



Study on the Emotional Characteristics of Consumers of Aquatic Products Prepared Dishes--Taking Zhanjiang Consumers on Jingdong Online Shopping Platform as an Example

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ABSTRACT: This study focuses on obtaining the emotional characteristics of consumers of aquatic product prepared dishes, aiming to gain a deeper understanding of consumers' emotional attitudes and purchase intentions towards aquatic product prepared dishes. Through the use of web crawling method, this study extensively collected consumer comments and feedback data about aquatic products prepared dishes, and constructed a rich dataset. On this basis, the data were analyzed in depth using the LDA topic model, revealing consumers' emotional tendencies and main concerns about aquatic products prepared dishes. With the network crawler method from shallow to deep investigation; text analysis on the use of octopus collector into the jingdong platform to find the case of consumer reviews for data crawling data 3973, for analysis and the establishment of sentiment analysis model, positive and negative evaluations of the two categories of LDA thematic analysis, and make a sharp contrast, can let producers, enterprises to see their own strengths, and at the same time to improve their own shortcomings. The results of the study show that: product quality, convenience, cheap price and after-sales service have a significant impact on the sales of aquatic products prepared dishes, which can be used as an entry point for marketing and promotion.

Keywords: Population Aquatic Prepared Dishes; Web Crawling Method; LDA Thematic Modeling

INTRODUCTION

In order to promote the development of the food industry, the relevant departments have issued a series of policies to provide favorable policy conditions and safeguards for the development of the industry. The State Council (2021) in the "14th Five-Year Plan" to promote modernization of agriculture and rural areas mentioned that we should accelerate the construction of origin storage, pre-cooling and preservation, grading and packaging, cold chain logistics, urban distribution and other facilities, to build warehousing and preservation of cold chain logistics network, in the main producing areas and the outskirts of large and medium-sized cities in the layout of the more than five new business. Among them, the promotion of new forms of central kitchens to meet the diverse and personalized needs of consumers of prepared dishes to lay a solid foundation.

The General Office of the People's Government of Guangdong Province (2022) issued a notice entitled "Ten Measures to Accelerate the High-Quality Development of the Prepared Vegetable Industry in Guangdong". The policy mentions the R&D of prepared vegetables, product quality and safety monitoring system, all-round joint development of prepared vegetables and related industries, construction of cold chain logistics of prepared vegetables storage, and increasing financial, financial and insurance support for the development of enterprises, etc., which set off a new wave of construction of the prepared vegetables industry in Guangdong Province.

Aquatic product prefabricated dish is a kind of convenience food made by processing and mixing aquatic products with vegetables and other ingredients, which has the characteristics of easy preservation, easy to carry and eat, and is a popular food in the current market Zhanjiang is an area rich in marine resources, with many high-quality aquatic product resources, such as seafood, kelp, seaweed, etc. Therefore, the abundant aquatic product resources are combined with vegetables and other ingredients to develop characteristic aquatic product prefabricated dishes, which will have very large market potential and development prospects. At the same time, there are also some problems with aquatic products, such as the production process is not scientific enough, the ingredients are not transparent enough, the preservation time is not enough and other problems. These problems may lead to the deterioration of the quality of prepared aquatic products, which may affect the consumers' eating experience and health and safety. Therefore, it is necessary to investigate and study the aquatic products prepared dishes.

Among them, Zhanjiang Guolian Aquatic is the largest comprehensive aquatic food supplier in China with shrimp products as its core. Product-wise, the company mainly focuses on shrimp food chain business, in addition to shrimp products, the company currently also extends tilapia, crayfish and global seafood selected products and other projects (Guolian Aquatic, 2024). Top 10 brands of prepared dishes rely on big data technology, integrated brand strength, product sales, user reputation, netizen voting and nearly 100 other indicators to select the top ten brands of prepared dishes in 2023 (Brand Network, 2023).

