, controversy, curiosity. For example, people don't have to worry too much about those who eat unhealthy food or smoke too much will actively avoid health guidance and persuasion, and refused to change their habits and preferences, but the health guide should not only focuses on emphasizing the dangers and fear of unhealthy choice preferences, but should stress solution, such as alternative food, provide the same satisfaction and higher nutritional value, or ways to reduce

smoking and the health benefits of quitting. Therefore, it is a possibility that consumers' preferences and choice decisions can be consciously changed by commercial marketing actions. Steven and Srinivas (2013) and Janssen and Jager (2001) emphasize the sensitivity of interpersonal influence and the role of idol effect in consumers' psychological activities

2.4.4. Factors influencing decision-making of consumers food choice

Past studies have shown that sensory appeal, health, convenience and price are often the most important factors influencing food choices. Food choice is a complex process that is influenced by many factors related to the product (internal and external attributes), the consumer (such as knowledge, beliefs, attitudes) and the consumption context (such as occasion, cultural environment). Motivation for food choice may be influenced by health interests, weight concerns, sensory pleasures, ideology, convenience, price, and familiarity. With the development of society, consumers have begun to pay more and more attention to the technology and process of food safety production.

2.5. The theoretical application of consumer food choice and behaviour and preference

2.5.1. General background of theory and research model application on consumer behaviour

In order to be able to put their limited resources (time, money, energy) distribution on things can bring them the biggest meet, rational consumers usually screen commodities or services through a series of decision-making process. The satisfaction of consumer demand is not only related to themselves, but also to meet the needs of family members and even the responsibilities to the society. Consumer behaviour analysis is of great significance for enterprise marketing. Its purpose is to develop targeted marketing strategies by finding out the factors that affect consumers' purchase choices and weighing their proportion in determining consumers' preferences, so as to improve the overall operating efficiency of enterprises[6].

Consumer behaviour research is an important part of consumer market analysis. It refers to the application of various market research techniques and methods on the basis of the basic characteristics of market environment (politics, law, society, culture, technology), demographic characteristics, lifestyle, economic level and so on. It is a study of consumer groups' realization of their wishes and needs through cognition, attitude, motivation, choice, decision, purchase, use and other stages. At present, the research and analysis of consumer behaviour in the academic circle are mainly through the separation of consumer decision-making process and the construction of appropriate model system. Mainstream consumer behaviour research models include:

■ Usage & Attitude model:

In the Figure 4, the U&A model focuses on consumer habits and attitudes, and is widely used in food, beverage, cosmetics, daily necessities and other bulk commodities fields. In the actual research process, the research method usually adopted by the academic community is The Fishbcin Model (also known as multi-attribute attitude model). According to The Fishbcin Model, consumers' attitude toward a given product is quantitatively evaluated as the sum of the degree of each significant feature of the product and the evaluation value of the feature by consumers.

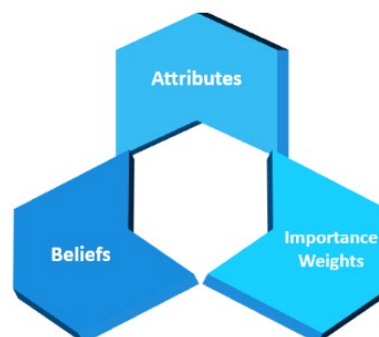


Figure 4: U&A model

■ AIDMA model:

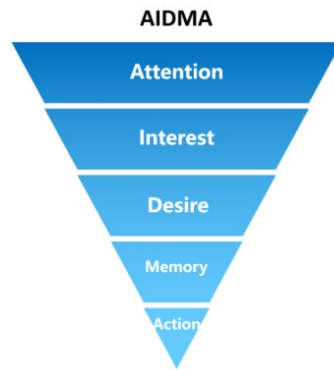


Figure 5: AIDMA model

AIDMA is one of the most mature theoretical models in consumer behaviour, according to this theory, from the moment consumers are exposed to information until they finally make a purchase intention, the progress go through five stages: attention, interest, desire, memory and action, which is what Figure 5 expressed.