Table 1: Top 10 Prefabricated Vegetable Brands 2023

	Brand	Established	Headquarters	Classification
1	Anjoy ANJI	2001	Xiamen	Ready-to-Heat
2	GUOLIAN	2001	Zhanjiang	Ready-to-Prepare
3	Zhengda Food CP	1989	Shanghai	Ready-to-Heat
4	Wangjiadu	2008	Sichuan	Instant hot & ready to serve
5	Xinya Restaurant	1926	Shanghai	Ready-to-Heat
6	Thousand Taste Central Kitchen	2012	Henan	Ready-to-Heat
7	Guyan	1993	Hebei	Ready-to-Heat
8	Cong Chef	2002	Hunan	Ready-to-Heat
9	Haodelai	1999	Suzhou	Ready-to-Heat
10	Tongqinglou	2005	Anhui	Ready-to-Heat

Source: Brand Network (2023)

This list adopts ii Meval big data evaluation model to calculate and assign values, which is generated based on the comprehensive strength of enterprises, platform sales, network communication trend, consumer evaluation, and combined with the evaluation of analysts' team, focusing on the online platform sales, consumer praise rate and other evaluation factors. This study comprehensively analyzes consumers' emotional preferences for aquatic product prepared dishes, aiming at.

1) Explore the reasons for consumers' emotional preference for prepared aquatic products and their promotion methods, and analyze the main problems existing in the current market of prepared aquatic products, with the aim of providing more targeted improvement suggestions for the promotion strategy and market competition of prepared aquatic products in order to meet the market demand.

2) Explore the specific effects of consumption scenarios (such as banquets, tastings, short meal preparation time, gifts, etc.) on consumers' willingness to buy prepared aquatic products, analyze in depth the correlation between these scenarios and purchasing behaviors of prepared aquatic products, and explore how the external environmental factors affect the decision-making process of consumers in purchasing prepared aquatic products, with a view to providing more accurate market positioning and marketing strategy suggestions for the market of prepared aquatic products. In order to provide more precise market positioning and marketing strategy suggestions for the prepared aquatic products market.

LITERATURE REVIEW

In China, several studies have been conducted on the emotional characteristics of consumers of prepared dishes (including aquatic prepared dishes). Li Jiayuan (2024) explored consumers' preferences and choices through an in-depth study of the behavior of prepared food consumers, which indirectly revealed consumers' emotional tendencies and provided important clues about consumers' attitudes toward prepared food. Fu, Yue-Lin et al. (2024) analyzed the market for prepared dishes and the factors influencing consumers' willingness to buy more directly. The study not only focused on consumers' acceptance of prepared dishes, but also explored in-depth consumers' emotional responses, providing valuable data on consumers' emotions. Zhou Lu et al. (2024) focused on the purchasing behavior and influencing factors of C-suite consumers of prepared dishes, and their findings revealed the emotional drivers behind consumers' actual purchasing behaviors of prepared dishes, which provided strong support for consumers' purchasing decisions. The results of Jin Liang et al. (2023), a comprehensive analysis of consumer perceptions of prepared dishes, the study not only covers consumer

perceptions of prepared dishes, but also delves into consumer emotional attitudes, providing direct evidence of consumers' emotional attitudes toward prepared dishes. Xu Jieying et al. (2023) further analyzed the influencing factors of consumers' willingness to purchase prepared dishes, and the study also involved consumers' emotional attitudes toward prepared dishes and willingness to purchase, providing a more comprehensive analysis of consumers' emotional characteristics.

In foreign countries, there are also several studies on the emotional characteristics of consumers of prepared dishes (including aquatic prepared dishes) that deserve attention. The study by Ting Meng et al. (2023) focuses on the determinants of consumers' spending on aquatic products in urban Shanghai, and the study mainly focuses on spending, but consumer preferences and emotions are also reflected therein, providing a foreign consumer's emotional inclination towards prepared dishes (especially aquatic prepared dishes) A useful perspective on the emotional tendencies of foreign consumers. Mansour et al. (2023) provide an in-depth understanding of the factors influencing consumer behavior towards the purchase of refurbished products from a chaotic perspective. The study is not directly focused on prepared dishes, but provides important insights into the understanding of the complex emotions of consumers, and is equally applicable to the analysis of the emotions of consumers of prepared dishes. Beatriz and Domingo (2023) study, on the other hand, focused more directly on consumer preferences for origin and traceability of fish products and found that the findings involved consumers' affective tendencies towards product attributes, providing concrete evidence of the affective characterization of prepared dishes (especially fish prepared dishes) by foreign consumers. Goindi, Garima et al. (2021), on the other hand, focused on consumers in the region of Pune and examined the perception of ready-to-eat food products, including prepared vegetables, with the study directly involving consumers' perceptions, the study deals directly with consumer emotions and attitudes, providing an in-depth analysis of the emotional characteristics of consumers towards prepared dishes in a specific region abroad. Smith, John (2022), while focusing more on the market level and exploring market issues and trends in ready-to-eat meals, the study also indirectly reflects changes in consumer needs and emotions, providing evidence of consumer demand and emotional tendencies towards prepared dishes (including prepared dishes for aquatic products) in a foreign country. The study also indirectly reflects the changing needs and emotions of consumers, providing a more macro view of foreign consumers' demand and emotional tendency towards prepared dishes (including prepared dishes for aquatic products).

MATERIALS AND METHODS

3.1 Research Objectives

Aquatic products prepared dishes is a kind of aquatic products and vegetables and other ingredients processed and mixed into a convenient food, with easy to save, easy to carry and eat and other characteristics, is the current market is very popular a kind of food. Zhanjiang City is a region rich in marine resources, with many high-quality aquatic resources, such as seafood, kelp, seaweed and so on. Therefore, combining Zhanjiang's rich aquatic resources with vegetables and other ingredients to develop aquatic product pre-prepared dishes with Zhanjiang characteristics will have very great market potential and development prospects.

3.2 Web Crawler Method

It can be used to collect a variety of information, such as the name of the product, price, ingredients, producers, sellers, reviews and so on. In turn, the themes and semantics of the comment text are mined, so as to analyze the opinions and suggestions of consumers of aquatic products prepared dishes.

3.2.1 Crawling Comment Text Data Object

In this study, we select the shrimp, crab, fish and meat pre-prepared food products shipped from Zhanjiang, Guangdong Province from the Jingdong online shopping platform to crawl the comment text data to analyze, and get the relevant conclusions and recommendations.

With the rapid development of the country's economy and the popularization of the Internet, it promotes the high-speed development of the Internet industry, which brings people closer to each other and the distance between people and stores. During the 2020 epidemic, the scale of China's Internet users further expanded, and people shared their lives and expressed their opinions on social platforms through cell phones, computers and other tools, aggregating a large amount of text data. Through these text data, it is important to study the opinions and attitudes expressed by online users towards entities as well as attributes for real life.

Through the e-commerce platform to analyze the comments on the pre-made dishes, the traditional sentiment analysis is only to discern the emotional tendency of the whole comment, while the emotional tendency of the other aspects of

consumer concern appearing in the commodity is not evaluated, so it can be said that the traditional sentiment analysis is a purely cursory sentiment analysis.

3.2.2 Mining Ideas and Processes

The difference in the length of the text of commodity reviews is too large, and previous studies have truncated the excessively long text, and the information extracted from the text by traditional sentiment analysis is not complete, and it is not possible to analyze certain attributes of the commodities that consumers are concerned about. According to the analyzed problems, we use drawing text word cloud map, sentiment analysis model, LDA theme analysis model to carry out sentiment analysis on the review text.

Using the massive real review data accumulated on the online shopping platform of this product, the Octopus Collector is used to mine the data, and the R language is used to carry out text pre-processing such as de-weighting, mechanical compression and de-wording, phrase filtering, etc., and based on the pre-processed data, we carry out the sentiment analysis, text segmentation, and the production of the word cloud map, and carry out a detailed analysis of the results of the word cloud map, and ultimately put forward the proposal to improve the product.

This modeling is aimed at the text review data of shrimp and crab, fish and meat of the prepared dishes on Jingdong Mall, after basic machine preprocessing, Chinese word splitting and stop word filtering of the text, through the sentiment analysis of the preprocessed data, and classify the review text data into positive review data (good review) and negative review data (bad review) according to the sentiment tendency, and then make word splitting of the positive and negative review data, respectively. Then the word cloud map is made to analyze the valuable contents of the text comment data from the corresponding results.