■ AISAS model:

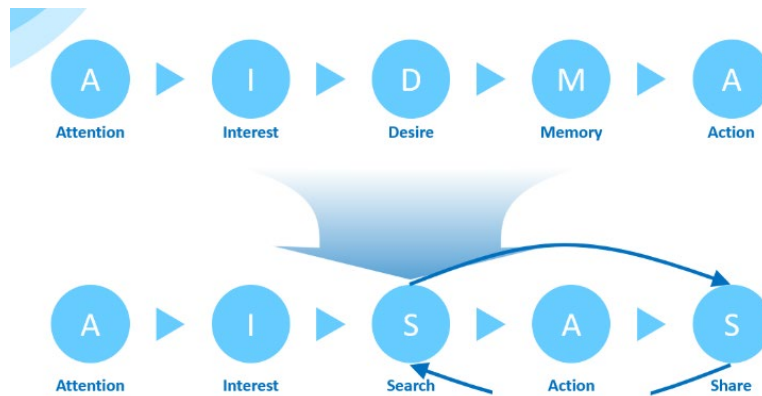


Figure 6: AISAS model (Source: Steven and Srinivas, 2013)

In the Figure 6, AISAS model is a brand new consumer behavior analysis model proposed in view of the changes in consumers' life patterns in the Internet and wireless application era (the change of media contact time, the increase of active consumption, and the change of consumers' psychology in the Internet era). AISAS model introduces two elements with network characteristics-search and share. The main factors of its model include attention, interest, search, action and share.

■ The Sheth-Newman-Gross consumption value model:

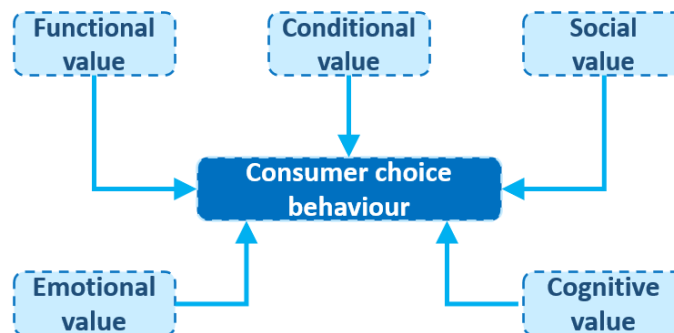


Figure 7: The Sheth-Newman-Gross consumption value model (Source: Lai et al., 2012)

Sheth, Newman and Gross proposed in 1991 a value-based behaviour model to evaluate consumer behaviour, believing that products provide customers with five values. Five consumption values are proposed to explain the reasons why consumers choose to buy or not to buy a certain product, choose one product over another, and choose one brand over another. The five consumption values are functional value, social value, emotional value, cognitive value and conditional value. Figure 7 illustrates the theoretical model in detail.

Functional value: functional value emphasizes the practical functional value of the commodity itself. When a product or brand has some functional attributes, and can meet the functional purpose of consumers using the product, then the product has functional value.

Social value: a product has social value when it provides utility by connecting consumers to other social groups. Under the influence of social value, consumers choose products not rationally focusing on their real characteristics and functions, but whether the products can improve their social status, shape social image, or satisfy their internal self-desire [7].

Emotional value: emotional value refers to the choice of consumers may depend on the expression of consumers' desire for emotion. The value obtained by consumers comes from the feelings of affection caused by the products they choose, so it has emotional value.

Conditional value: Conditional value refers to the choices consumers make when faced with a particular situation. It refers to situations in which a product temporarily provides greater functional or social value. Products that generate conditional value are often linked to a consumer's antecedent state. These products produce external effects due to the conditions in special situations, and change the original behaviour of consumers. Conditional value is basically not long held but short lived.

2.5.2. Application of TPB in consumer food choice

TPB has become one of the most widely used and influential models to analyze and predict human social behaviour since it was proposed. Consumer behaviour is representative of human social behaviour because of its diversity, complexity, comprehensiveness, pragmaticity and inducible feature. Research on consumer behaviour needs mature and systematic theoretical framework. The application value of TPB in the commercial field is considered effective by the academic and business circles. For example, in the food industry, many scholars choose to analyze consumers' preferences in selecting and buying food meticulously and accurately through the TPB model whether in China or elsewhere.

Whether the attributes of various foods can meet consumers' personal demands is the key to affect consumers' choice preference. Considering the general attributes of food commodities such as health, convenience, and special attributes, such as food security, nutritional supplements, sensory experience (gustation and visual sense), animal welfare, eating habits, food culture, the origin attribute, etc., when conducting research and analysis on consumers' food choice preferences through TPB model, the academic circle often combines the above-mentioned food attributes with attitude, subjective norm and perceived behavioural control, and then examine how they directly or indirectly affect consumers' motivation to buy a certain food, thus ultimately promoting or weakening the actual purchasing behaviour [8].