Step 1: Data Crawling. Enter the Jingdong e-commerce platform to find the required aquatic products and copy and save the comments of the corresponding product reviews of the URL, unified summary in a word document for the next data mining use. Using the crawler tool - octopus collector, the original saved URL into the work address, to start data mining, get about a variety of comments on the excel table, and then unified summary in an excel table.

Step 2: Data exploration and pre-processing. Carry out basic processing operations on the acquired data, including comment preprocessing, Chinese word segmentation and other operations.

Step 3: Modeling & Diagnosis. After processing the text comment data, use various means to analyze the comment data in various aspects, after diagnosis to determine that there is no error, and finally construct a model in the form of a good word cloud diagram.

Step 4: Results & Feedback. Analyze and summarize the results of the good word cloud model, and obtain the valuable content of the text comments, and give feedback in the form of an experimental report.

Software selection basis: To analyze the comment data of shrimp and crab, fish and meat of the pre-made dishes on Jingdong platform, it is necessary to collect the comment data first. Throughout the market collector software, generally need to analyze the web page source code, analyze the web page script code, as well as programming ideas to do the collection, relatively speaking, can realize the visual operation of the octopus collector has certain advantages, octopus collector built-in collection process visualization and configuration of the interface is the core of the collection process is a can be dragged and dropped like a drawing board to operate the collection process, through simple drag and drop, you can achieve the collection, even without the need to drag and drop can be achieved by simple drag and drop collection, and even without drag and drop, just like browsing the web page as the operation of the web page, and then specify the data collection logic and visual selection of data collection, you can complete the formulation of collection rules. Due to the "ease of use" of Octopus, Octopus Collector is chosen as the webpage data capture tool for this experiment.

RESULTS

Through model evaluation and tuning to improve the prediction accuracy, and finally obtain the emotional characteristics of consumers. This process helps companies understand consumer needs and optimize products and services.

4.1 Data Collection and Processing

This study collects comment data on shrimp, crab, fish and meat products of prepared dishes, in order to make the collected data more representative, and in order to give more convincing suggestions for improving products based on the modelling of this data, we selected the merchants with the first sales volume of this product on the Jingdong e-commerce platform to

capture comment data, and uniformly output it as an Excel document to get the original comment text after the collection is completed.

View the collected comment text of the shrimp and crab, fish and meat products of the prepared dishes, you can find that the comments have the following characteristics

- 1). Short text, many comments are a sentence.
- 2). The emotional tendency is obvious, such as "good", "can", "good to use".
- 3). The language is not standardized, some network words, symbols, numbers, etc., such as 666, "magic weapon".
- 4). Repetitive, repeated words in one sentence, such as "very good, very good, very good".

Therefore, after the data collection of the comments is complete, the data processing is carried out. In the collection of 3973 text comment data there is a part of the value content is very low or even no value content of the entries, in order to follow up the text analysis is not affected by these comment data, then we need to utilize these text data before the data preprocessing, to remove a large number of non-value comments, to ensure the accuracy of the final results of the following comment on the text of the data preprocessing.

4.1.1 Text De-duplication

Remove the duplicate part of the text comment data. The reasons for de-duplication are as follows:

- 1). Some e-commerce platforms to avoid customers do not comment for a long time, set up a program, the user does not comment more than the specified time, the system will automatically comment.
- 2). The same person appears to repeat comments, for example: the same person to buy a variety of different items in order to save time, copy and paste, will appear in the same or similar comments, of course, there is no lack of valuable comments, but only the first one has a role.
- 3). Due to the characteristics of the language, in most cases, valuable comments between different people will not appear to repeat, for example: "good goodgoodgoodgood" or copy and paste the last person's comments, this comment is obviously only the earliest comment is meaningful (i.e., the first one)

The method of de-duplication: Since relatively complex text de-duplication can better remove useless information, this study will choose the simple text de-duplication idea, that is, only the completely repeated corpus to start.

4.1.2 Running Results

The comments content are shown in Table 2

Table 2: Comments

Comments Content
Guolian grilled fish has been into the hands of the affordable price, the quality and the quality of the store outside can not be too much difference, the special price affordable procurement, the next day to reach the logistics of the absolute point of praise ! Can share! Shipping is fast, logistics is strong, although not self-supporting, but also very fast, the date is very fresh, not yet, and then come back to the review, see the evaluation are said to be good, the taste is very good it, before not much to buy this kind of semi-finished dishes, and now also learn to buy, more than the taste of their own, but also convenient! This baked fish flavor is really good! Special later to evaluate! Very easy to make! Multiple heating methods are available! The green peppercorns have a pure flavor and good taste! The price is also very affordable! Logistics fast! Packaging intact! My family refrigerator often prepared grilled fish Oh, each flavor is good can not be spicy can try the garlic, the taste is particularly good put some favorite side dishes, a family of three is not finished, in time for the event stocked up on the box of flavors, good Oh! Logistics is very fast, not two days to receive ~ this green pepper grilled fish flavor is particularly good up not so spicy, green pepper flavor is very good, put some of the love of the side dishes, really good, in time for the event hoarded box, each flavor I love? Very good very good ah, very satisfied with a shopping, ice did not return, good merchant service, fast shipping, logistics is also very powerful, baby received very much like, buy rest assured, have peace of mind . Xiaobalong brand system products flavor grilled fish, good taste and flavor. This is the Guolian tender tilapia spicy green pepper flavor, belongs to the convenience of pre-prepared dishes, only heating that is eaten, green pepper grilled fish box, packaging is very good, received when the ice is not yet frozen, the meat of the fish and ready to do the same. Logistics speed is really no words, is a word: fast. Commodities from the outer packaging is very high-grade, really a penny a penny,

good not expensive, fast delivery, worth buying, get down quickly!

Beautiful appearance design, the size of the right size, packaging carefully and completely, baby feel good, feel good, fast shipping, first-class service attitude, give strength! Star praise! Fish is particularly good, hurry up and buy

Very good, the baby is very high, the quality is very good, it looks like it gives a sense of seniority, the price is also appropriate, this online shopping is very pleasant, praise this fish is really good, too good, the price is also affordable!

4.2 Modeling Sentiment Analysis

4.2.1 Concept of the Model

Sentiment analysis is simply the technique of analyzing the emotions expressed according to a text. On the market about sentiment dictionaries, several research institutions have analyzed and published the results, such as Dalian Institute of Technology, Chinese Sentiment Word Extreme Table, NTUSD (National Taiwan University Sentiment Vocabulary Ontology Library, 2018), Zhi.com Hownet Sentiment Dictionary, and Chinese Positive and Negative Sentiment Dictionary v1.0 (Li Jun, 2011), etc., and some of the dictionaries are divided into two parts of the positive and negative words; Some are put together and then have separate labels that can be merged together. This model is cited in Mr. Tan Songbo's Forward and Reverse Sentiment Dictionary.

Given that most of the current text processing focuses on sentence-level analysis, this paper also adopts sentence-level analysis, and its processing is mainly divided into utterance extraction, specific word extraction, syntactic analysis, and calculation of scores, which are briefly described as follows:

- 1). Statement extraction: According to the characteristics of Chinese text, the text is segmented by periods, question marks and exclamation marks.
- 2). Specific word extraction: extracting conjunctions and negatives from sentences to assist in sentiment analysis.
- 3). Syntactic analysis: Determine the weights of words before and after the sentence based on conjunctions, and determine the polarity reversal or double negation for negatives.
- 4). Calculate the score: Based on the sentiment vocabulary and the syntactic analysis structure, the score of the sentence is calculated comprehensively.

In sentiment analysis, the conjunctions with indicative features are characterized as:

- 1). Juxtaposition conjunctions: the polarity of the preceding and following sentences is the same;
- 2). Selective conjunctions: general agreement in polarity between the preceding and following sentences;
- 3). Progressive conjunctions: general agreement in polarity between the preceding and following sentences, with a slight increase in intensity in the latter;
- 4). Transitive conjunctions: the polarity of the preceding and following sentences is reversed, but the latter is more intense. Other types of conjunctions are not sensitive to emotional tendencies and are not considered at this time.