However, although TPB model is widely considered to be effective in analyzing consumer choice preferences in the food industry and its conclusions have certain reference value for predicting consumer behaviour, point out that using TPB framework independently to analyze consumers' food choice preferences will lead to prediction bias and inadequate interpretation. Extended planned behaviour theory or TPB combined with other theories is considered a more accurate approach to explain specific food choice preferences or decision behaviours. For instance, when studying young people's intention to choose healthy food, the results come from the introduction of the concepts of role identity, group norms and group identity as independent influencing factors on the basis of TPB framework are different from the direct use of TPB framework as a single theoretical model, in addition, Åström and Rise (2001) believe that the latter ignores the significant positive mediating effect of 'self-role cognition' and 'group norms' on young people's intention to choose healthy food.

2.5.3. Application of TPB in consumer dairy products choice

The intervention and application of TPB model are considered to be effective in exploring consumers' preference for dairy products and analyzing consumers' motivation to purchase dairy commodities. According to different entry points and research directions, scholars respectively examine consumers' choice behaviour and preference for dairy products from different perspectives, such as segmentation of consumer groups, segmentation of dairy products, segmentation of consumption motivation and purpose,

and segmentation of market background.

2.6. Summary and research gap

This part summarizes the contents of the above four chapters to clarify the discovery process and significance of research gap. The specific dimensions include the current research status of consumer preference for milk products in the Chinese market, analysis of consumer preference for milk in other countries or regions, tentative prediction of the trend of consumer preference for milk and its effectiveness.

In view of Chinese consumers' preference for milk, the mainstream view takes "food safety" as an important perspective to analyze. The study found that Chinese consumers judge the safety and health properties of dairy products through quality certification and traceability labels.

There is little literature on Chinese consumers' preference for milk shelf life, Schroeter, Nicholson and Meloy (2016)'s study was limited to Chinese people who lived in Australia for years. Given China's short shelf life of milk sales growth rate is greater than the long shelf life of milk, and long shelf life of milk market share is far higher than the short shelf life of milk, milk, therefore, to explore how milk shelf life influence Chinese consumer preference is meaningful, both in the academic field and commercial applications.

3. Methodology

3.1. Research philosophy, method and strategies

The action of choosing and weighing different commodities by consumers is the pursuit of maximizing their utility. However, consumer choice behaviour and decision-making process is extremely complex, which involves economics, psychology and sociology, and is an interdisciplinary comprehensive research field. At the same time, consumer behavior is also dynamic, and its process includes perception, cognition, behavioral intention and final purchase action, which is the comprehensive result of mutual influence and superposition of various factors in the whole transaction process.

Considering previous literature on the research content involves the less, the current research situation belongs to the unfamiliar, uncontrolled, dynamic exploration, and the analysis of consumer behaviour is for the purpose to acquire 'descriptive information', therefore, this research adopts the philosophy position of constructivism, try to through the qualitative analysis to explore the Chinese consumer preference for milk shelf life.

3.2. Data collection

Considering that this research is heuristic and tentative, and its objective is to explore the preference of Chinese consumers for milk shelf life, the selection of sample of the interviewees strives to diversify the characteristics of milk consumers within a limited number of people, and to be typical and comparable. Specifically, this research adopts the qualitative analysis method and conducts one-to-one in-depth interviews with several interviewees from East China (the Yangtze River Delta) to explore their preference for milk shelf life and discover some rules among these choice behaviours in the Table 1.

Respondents aged between 20 and 50 were selected mainly because most of them are well-educated and have a broader and deeper knowledge of dairy products than other groups. In addition, respondents in this age group can afford milk products, so interviewing them can get more relevant information.

Qualitative analysis is a qualitative research method. Qualitative methods do not measure with numbers or statistics, nor do they obtain relevant data with structured questionnaires in advance. On the contrary, qualitative research is based on the cross-analysis of diversified and multi-faceted data to enhance the reliability and validity of the research. In addition, compared with quantitative analysis, the causes and results in qualitative analysis are asymmetrical. Considering the complexity and effectiveness of consumers' choice preferences, qualitative analysis is helpful to deeply explore the specific factors that influence consumers' choice behaviors.

Table 1: Details of respondents

Participant code	Date of Interview	Gender	Age	The education lever	Annual income (RMB)	Occupation	Have children
S1	11/15/2021	F	24	BD	N	Student	N
S2	11/15/2021	F	23	BD	N	Student	N
S3	11/15/2021	F	25	MD	N	Student	N
S4	11/16/2021	F	23	MD	N	Student	N
S5	11/16/2021	F	24	MD	N	Student	N
S6	11/16/2021	F	24	MD	N	Student	N
S7	11/17/2021	F	22	BD	N	Student	N
S8	11/17/2021	F	29	BD	80000	Teacher	Y
S9	11/18/2021	F	24	MD	N	Student	N
S10	11/18/2021	F	23	MD	N	Student	N
S11	11/18/2021	F	27	BD	100000	Bank clerk	N
S12	11/18/2021	F	24	BD	N	Student	N
S13	11/18/2021	F	23	TD	N	Student	N
S14	11/19/2021	F	23	BD	N	Student	N
S15	11/19/2021	F	23	BD	N	Student	N
S16	11/30/2021	M	29	TD	70000	Engineer	Y
S17	11/30/2021	M	26	MD	N	Student	N
S18	11/30/2021	M	29	BD	150000	Toastmaster	N
S19	11/30/2021	M	27	BD	100000	Quality Inspector	N
S20	12/3/2021	M	22	MD	N	Student	N
S21	12/3/2021	M	23	MD	N	Student	N
S22	12/3/2021	M	23	MD	N	Student	N

Notes: M: male; F: female; HS: high school; TD: Technical or Vocational degree; BD: Bachelor's degree; MD: Master degree; DD: Doctoral Degree; N: none; Y: yes.

3.3. Data analysis

Table 2: Coded qualitative data

Interview excerpts	Code
I prefer short shelf-life milk, because I think short shelf-life milk is very fragrant and creamy, I like the taste of milk very much, so I am choosy when I choose milk, milk is more than just a supplement for me. However, it is inconvenient to buy milk with short shelf life, I have to go to the convenience store every day to buy it, and I would be worried about its spoilage, especially when I was in school, you know, there is no refrigerator in the school dormitory. Even so, I buy milk with a short shelf life in most cases.	<ul style="list-style-type: none"> ● Milk with a short shelf life has better texture and flavor than long shelf-life milk ● Pay attention to the flavor of milk ● Pay attention to the convenience of milk ● Attitudes towards convenience factors

Thematic analysis is a method of analyzing qualitative data. It is usually applied to a set of texts, such as interview transcripts. Researchers scrutinize the data to identify common themes. Subject analysis methods attempt to identify people's views, opinions, knowledge, experiences, or values from a set of qualitative data, such as interview transcripts, social media profiles, or survey responses. Therefore, this data analysis tool is suitable for the research method of this study.

Thematic analysis generally follows six steps: familiarization, coding, generating themes, reviewing themes, defining and naming themes, and writing up.

Among these six steps, coding and generating themes are very important to the accuracy of this study. Coding Includes both manual and software (Nvivo) methods. Considering that the volume of interview content in this study is not particularly large, this section intends to adopt manual method in the Table 2.

4. Findings

Through semi-structured interviews respondents, this study finds that the main factors that participants consider when choosing different shelf-life milk including the freshness of milk, convenience, sensory experience, prior experience and emotional value, in addition, there are very few

respondents mentioned the difference in price between the two kinds of expiration date milk. The specific research results are as follows: Most participants mentioned the freshness factor and rated milk with a shorter shelf life as fresher. In addition, consumers with higher cognition of milk products are more concerned with freshness of milk products, regardless of age and gender.

4.1. Convenience

Convenience factors influenced participants' attitudes toward milk with different expiration dates. The convenience factor had a greater impact on male participants than female participants.

4.2. Taste and flavor

Taste factors and sensory experiences influenced participants' attitudes towards milk with different expiration dates, and thus their purchase intentions. Taste factors had a greater impact on female participants than on male participants

4.3. Price sensitivity

Only one of the participants mentioned the price factor. Possible reasons include China's rising per capita income levels and the small gap between the two shelf-life milk prices.

4.4. Past behaviour

Some of the female participants spoke of nostalgia for the 1-day shelf life of fresh milk they bought as children.

4.5. Emotional value

Although there was no evidence that milk with a long shelf life was healthier than milk with a short shelf life, most participants stated that 'drinking fresher milk made them feel better', suggesting that perceived emotional value influences consumers' attitudes towards milk with different shelf lives.