Negation has unique grammatical significance and influence in the text, and in general, words modified by negation generally change the affective polarity. In addition, due to the phenomenon of multiple negations in Chinese, the algorithm in this paper only considers double negations in view of the large proportion of double negations.

In this paper, the proposed negative words are: no, no, non, mo, don't, not, don't want, don't have to, no, etc. The algorithm will be optimized later. If the algorithm is optimized later, it will be added or deleted depending on the situation.

4.2.2 Model Realization

- 1). Read in the comment text data, and then divide the comment text into clauses, so that it is processed as a unit of sentence;
- 2). Extract conjunctions and negatives from the clauses and mark the corresponding conjunctions and negatives positions;
- 3). Accessing the sentiment lexical ontology to determine lexical polarity and its intensity;
- 4). For conjunctions (if any), determine the weights of the preceding and following clauses by the conjunction and conjunction positions, and for negatives (if any), determine the double negatives and the polarity reversal of the neighboring words according to the negation positions; if no conjunctions or negatives are included, this step is skipped;
- 4). Accumulate the sentiment of this sentence to calculate the score;

5).Loop access step 2) to step to calculate the score of this text, if it is positive then it is positive, if it is negative then it is negative, otherwise it is neutral.

4.2.3 Running Results

The results obtained as in Table 3 for favorable comments and poor comments are as follows:

Table 3 : Favorable and Poor Comments

FavorableComments			
Id	Word	Nature	Index_Word
882	Cool	x	136
882	Price	n	135
882	Attitude	n	134
882	Little brother	n	133
882	Express	v	132
882	Convenience	z	131
882	Optional	v	130
882	Buy	v	129
Poor Comments			
3522	Chide	vn	59
3522	Pay for it.	ns	58
3522	It's heavy.	a	54
3522	Fishy	n	53
3522	Sticky	n	52
3522	Sticky	zg	51
2122	Refund	v	50
3522	A	m	50

4.3 LDA Theme Analysis

Positive and negative evaluations of comment texts are mixed together, and direct LDA theme analysis may generate some confusing words under one theme, therefore, LDA theme analysis should be performed on the two types of texts, positive and negative evaluations, respectively.

In the following, we use the third-party Gensim library, which is open source in R language, to complete the LDA theme analysis. Through the code, we can know that the best theme for positive reviews is 2 (see Figure 1 for positive review themes), and the best theme for negative reviews is 5 (see Figure 2 for negative review themes).

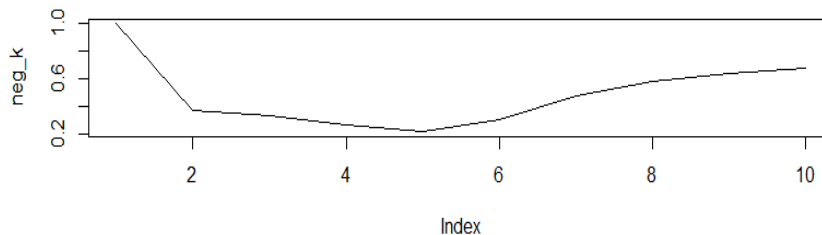


Figure 1 : Theme Map of Good Reviews

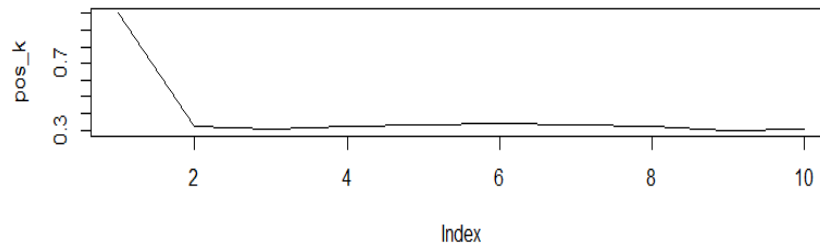


Figure 2: Thematic Map of Negative Reviews

The results can be obtained through the LDA model as follows Table 4 LDA positive review model results.