4.5.1. How do Chinese consumers judge the health attributes of milk products based on the shelf life

All participants agree that a shorter shelf life means more natural milk quality, while 'natural' attribute means higher product quality and is perceived by participants as better for their health. To determine how consumers judge the health properties of milk products based on their shelf life, this round of one-to-one in-depth interview asked the participants supplementary question when talking about relevant contents, that is, 'Do you have the habit of choosing products with a relatively new shelf life when buying milk?' All participants admitted to a habit of choosing milk products with newer expiration dates, which proves consumers' cognition of the relationship between shelf life and health attributes of milk. Although the products targeted by these studies are different from milk in attributes to some extent, this result is consistent with research conducted by on related issues, that is, consumers consider longer food shelf life as a kind of growth of food safety risk.

4.5.2. To what extent will convenience affect Chinese consumers' preference for milk shelf life

More than 90 percent of respondents mentioned convenience in their answers, with those who preferred milk with a shorter shelf life admitting that convenience caused them problems during the purchase process. Although convenience affected respondents' willingness to buy milk with short shelf life, data analysis found that 'safety awareness' and 'health awareness' played a mediating role between perceived behavioural control and purchase intention. Specifically, participants with stronger perceived behavioural control were less willing to buy short-life milk, and 'safety awareness' played a promoting role in this negative correlation, while 'health awareness' played a weakening role in this negative correlation. In other words, although convenience factors weaken consumers' willingness to buy milk with a short shelf life, 'health-conscious' consumers are willing to ignore the negative effects of convenience in order to buy milk products that are more beneficial to their health.

Specifically, through data analysis, it is found that taste factors have an important influence on consumers' choice of milk products with different shelf life, which has different influence on male and female consumers, and thus has different influence on their consumption intention and purchase behaviour. Taste factors are more likely to affect female consumers' attitudes towards milk products, but

not male consumers. On the contrary, convenience factors have different effects on male and female consumers as well, but convenience factors are more likely to affect male consumers' attitudes towards milk products, while the impact on female consumers is not obvious.

5. Discussion

Attributes associated with milk shelf life include food safety, food health, food flavor, convenience, and emotional value. Specifically, on the basis of Chinese consumers' knowledge of liquid milk products and related sterilization technology, milk shelf life means more than just a difference in the number of days, it also means safety, health, convenience, and emotional value attributes of milk products.

Enterprises should strengthen the health of shelf life of milk and fresh attribute of publicity and marketing, although there is no evidence to suggest that pasteurized milk and UHT milk is very different in terms of nutrition, but let the consumer feel health is also a kind of promotion.

Since the biggest reason for consumers not to choose milk with long shelf life is convenience, enterprises should customize the product structure for different regions, including supply chain level, university distribution, community distribution and so on. In addition, consumers' preference for milk with a short shelf life presents an opportunity for local milk producers, especially for local consumers, they have a natural location advantage.

6. Limitations of the research

The limitations of this study mainly lie in the selection of research methods and the shortage of sample size. First of all, although qualitative research methods are conducive to the exploration, understanding, clarification and in-depth description of individual behaviours, the accuracy of the results is easily affected by the subjective bias of researchers. Secondly, the respondents in this study come from only one region in China, and the number of participants is limited. Therefore, the analysis results of this qualitative research are not enough to quantify the factors influencing consumers' choice behaviour and preference of milk shelf life in China.

On the basis of this study, researchers can expand the sample size and explore the interaction between the elements found in this study through quantitative research methods, so as to form research results with universality, representativeness and guidance.

7. Conclusion

China's dairy market is facing the dilemma of sluggish growth, and the deep cultivation of milk production enterprises in the segmented field will help enterprises to find new growth points and get rid of the dilemma. Although the analysis of consumer behaviour has been widely applied in the commercial field on food industry, there is still insufficient theoretical literature support in many market segments. Food choice behaviours are all related to the pursuit of consumers to maximize utility in terms of limited conditions. With the development of society and the progress of productivity, the satisfaction of consumer utility has not only depended on meeting the living conditions, but an increasing number of consumers pay more attention to the health value and emotional value brought by products when choosing food. Through qualitative analysis of Chinese consumers, this study explores the consumers' choice and preference for milk shelf life in the Yangtze River Delta region. The results show that the willingness and behavior of consumers to buy milk with different shelf life accords with TPB model, and the integration of health awareness, safety awareness and product awareness is more conducive to understanding consumers' different choices. The results show that more health-conscious consumers have a better attitude towards milk with a shorter shelf life, and more safety-conscious consumers have a stronger preference for milk with a longer shelf life. In addition, consumers' nostalgia gives local milk producers an opportunity to grow.

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