Table 4: LDA Favorable Modeling Results

Topic 1	Topic 2
Packaging	Not bad.
Purchase	Taste
Liked	Logistics
Received	Fresh
Courier	Satisfactory
Special	Price
Repurchase	Size
Quality	Taste
Grilled fish	Worth it
Very fast	Do

The results can be obtained through the LDA model as follows Table 5 LDA poor review model results.

Table 5: LDA Differential Modeling

Topic 1	Topic 2	Topic 3	Topic 4	Topic 5
Meat	Spicy	Taste	Copy That	Flavor
Not bad	First time	One	Heating	Make
Spicy	Poor	Not good	Bad	Plus
Sour	Taste	Tender	Packaging	Great
Boiled	Fish	Vegetable	Purchase	Crab
Crab meat	Price	Repurchase	Tilapia	Good value
Extraordinary	Taste	Feeling	Seller	Size
Not good value	Fried	Three boxes	Frozen	Logistics
Two	Stuff	Spicy	Bread	It's true.
Impact	Home	Value for money	First	Fish

After LDA thematic analysis, the text of positive reviews is grouped into 2 themes, and the text of negative reviews is grouped into 5 themes, and each theme displays the 10 most likely words and their corresponding probabilities.

4.4 Positive Evaluation Analysis

The high-frequency words in theme 1 include "packaging", "like", "grilled fish", "repurchase", "quality" and so on. "quality", etc., mainly reflecting that the packaging and quality of shrimp, crab, fish and meat in the prepared dishes on the e-commerce platform are good, and the taste of the prepared dishes of grilled fish is good;

The high-frequency feature words in Theme 2 include "price", "texture", "flavor", "freshness", "worthwhile", and so on. "worthwhile", etc., mainly reflecting that the price of shrimp, crab, fish and meat in the prepared dishes on the e-commerce platform is cheap, tasty and fresh.

Comprehensive high-frequency words of the two themes indicate that in the commodity prepared dishes of shrimps and crabs, fish and meat in the cheap price, good taste, freshness, packaging, good quality, which is a good taste of the prepared dishes of grilled fish .

4.5 Poor Evaluation Analysis

The high-frequency feature words in Theme 1 are "meat", "spicy", "sour", "particularly bad value for money" "Crabmeat", "impact", etc., mainly reflecting that there are some problems with the shrimp, crab, fish and meat in the prepared dishes, especially the meat is not fresh, the spiciness and acidity of the meat are not good, and it is not cost-effective to buy it, and so on;

The high-frequency feature words "fish", "price", "texture", "flavor", "first time", etc. in Theme 2. "first time", etc., mainly reflecting that the first purchase of shrimp and crab, fish and meat in the prepared dishes brought bad experience to consumers;

The high-frequency feature words "flavor", "cost-effective", "bad", "one", "feel tender", and so on in theme 3. "Feeling that the dish is tender", etc., mainly reflecting that the cost-effectiveness of prepared dishes is not good, the quantity is small, and the dish is tender;

The high-frequency feature words in Theme 4, such as "heated", "bad", "packed", "frozen", "purchased", etc., mainly reflect the problems of poor value for money, small quantity and tenderness of prepared vegetables. "Purchase", etc., mainly reflecting that there are problems with the heating of shrimp, crab, fish and meat in the prepared dishes, and that the packaging is bad after purchase;

The high-frequency feature words "flavor" and "logistics" in Theme 5 mainly reflect that the logistics of shrimps, crabs and fish in prepared dishes are not fast enough.

4.6 Consumer Sentiment Analysis

Through the text mining of the comments on the aquatic products prepared dishes on Jingdong, effective information is filtered and analyzed. A review thesaurus applicable to this product is established to improve the interpretation of information in the reviews of single products, which is not limited to word frequency analysis. It is also noted that the combination of word frequency analysis and weight analysis can produce more accurate results . In the good reviews word cloud and the bad reviews word cloud, good reviews and bad reviews are contrasted, and two good themes and five bad themes are obtained through sentiment analysis. These analyses allow manufacturers and companies to see their strengths and weaknesses and make improvements.

CONCLUSION AND SUGGESTIONS

5.1 Close to Users and Product Development

The creativity and soul of product research and development should come from the market, and should be committed to bring the research and development department closer to the first line of the consumer market, and carry out close research on the market hot ingredients and dishes. At the same time, we should respond quickly to the product demands of the marketing side, and continuously upgrade the series and new products to meet the increasing demand for pre-made dishes and the consumers' demand for new products. We insist on cost optimization, and optimize the cost of products from the R&D end according to the demand of productfactoryization. Provide customers with personalized dish selection, customization and delivery services according to their preferences and needs, in order to increase customer satisfaction and loyalty.

The greater the brand awareness, the better the corporate reputation, the better the after-sales service, the more favored by consumers, the enterprise should focus on these three aspects of the construction, the following is the relevant recommendations:

5.2 Strengthen Brand Marketing

Utilize social media, advertisements, promotional activities and other channels to increase the visibility and attractiveness of the brand of prepared dishes in order to attract more potential customers.

Self-media matrix dissemination: the brand can take advantage of the influence of KOL, seize mobile news apps and online social platforms, and build out a pro-brand KOL circle; it can also directly cooperate with KOL and maintain it carefully, to build up a deep relationship of trust and cooperation. You can also cultivate the brand's own KOC camp through the community and other ways to pave the way for brand exposure. By inviting KOL / KOC to participate in brand activities, granting honors, etc., to help them form a special topic to further increase the influence of both sides.

Product self-propagation: a good product, self-propagation. A product to achieve self-propagation, it is necessary to "bury points" in the product design.

Topic communication: the brand in making major decisions to change, or brand upgrades, or new product launches, will be used in the way of topic communication.

Integrated marketing communication: the brand reaches a certain scale, in order to better speak of "fast flow" "product effect", will adopt the integrated marketing approach. Through online and offline multi-channel, multi-method brand publicity, to obtain traffic conversion.

Loaning communication: Loaning is a communication method that every brand will do. High-quality momentum communication, pay attention to the combination of copy and materials to make users resonate. Brands use the hot spots of festivals or hot topics to increase brand exposure, and let users participate through topic interaction, and form events.

5.3 Strengthen After-sales Service

Provide customers with perfect after-sales service, including return policy, customer service hotline, online customer service, etc., do a good job of after-sales reception, processing, follow-up, bad and bad reviews, complaints, and timely feedback to the appropriate departments, in order to improve the enterprise's reputation and customer trust and satisfaction.

5.4 Attention to Commodity Attributes

When marketing to consumers, we should give priority to hot products with good taste and popularity among most people, which have higher requirements for hygiene conditions, and it is better to provide relevant quality and hygiene test certificates and other materials when selling online and offline. In addition, the fresher the ingredients, the easier it is to make, and the cheaper the price, the easier it is for consumers to accept and sell. In the sales process, the relevant personnel should be well trained and familiar with the product information, and the freshness of the ingredients and the ease of production should be visualized, such as posters, creative copy design, and so on. Of course, the enterprise itself should increase investment and publicity in the above mentioned product attributes, in order to better develop and deepen in the B and C markets.

From the survey results, it is known that nearly half of the customers come into contact with aquatic products through offline channels. Strengthen the construction of channel access, set up a special booth in Walmart, Box Horse Fresh, Sam's Supermarket and other major supermarkets, restaurants, and increase the training of promotional staff, brand, product quality and increase the publicity efforts to ensure that consumers can be the most intuitive contact to understand the product, feel the product, in order to increase the stickiness of the customer.

Online, through Jittery Voice, Xiaohongshu, WeChat and major e-commerce platforms (such as Taobao, Jingdong, Pinduoduo) live with the goods, blogger grass, organized promotional activities, or through cross-border co-branding, the launch of cultural and creative products, in order to increase the rate of repurchase of the product and open up new consumer customer groups. Offline, the launch of their own brand (to create high-end aquatic food as a specialty) chain of restaurants or specialty stores, the model can be referred to Haijilao, through the offline physical stores to the online self-traffic platform, such as WeChat community, circle of friends and other means of customer relationship maintenance, more promotions, benefits, and ultimately to achieve a differentiated quality of customer service, in order to increase the stickiness of the user.

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